magnus Group

8TH EDITION OF WORLD CONGRESS ON

INFECTIOUS DISEASES

JUNE 09-11, 2025

ROME, ITALY

VENUE:

NH Villa Carpegna

Via Pio IV, 6, 00165 Roma RM, Italy

BOOK OF ABSTRACTS

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BOOK OF
ABSTRACTS

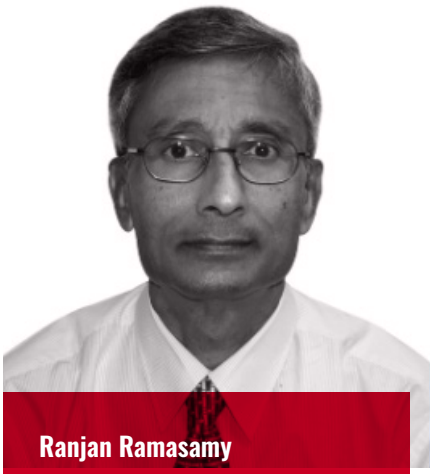
Index

Keynote Speakers

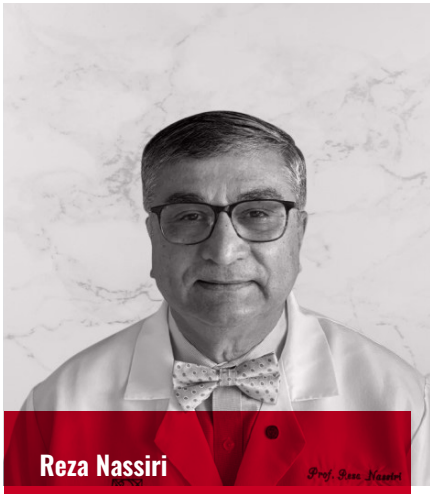
Claudia Ferreira
Biophytis Sorbonne, France

Elena Chiappini
University of Florence, Italy

Pio Conti
University in Chieti, Italy



Ranjan Ramasamy
IDFISH Technology, United States



Reza Nassiri
Michigan State University, United States

Saurabh Chattopadhyay
University of Kentucky College of Medicine, United States

Keynote Speakers

Seki Masafumi

Saitama Medical University International Medical Center, Japan

Stephen Hsu

Augusta University, United States

Xiaoyun Zhao

Tianjin University Chest Hospital, China

Yazdan Mirzanejad

University of British Columbia, Canada

Thank You All...

Welcome Message

It is a great honor to welcome you to participate in the 8th Edition of World Congress on Infectious Diseases – INFECTION 2025 in Rome, Italy, from June 9th to the 11th. This hybrid event is a great platform for us to exchange our ideas and promote innovation to overcome challenges in disease control and prevention. The unique them "Global Challenges, Local Impacts: Innovations in Infectious Disease Prevention, Diagnosis, and Treatment" will bring us together to share our discoveries and achievements aiming to improve human health globally. Your participation will certainly contribute to the effort against infectious diseases worldwide.

Stephen Hsu, PhD

Augusta University, GA, USA

Welcome Message

It is with great honor and excitement that I welcome you to the 8th Edition of the World Congress on Infectious Diseases (Infection 2025), to be held in the historic city of Rome, Italy, from June 9th to 11th, 2025. With the theme "Global Challenges, Local Impacts: Innovations in Infectious Disease Prevention, Diagnosis, and Treatment," this prestigious event brings together the brightest minds in infectious disease research, clinical practice, and public health to address some of the most pressing challenges facing our world today.

As history has shown us, epidemics and pandemics shape our societies, influencing lives in ways that leave an indelible mark. The future holds both promise and peril, with emerging threats of infection demanding relentless innovation, collaboration, and global solidarity. Infection 2025 serves as a unique platform to exchange groundbreaking ideas, share vital discoveries, and inspire new approaches to combating infectious diseases. Whether you are attending in person or virtually, your presence contributes to the advancement of knowledge and the creation of meaningful solutions for a healthier tomorrow.

Welcome to Infection 2025—where together, we strive to shape the future of global health. Let us embark on this journey of discovery, innovation, and impact.

Yazdan Mirzanejad

University of British Columbia, Canada

Welcome Message

I am honored to welcome you to the "8th World Congress on Infectious Diseases" (Infection 2025) with the theme "Global Challenges, Local Impacts: Innovations in Infectious Disease Prevention, Diagnosis, and Treatment". Many presentations will address the overarching theme of this Congress highlighting new research findings that will interest early career and established scientists, academics and clinicians. The presentations will enhance knowledge, generate new approaches to research and suggest new solutions for controlling infectious diseases. The Congress also provides an opportunity for participants to develop international networks in order to advance their research, teaching and clinical practice.

Professor Ranjan Ramasamy, Ph.D.

IDFISH Technology, United States

Welcome Message

Dear Conference Attendees,

It is an honor to invite you to participate in Infection-2025. Infectious diseases, including the recent pandemic, COVID-19, are significant threats to human and animal health. Collaborative research by engaging the community worldwide is the key to finding ways to minimize these threats. The conference will highlight recent discoveries in various aspects of infectious disease research.

Saurabh Chattopadhyay

University of Kentucky, USA

Welcome Message

I am delighted to write the welcome letter for "The 8th Edition of The World Congress on Infectious Diseases", (Infection 2025), this prestigious event will be held in the historic city of Rome, Italy, from June 09-11, 2025. As one of the world's most influential gatherings in the field of infectious diseases, Infection 2025 is where the brightest minds in research and application come together to share, learn, and advance the future of global health.

For three days, we will explore the most critical advances in basic, clinical, and operational infectious disease science. The diverse program this year focusing "Global Challenges, Local Impacts: Innovations in Infectious Disease Prevention, Diagnosis, and Treatment", reaches into the far corners of the infectious disease landscape with the aim of showcasing the latest cutting-edge studies and breakthroughs that are sure to shape policy and practice for years to come.

Whether you will be in Rome or virtually to present, collaborate, or gain insights, I am thrilled to have you join this vibrant community of experts, innovators, and leaders as we pave the way for new frontiers.

Welcome to Infection 2025—let's make history together!

Looking forward to meeting with you in Rome

Dr. Claudia Ferreira MD, PhD

Biophytis Sorbonne University, France

Welcome Message

Dear colleagues and friends,

It is with great enthusiasm and pride that I welcome you to the 8th edition of World Congress on Infectious Diseases held in the magnificent and great city of Rome.

The title of the 8th edition of World Congress on Infectious Diseases reflects the essence of the organizers' commitment. We are in an era of rapid change: the challenges posed by the complexity of infectious diseases, the expansion of therapeutic indications and the increasingly stringent ethical and social needs call us to act with vision and responsibility. But it is also an era of incredible opportunities, thanks to the progress in immunological therapies and vaccination prevention, and in technological medicine applied to infectious disease.

This congress aims to be an opportunity to explore new frontiers together and serve as a unique opportunity to share knowledge, discuss revolutionary ideas and, above all, build the future of infectious diseases together.

Pio Conti

University in Chieti, Italy

Welcome Message

It is our great pleasure to invite distinguished speakers and researchers to the Infection 2025 on June 09-11, 2025 at Rome, Italy. Sciences of infectious diseases field make unprecedented progress today since the pandemics of novel influenza 2009 and COVID-19. In addition, RS virus and other respiratory virus are also found to induce severe diseases not only in children, but also in the elderly people. This opens new opportunities to achieve higher treatment and prevention efficiency, and to introduce intelligent, differentiated methods to works against these infectious diseases. It is obvious that both basic and clinical research could go together, and these studies based of precise microbiological and clinical evidence will be the future basis for success.

Masafumi Seki MD, PhD.

Saitama Medical University International Medical Center, Japan

ABOUT
MAGNUS GROUP

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceutics, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

ABOUT
INFECTION 2025

The **8th Edition of the World Congress on Infectious Diseases** is a prestigious international gathering set to take place in **Rome, Italy** and virtually from **June 09–11, 2025**. This global event brings together leading scientists, researchers, healthcare professionals and industry leaders to share knowledge and explore the latest advancements in infectious disease research, prevention, diagnosis, and treatment.

Under the theme "*Global Challenges, Local Impacts: Innovations in Infectious Disease Prevention, Diagnosis, and Treatment*," the Infection 2025 summit will highlight the vital role of infection control in enhancing healthcare outcomes and improving global public health. The conference aims to tackle pressing global health challenges and foster innovative, evidence-based solutions.

Attendees will benefit from a robust program featuring keynote lectures, oral, poster presentations and networking opportunities. The event provides a dynamic platform for meaningful dialogue, experience sharing, and building lasting professional relationships.

Renowned experts from academia, industry and research institutions will present on cutting-edge developments, emerging trends, and transformative technologies in the field of infectious diseases. By fostering collaboration and interdisciplinary exchange, the congress seeks to drive impactful change and shape a healthier, more resilient future for communities worldwide.

ABOUT

CPD Accreditation

APPROVED PROVIDER #780643

Continuing Professional Development (CPD) credits are valuable for Infection 2025 attendees as they provide recognition and validation of their ongoing learning and professional development. The number of CPD credits that can be earned is typically based on the number of sessions attended. You have an opportunity to avail 1 CPD credit for each hour of Attendance.

Some benefits of CPD credits include:

Career advancement: CPD credits demonstrate a commitment to ongoing learning and professional development, which can enhance one's reputation and increase chances of career advancement.

Maintenance of professional credentials: Many professions require a minimum number of CPD credits to maintain their certification or license.

Increased knowledge: Attending Infection 2025 and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking opportunities: Infection Conference provide opportunities for attendees to network with peers and experts, expanding their professional network and building relationships with potential collaborators.

Note: Each conference attendee will receive 33+ CPD credits.

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

BOOK OF ABSTRACTS

magnus Group

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KEYNOTE PRESENTATIONS

Dr. Claudia Ferreira[1]* MD, PhD; Joselito Balingit[2]; Marie-Francoise Doursout[3]

[1]Biophytis Sorbonne, Medical Director, Paris, France

[2]TECHNE Medical Department Champignelles, France

[3]Marie-Françoise Doursout, Department of Anaesthesiology, The University of Texas Health Science, Houston, TX USA

2000 years of pandemics: Past, present and future

A pandemic is considered as an outbreak of a disease occurring over a wide geographic area, crossing national borders, and affecting a high proportion of the world. During the 1st millennium AD, three main pandemics emerged. The Antonine Plague (165-190 AD), caused by hemorrhagic smallpox, killed 5 million people and contributed to the downfall of the Roman Empire. Four-hundred years later, the Justinian plague caused by Yersinia pestis decimated the Byzantine Empire, killing 50 million people. Between 1346-1353, the black death took 200 million lives (1/3) of the European population.

With the American colonization, Europeans brought several infectious diseases to the New World including Yersinia pestis, smallpox, influenza, enteric salmonella, among others, subsequently devastating 90% of the local Native American population. During the late 19th century and through the mid-20th century, several influenza outbreaks emerged. The Russian flu, Spanish flu, Asian flu (H2N2), Hong Kong flu killed around two billion people worldwide. In addition, previously unknown viruses, such as Marburg, Ebola, and HIV came into public awareness in the mid-1970. From 2002 to present, Influenza, Swine Flu, SARS, MERS, and SARS-COVID-19 have killed and

Biography

Claudia Ferreira MD, PhD, graduated in medicine from the University of Cordoba in Argentina, followed by a fellowship from the Harvard AIDS Institute and the University of Texas Health Science Center in Houston, TX, USA. Dr. Ferreira has dedicated the last 25 years of career to the fields of infectious diseases, tropical diseases, and gastroenterology. Dr. Ferreira was also a medical editor of a web portal related to community awareness for bioterrorism after 9/11. Dr. Ferreira also worked as an investigator for the National Agency for AIDS Research, a branch of the National Center for Research Science, and for several pharmaceutical laboratories in France. Dr. Ferreira helps international agencies and private organizations manage emerging infectious diseases, pandemic preparedness and - response planning. Currently, Dr. Claudia is the Medical Director of Biophytis, at the University of Sorbonne in France.

infected several million people. The role of wildlife in emerging zoonotic diseases has been well documented since the 20th century. However, its frequency seems to increase since the 20th century. Three main factors are associated to pandemics emergence: Human development, climate change and human displacement. The history of previous pandemics needs to be reconsidered to learn from mistakes of the past, building a better future.

Elena Chiappini

Department of Health Sciences, Pediatric Infectious Diseases Unit Meyer Children's University Hospital, IRCCS, University of Florence, Florence, Italy

Tubercular disease in children: Optimizing treatment strategies through disease insights

Background: Paediatric Tuberculosis (TB) represents a critical health concern due to the significant risk of Extrapulmonary TB (EPTB), severe disease forms, and the increasing prevalence of Drug-Resistant Strains (DR-TB). Understanding the clinical characteristics of affected children and evaluating the role of second-line drugs is essential for optimizing management strategies.

Methods: A retrospective study was conducted on 271 children diagnosed with active TB at Meyer Children's Hospital, Florence, Italy, from 2006 to 2022. Among these, 44 cases involved EPTB and 9 cases were DR-TB. Clinical data, Drug Susceptibility Testing (DST) results, and treatment outcomes were analyzed. Univariate and multivariate logistic regression were employed to identify risk factors associated with EPTB, DR-TB, and the use of second-line drugs.

Results: Drug susceptibility testing results were initially challenging to obtain, with an increase in availability from 11.04% in 2006–2013 to 42.73% in 2014–2022 ($p<0.001$). Second-line drugs were administered in all DR-TB cases and in 45.45% of EPTB cases, often reflecting therapeutic complexity. Adverse events related to second-line therapies were infrequent (4.8%) and generally mild. The overall treatment success rate was 98.52%, with only 1.48% of children presenting sequelae. Asian origin emerged as a significant risk factor for both EPTB ($p=0.013$) and DR-TB ($p=0.045$). The introduction of GeneXpert technology

Biography

Elena Chiappini is an Associate Professor of General and Specialized Pediatrics at the University of Florence, where Elena Chiappini coordinates the Pediatrics Course for Medicine and Surgery Medical Degree School and chairs the Second-Level Master's Program in Clinical Epidemiology and Guidelines. Elena Chiappini is the Deputy Head of the Pediatric Infectious Diseases Unit and leads the International Adoption Service at Anna Meyer Children's Hospital. With over 329 publications in high-impact journals (Scopus H-index: 41), Elena Chiappini has contributed to over 20 international guidelines.

significantly improved diagnostic accuracy and DST result availability.

Conclusions: While second-line drugs are primarily recommended for DR-TB, selected EPTB cases may also benefit from these therapies. The integration of advanced diagnostic tools, such as GeneXpert, enhances disease management and facilitates tailored treatment approaches. Further studies are needed to refine therapeutic protocols and improve outcomes for paediatric TB.

Masafumi Seki MD, PhD

Division of Infectious Diseases and Infection Control, Saitama Medical University International Medical Center, Hidaka City, Saitama, Japan

Current topics of adult COVID-19, influenza, and RS virus patients in Japan

Background: Respiratory Syncytial Virus (RSV) is a pathogenic respiratory virus that is considered to affect not only children but also adults, especially elderly persons aged ≥65 years. However, in Japan, the annual epidemic situation and severity of RSV infections in these adults have not yet been clarified, especially during the COVID-19 pandemic. In addition, COVID-19-related pneumonia was initially rare, though influenza-related pneumonia is well known as a severe complication of influenza. However, COVID-19-related pneumonia may be increasing since the omicron variant of COVID-19 appeared.

Methods: The epidemic of RSV, especially the number of adults with RSV infection during the COVID-19 period, was retrospectively analyzed. In addition, the clinical features of patients aged ≥65 years (older group) and those aged ≤64 years (younger group) were compared. Furthermore, the clinical differences between COVID-19-related and influenza-related pneumonia patients were retrospectively investigated in patients hospitalized from January 2022 to December 2023.

Results: A total of 58 patients were found to have RSV infections from April to August 2021. Ten were adults, and five each were detected in June and July, respectively. Of the 10 adult patients, three were in the older group and were more often infected by their grandchildren, and seven were in the younger group. All older patients had underlying diseases, including diabetes mellitus. In addition, the older group showed more severe inflammation, such as increased white blood cell counts and C-reactive protein

Biography

Professor Seki has been graduated from Department of Medicine, Nagasaki University, as Medical Doctor, with the specialties including Internal Medicine, Infectious Diseases, and Infection Control. Later on obtained post-graduation, started working at Osaka University. After the professor of Tohoku Medical and Pharmaceutical University, presently Prof. Seki has been working at the Saitama Medical University International Medical Center, Hidaka City, Saitama, Japan.

levels, and received antibiotic therapy, whereas no antibiotics were used for the younger group. Two of the three older patients were admitted to our hospital, but survived. In addition, COVID-19-related and influenza-related pneumonias were found in 46 of 285 (15.8%) and 6 of 12 (50.0%) patients, respectively ($p<0.001$). Their mean ages were 75.5 (45-93) years and 53.8 (19-73) years in COVID-19-related and influenza-related pneumonia cases, respectively ($p=0.002$). Aspiration pneumonia was more common in COVID-19-related pneumonia (28/46=60.9%) than in influenza-related pneumonia patients, and it was treated by sulbactam/ampicillin (31/46=67.4%). The influenza-related pneumonia patients were more often infected in the work place (2/6=33.3%) and not vaccinated (4/6=66.7%), compared with COVID-19-related patients. Death occurred in 7 of 46 (15.2%) COVID-19 patients, but none of 6 influenza-infected patients died.

Conclusion: These data suggest that RSV infection in adult patients was related to the increase in pediatric RSV patients and that the infection season had shifted to summer, similar to other countries. Among the adult RSV patients, those aged ≥65 years were more often infected by their grandchildren and received antibiotics because of their more severe inflammatory status than patients aged ≤64 years during the COVID-19 pandemic in Japan. Furthermore, COVID-19-related pneumonia presented as aspiration pneumonia in older patients, although influenza-related pneumonia was more common in younger and non-vaccinated patients and might be associated with immune mechanisms during the omicron variant surge era.

Pedro Plans-Rubió

College of Physicians of Barcelona, Spain

COVID-19 vaccination strategies in the post-pandemic era

COVID-19 vaccines have reduced the negative health and economic impact of the COVID-19 pandemic by preventing severe disease, hospitalizations and deaths. In the new socio-economic normality, the COVID-19 vaccination strategy can be universal or high-risk and seasonal or not seasonal, and different vaccines can be used. The universal vaccination strategy can achieve greater health and herd immunity effects and it is associated with greater costs than the high-risk vaccination strategy. In each country, the optimal COVID-19 vaccination strategy must be decided by considering the advantages and disadvantages and assessing the costs, health effects and cost-effectiveness of the universal and high-risk vaccination strategies. The universal vaccination strategy should be implemented when the objective of the vaccination program is to achieve the highest health benefits from COVID-19 vaccination and when its incremental cost-effectiveness ratio is lower than EUR 30,000–50,000 per QALY or LYG. The use of adapted vaccines targeting currently circulating variants of SARS-CoV-2 is necessary to avoid the immune escape of emerging variants.

Biography

Pedro Plans-Rubió has been Responsible for Health Registries, Public Health Agency of Catalonia, Health Department of Catalonia, Spain. Pedro Plans-Rubió received a MD from the School of Medicine, University of Barcelona; a PhD from the School of Medicine, University of Barcelona, an MSc in Health Economics from the School of Economics, University of Barcelona, and an MSc in Design of clinical and epidemiological studies from the School of Medicine, University of Barcelona. Specialist in Preventive Medicine and Public Health. Specialist in Labor Medicine. Member of the research group CIBER of Epidemiology and Public Health (CIBERESP), Instituto de Salud Carlos III, Madrid, Spain. Plans-Rubió has published more than 100 articles in scientific journals on the epidemiology of infectious diseases, epidemiology of risk factors for chronic diseases and for infectious diseases, seroepidemiology, cost-effectiveness analysis of medicines and health programs, vaccination programs, and health policy. Pedro Plans-Rubió has published the book “Application of the cost-effectiveness of medicines and health programs in the health planning”, Elsevier, 2015. Editor-in Chief of Section “Vaccine Efficacy and Safety” of the journal Vaccines and Editor of several Special Issues of the journal Vaccines. Member of the Editorial Board of the journals Pharmacoeconomics Open.

Pietro Salvatori[1]*, Aldo Venuti[2], Ali Amoushahi[3]

[1]Independent Head & Neck Surgeon, Milan, Italy

[2]Head HPV Unit, IRCCS Regina Elena National Cancer Institute, Rome, Italy

[3]Anesthesiologist and Intensive Care Unit Physician, Isfahan University of Medical Sciences, Isfahan, Iran

Ethanol inhalation for respiratory infections due to enveloped viruses

This review deals with enveloped viruses, whose structure is basically descripted, with particular attention to those that commonly affect the respiratory tract. Then, we analyze how ethanol can alterate this envelope, leading to distruction or inactivation of such pathogens; particularly, we illustrate the advantages of its delivery through inhalation. After having examinated ethanol toxicity, including its effects on tissues and microbiota, we report general data about ethanol as medicament. Finally, we review the current knowledge on ethanol usage in respiratory infections, both preventive and curative. We conclude suggesting further studies in order to confirm ethanol efficacy, tolerability and cost-effectiveness in treating respiratory infections due to enveloped viruses.

Biography

Dr. Pietro Salvatori graduated at the University of Florence Medical School, Italy and earned specialization in General Surgery, Otorhinolaryngology, and Maxillo-Facial Surgery. Dr. Pietro was Research Fellow at the University of Liverpool, served in several Institutions, and ended hospital career as a Head of ENT-H&N Department of the Humanitas San Pio X Hospital, Milan, Italy. At present, Dr. Salvatori acts as freelance Head & Neck Surgeon. Most of both the work and research dealt with head and neck cancer. Also published more than 70 papers and gave about 150 speeches. During recent pandemic, Dr. Salvatori made research with international colleagues and published on ethanol inhalation to treat SARS-CoV-2 infection and Covid-19.

Pio Conti

University in Chieti, Italy

Role of mast cells in infection and inflammation

Mast Cells (MCs) originate from CD34+/CD117+/CD13+ pluripotent hematopoietic stem cells and they express the c-Kit receptor (c-Kit-R) which regulates their proliferation and sustains their survival, differentiation, and maturation. MCs are immune tissue cells derived from bone marrow that are present in all vascularized tissues and play active roles in processes and reactions relating to infection and inflammation. MCs are also involved in innate and adaptive immunity, autoimmunity, and cancer. These cells have a dual role in infection; they can be beneficial for infection by acting as immune cells, or they can cause harm by producing inflammatory cytokines such as Tumor Necrosis Factor (TNF), IL-1, and IL-6. Since MCs release an exaggerated amount of pro-inflammatory cytokines in inflammation, inhibiting the production of MC compounds may represent a promising approach and a new therapeutic strategy that can be complementary to the traditional procedures used today. In infection, MCs can be activated through mRNA and release inflammatory cytokines, without degranulation. MCs can be recruited into inflamed tissue by diverse chemotactic molecules, including Vascular Endothelial Growth Factor (VEGF), Stem Cell Factor (SCF), and several CC and CXC chemokines produced by activated immune cells. MCs are known to mediate endothelial cell activation, resulting in inflammatory disorders. The role of MCs in infectious diseases has been extensively studied and reported in the scientific literature and it is of great clinical interest. Here, we report the role of MCs and their generation of inflammatory cytokines in infections and suggest that blocking MC cytokine production by anti-inflammatory cytokines could be a new strategy for therapy.

Biography

Professor Pio Conti began scientific research in London in 1977, worked in the laboratory of Prof. D.A. Willoughby, studying the mechanisms of chronic inflammation. From 1981-1983, Prof Pio Conti worked in the USA in Washington D.C. at the Immunology Center at Georgetown University, directed by Prof. J.A. Bellanti. In this lab, Prof Pio Conti studied the eicosanoids and the effect of lymphotoxin on neutrophils in vitro, in collaboration with Prof. Peter W. Ramwell and Dr. Terry W. Williams, the collaborator of G.A. Granger (University of California), the discoverer of lymphotoxin, which was later named Tumor Necrosis Factor (TNF). In 1985, P. Conti and T.W. Williams published an interesting article highlighting that lymphotoxin damages human neutrophils, causing vacuolization and increasing thromboxane. Later, this discovery proved to be the basis for myocardial infarction. In 1984, P. Conti was invited to Boston (USA) to carry out research on the cytokine IL-1 in the laboratory of Prof. Charles A. Dinarello, the purifier and cloner of IL-1 and the discoverer of various cytokines (IL-18, IL-33, IL-37, IL-38, IL-1RA). Prof

Pio Conti work here led to the publishing of a pioneering article on the effects of IL-1 on natural killer cells and tumor killing with J.W. Mier (who discovered IL-2 with Robert Gallo from NIH). From 1985-86, Prof. Conti worked at Harvard Medical School in Boston, collaborated with Dr. C.N. Serhan (collaborator of Prof. Bengt I. Samuelsson, Nobel Prize winner), the discoverer of Lipoxins A and B, and published an original paper on the stimulation of lipoxin A on the release of thromboxane by neutrophils. From 1986-2022, Prof P Conti studied the pathophysiology of mast cells at the Molecular Pharmacology and Drug Discovery Laboratory at Tufts University in Boston, directed by Prof. T.C. Theoharides. The studies done in this research center led to the publication of a significant number of articles in the best international scientific journals. From 2009 to today, Prof P Conti has collaborated with Dr. Susan E. Leeman (former Nobel Prize candidate), discoverer of the neuropeptide neurotensin and purifier of substance P. In 2020, during the pandemic, Professor Conti published an article on the damage effects of cytokines released in COVID-19 which obtained many citations (over 2,000).

Ranjan Ramasamy

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Global environmental changes and mosquito-borne diseases in coastal areas

Changes in temperature, rainfall and humidity due to global warming affect mosquito-borne disease transmission. However, coastal areas are also influenced by the expansion of brackish water mosquito habitats as a result of global warming leading to higher sea levels and the accumulation of man-made waste containers collecting brackish water. Typical fresh water mosquito vectors such as the arboviral vectors Aedes aegypti and Aedes albopictus as well as the malaria vectors Anopheles stephensi and Anopheles culicifacies have recently been documented to develop in coastal brackish water habitats in the 1025 km2 Jaffna peninsula in northern Sri Lanka. Adaptation of Ae. aegypti to oviposit and undergo preimaginal development in brackish water is accompanied by thickening of larval and adult cuticles and concomitantly greater resistance to common larvicides and adulticides respectively. Brackish water habitats of Aedes vectors are not presently targeted in vector control programmes. Because brackish water Ae. aegypti and Ae. albopictus are injectable with dengue virus, they can constitute a neglected reservoir of dengue virus that initiate epidemics with the onset of seasonal rains. This may also apply to brackish water-adapted malaria vectors and malaria. The findings highlight the importance of extending mosquito vector control measures to coastal brackish water habitats to reduce morbidity and mortality from mosquito-borne diseases.

Biography

Ranjan Ramasamy graduated in 1971 and then a PhD in 1974 from the University of Cambridge, UK. Ranjan Ramasamy was the Chairman of the National Science Foundation of Sri Lanka, Professor of Life Sciences at the Institute of Fundamental Studies in Kandy in Sri Lanka, Professor of Biochemistry in the University of Jaffna in Jaffna Sri Lanka, Professor of Immunology in the University Brunei Darussalam Medical School and held institute appointments at the Babraham Institute, Cambridge, UK and Scripps Clinic and Research Foundation, La Jolla, USA. Ranjan Ramasamy has more than 280 publications.

Prof. Dr. Nassiri

Department of Clinical Pharmacology/Toxicology, Michigan State University, East Lansing, Michigan, USA

The impact of global antibiotic resistance on the healthcare system, public health, environment, and society

Treatment of infectious diseases with antibiotics is a marvel of medicine and the most significant clinical developments of the 21st century. However, the rapid spread of antibiotic resistance genes especially in gran-negative bacteria in the healthcare settings, community, and environment pose serious threats on patients' clinical outcomes, which impacts the well-being of human and society.

Resistant bacterial infections can therefore cause clinical, public health, or economic devastations. The magnitude of such negative outcomes has extensively been measured by numerous academic research groups as well as the WHO or CDC in the context of morbidity and mortality resulting in increased resource utilization, higher costs of hospitalizations, and antibiotic treatment protocols which favor by increasing utilization of broad-spectrum empiric therapy. It is widely agreed that the treatment failures with resistant infections are of multifactorial characteristics including bacterial fitness and expression genetic mobile elements. For example, high-risk clones such as *Methicillin-resistant Staphylococcus aureus (MRSA), Vancomycin-resistant Enterococcus faecium*, are rapidly spreading and carry drug-resistant phenotypes which is difficult to treat. Of significant challenge is the heteroresistance infections, a distinct type of antibiotic resistance that involves the occurrence of a subpopulation of bacteria that are more resistant than the main subpopulation. Although heteroresistance infections are present at very low frequencies, their rapid enrichment is concerning.

Biography

Prof. Nassiri is a hematologist graduate of the University of Paris with a fellowship training in Clinical Pharmacology at the U of M Medical Center in Ann Arbor, Michigan. Had an academic expertise in Infectious Diseases, Tropical Medicine, and Global Health. Prof. Nassiri directs online courses in Pharmacology and Infectious Diseases, Tropical Medicine, and perspectives on Global Health. Currently, Nassiri is a Professor of Pharmacology and Toxicology in Michigan State University and had served as a Professor of Family & Community Medicine. In addition, Prof. Nassiri had served as Associate Dean of Global Health and Director of Institute of International Health. Currently works on global health issues, particularly antibiotic resistance, COVID-19, One Health, and viruses without borders. Also made significant contributions in various fields of medical sciences including clinical investigations, health education, and advances in academic medicine. Based on expertise in infectious diseases including HIV/AIDS and diseases of the tropics, Prof. Nassiri had previously developed clinical research programs in Brazil, South

The HR phenotype has widely been observed in several antibiotics. Because of their inherent instability as well as low frequency, they are particularly difficult to detect and treat efficiently. The impact on healthcare system is rapidly evolving especially in countries with resource-limited laboratory capabilities and the availability of alternative antibiotics. The emergence and spread of epidemic clones of *Methicillin-resistant Staphylococcus aureus* (MRSA), *Vancomycin-resistant Enterococcus faecium* (VRE) and Acinetobacter spp. are good examples of additional resistant infections which are currently global health burden causing nosocomial infections. Further, colonization with multidrug-resistant organisms is increasingly common in numerous countries including the high-income countries. As selection of antibiotic resistance is a natural process, therefore, resistance develops more rapidly through misuse and overuse–a challenge in our global public health. While hospitals remain key sites for the transmission of antibiotic resistant infections, effective prevention control measures highly emphasize on the importance of hand hygiene among healthcare workers and disinfection measures by the hospitals' infection control departments. Contaminated hands with genetic mobile elements may further spread the resistant infections in the communities bringing more challenges to the public health impacts. Particularly, inpatients are at higher risk of developing antibiotic resistance infections compared to outpatients. According to the WHO, patients with *Methicillin-resistant Staphylococcus aureus* (MRSA) infection, which is primarily a hospital- acquired infection, are about 62% more likely to die the resistant infection compared with people with drug-sensitive infections. Parallel to the impact on the healthcare system and public health, rapid flow of antibiotic resistant genes from the environment to the clinical setting adds deeper to the enigma of global antibiotic resistance. One common example is contaminated foods which end up in our commensal system (GI tract), where antibiotic resistance emerges from the presence of antibiotic treatment or transferred from genetic mobile elements to gut microbiota. Global

Africa, Haiti, Dominican Republic, and Mexico. And, also serves on editorial board of numerus medical journals including HIV and AIDS Review, Journal of Antibiotics, and J of Global Health. Delivered seminar presentations on tropical diseases, HIV/AIDS, antibiotic resistance, COVID- 19, deadly viral epidemics and global health issues in numerous national and international conferences and workshops. Prof. Nassiri is internationally recognized for his work in the areas of One Health, building effective international partnerships in global health and technical assistance mechanisms in public health issues. Prof. Nassiri is the founder of MSUCOM Primary Health Clinic in Merida, Yucatan, Mexico. During his tenure as MSUCOM Associate Dean of Global Health, Prof. Nassiri developed partnerships with Brazil, Mexico, Dominican Republic, Egypt, Japan, S. Korea, and Turkey. Prof. Nassiri research interests are clinical pharmacology of anti-infective agents, deadly viral epidemics including SARS-Cov-2 (COVID-19), antibiotic resistance, prevention and control of infectious diseases, diseases of tropics, global health, and community-based public health interventions. Also served as the Vice Chair of the AOA Bureau of International Affairs for 10 years.

health arena is consisted of interconnected groups, individuals, communities, and institutions. The spread of antibiotic resistant genes represents one of the biggest challenges to the future of global health arena. To this note, consequences of antibiotic resistance is significantly profound impacting the health of our society. Our individual public health behavior whether in the hospital levels, or outpatient levels, reflect our determination in prioritizing for mitigation of the spread of antibiotic resistance infections by actively engaging safe practices of public health vis-à-vis the emergence of antibiotic resistance. On the other hand, healthcare practitioners are advised to prescribe antibiotics responsibly based on the evidence of bacterial infections to safeguard the health and well-being of the society at large. It is evident that mitigating antibiotic resistant infections require evidenced-based global initiatives that spans the fields of hospital practice, public health, environmental health.

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Controlling pulmonary inflammation during respiratory virus infection

Virus infection causes rapid induction of antiviral and inflammatory genes in infected cells, leading to an antiviral state in the host. Inflammation in the early stages of the infection is beneficial; however, hyperinflammation, caused by cytokine storm, contributes to the pathogenesis. Our lab has been studying the delicate balance between the antiviral and inflammatory arms of the host-virus interaction. Our studies using cells and mice identified new ways the host controls the inflammatory responses to curb cytokine storm and eventually the inflammatory response. These studies have translational impacts against specific respiratory viruses.

Biography

Saurabh Chattopadhyay, Ph.D., is an associate professor in Department of Microbiology, Immunology, and Molecular Genetics at University of Kentucky (UK) College of Medicine, Lexington, Kentucky, USA. Saurabh Chattopadhyay's group studies virus infection and its interaction with host immune responses. Research work in laboratory is funded by the National Institutes of Health, Ohio Department of Health, Center for Disease Control, and American Heart Association. Saurabh Chattopadhyay graduated from Indian Institute of Technology Delhi in Biotechnology and did a postdoc in Virology at Cleveland Clinic. Before moving to UK, and Saurabh was an associate professor at University of Toledo College of Medicine, Ohio.

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Biography

Dr. Stephen Hsu earned a Ph.D. degree from University Cincinnati College of Medicine and joined Memorial Sloan-Kettering Cancer Center as a Research Fellow and served as a lecturer in the National University of Singapore. Dr. Stephen is currently a tenured professor at Dental College of Georgia, Augusta University. Dr. Hsu invented several technologies and products to treat various diseases and conditions such as xerostomia and viral infections based on results from phase II clinical trials. Dr. Hsu's NIH support is on novel virucidal disinfectants against bacterial spores, and nasal nano-drug intervention on Long COVID associated neurologic symptoms.

Novel nanotechnology and its potential applications

Hydrophobic molecules with poor water solubility are often associated with low bioavailability. This physical property prevents these molecules from being developed for new drug use. Examples of these hydrophobic drug candidates include paclitaxel (Taxol), quercetin, Cannabidiol (CBD), Tetrahydrocannabinol (THC), retinoic acid, tocotrienols, and ivermectin. It is estimated that 70–90% of drug candidates under development stage are poorly soluble, which may be associated with low bioavailability, reduced therapeutic effects, and increased dosage that could cause unwanted adverse effects. In our previous work, we developed a novel Facilitated Self-Assembling Technology (FAST for short) with several specific practical methods. The major advantage of this technology is that it is not engineered nor encapsulated, and is without lipid, surfactant, or metal component. The nanoparticles prepared using this technology are highly hydrophilic and stable. This nanotechnology would allow many drug candidates to be developed with increased solubility and bioavailability in their own nanoparticle form. The purpose of the current discussion focuses on the potential applications of EC16 (Epigallocatechin-3-Gallate-Palmitates, or EGCG-palmitates) nanoparticles that can be produced using three practical methods of FAST to prepare water-based nanosuspensions. The results demonstrate that this novel nanotechnology is able to generate stable and water-soluble nanoparticles with a wide range of applications. It could be used in new drug development or reformulate and improve the solubility and bioavailability of existing drugs.

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A novel device for preventing ventilator-associated pneumonia in intubated patients

Background: Ventilator-Associated Pneumonia (VAP) occurs within 48 hours of mechanical ventilation and up to 48 hours after extubation, often caused by bacterial pathogens such as Staphylococcus aureus, Pseudomonas aeruginosa, and Klebsiella pneumoniae etc in the secretion above the balloon around of the tube. Traditional prevention methods, such as antibiotics and regular suctioning, have limitations in removing bacteria from sputum during intubation. This device aims to use 222nm UV-C light to more effectively kill pathogens in the secretion above the balloon, in order to reduce the risk of VAP.

Materials and Methods: The device uses a combination of 222nm UV-C light and fiber optics to deliver light to the sputum area around the endotracheal tube and secretions above the balloon. The 222nm UV-C light kills pathogens without harming human tissues. The fiberoptics are arranged in a helical pattern around the tube to ensure even light distribution, while a reflective membrane lay under the fiberoptics prevents UV light from entering the tube and forming harmful ozone. Additionally, a negative pressure suction system continuously removes ozone and secretions during treatment.

Biography

Dr. Xiaoyun Zhao studied Clinical Medicine at the Nankai University and got a MM degree in 2004, and then received a MD degree at the Tianjin Medical University. Dr. Xiaoyun's fellowship was supervised by Dr. Richard Castriotta at the Texas University Health Science Center at Huston. Now, Dr. Xiaoyun serves as the chief doctor and the discipline leader of National Respiratory Medicine Clinical Key Specialty at Tianjin University Chest Hospital. Also serves as a professor of Clinical Medicine and Biomedical Engineering at the Tianjin University, Tianjin Medical University, Tiangong University, China. Dr. Xiaoyun Zhao has published more than 70 research articles in journals.

Results: The device effectively disinfects the sputum, ensuring a high level of pathogen elimination. The 222nm UV-C light method overcomes the challenge of sputum viscosity, ensuring consistent treatment. The design also minimizes the risk of ozone production, a common issue with UV sterilization.

Discussion: This innovation provides a non-chemical method that targets bacteria in the sputum without introducing the risk of antibiotic resistance. It ensures patient safety by minimizing harmful ozone production.

Conclusion: The novel intratracheal tube with UV-C light sterilization device offers a promising solution to prevent VAP in intubated patients, providing a valuable complement to existing prevention methods.

Brooke Cheng, Beenu Bajwa, Seung-won Choi, Hannah Martin, Tyson Miao, Denise Werry, Michael Perlman, Yazdan Mirzanejad*

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Anti-IFN-γ autoantibody syndrome presenting with disseminated NTM infections: A case series and therapeutic implications and review of literature

Anticytokine autoantibodies, particularly anti-IFN-γ Autoantibodies (AAbs), disrupt cytokine functions, leading to infections, autoimmune-like diseases, and conditions resembling IL-12/IFN-γ pathway defects. Advances in genetic testing have clarified overlaps between autoinflammatory, autoimmune disorders, and primary immunodeficiencies but reveal complex phenotypes and pathways. While these insights deepen our understanding of immune mechanisms, they also complicate diagnosis and treatment, with limited options for IFN-γ deficiencies caused by genetic mutations. The adult-onset immunodeficiency with disseminated lymphadenitis due to Nontuberculous Mycobacteria (NTM) and other opportunistic infections, linked to high levels of anti–IFN-γ autoantibodies. This syndrome, initially identified in HIV-negative asian patients, frequently affects individuals of asian descent and may be associated with specific HLA alleles. The presence of neutralizing anti–IFN-γ autoantibodies impairs the IFN-γ–dependent immune response, likely contributing to the persistent NTM infection. This understanding of immunopathology underscores the potential for late-onset anti-IFN-γ autoantibody syndrome to manifest with disseminated NTM infections and highlights the timely diagnosis and prescribing rituximab as a potential therapeutic option.

Biography

Yazdan Mirzanejad is a Clinical Professor and Senior Consultant in Infectious Disease at the Surrey Hospital Campus & Health Sciences Centre. Also serves as the Clinical Lead in Infectious Disease & Health Care Epidemiology for Surrey and the Community of South Fraser Division Infectious Diseases. Yazdan Mirzanejad has been a significant figure in the field of infectious diseases, contributing to both clinical practice and medical education. Yazdan Mirzanejad has been involved in various research projects and has a passion for teaching and mentoring the next generation of healthcare professionals.

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ORAL PRESENTATIONS

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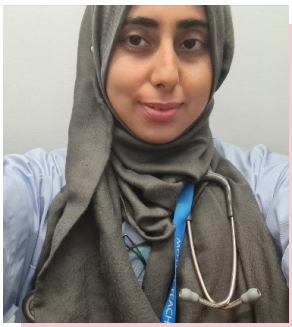
Capitol Medical Center, Philippines

Laparoscopic heller myotomy with anterior fundoplication in an elderly male patient with achalasia and coexisting miliary tuberculosis

Background: This case report aims to present the applicability and safety of Laparoscopic Heller myotomy with anterior fundoplication in an elderly male patient with achalasia and coexisting miliary tuberculosis. Although the exact cause of achalasia has not been determined, the clinical course of the patient's pulmonary tuberculosis and the occurrence of achalasia suggests a possible association between these two diseases. Further studies are needed to confirm this association, as miliary tuberculosis has been reported to invade the esophagus in published journal articles. Pathogenesis includes micro-invasion of the organism in the esophageal myenteric plexus or the paraneoplastic effects of the inflammation.

Case Presentation, Methods, and Results: A 70-year-old, male patient presented with decreased appetite, episodes of vomiting, and generalized body weakness a few weeks prior to admission. He was previously diagnosed with pulmonary tuberculosis several years prior and underwent treatment. He had also been diagnosed with achalasia in 2022. Upon admission, he underwent esophagogastroduodenoscopy which showed achalasia and a markedly dilated esophagus, tight gastroesophageal junction but still able to pass scope through. A chest CT scan with intravenous contrast was also performed, showing miliary tuberculosis and megaesophagus. He later underwent surgery for achalasia, laparoscopic Heller myotomy with anterior fundoplication, perigastric lymph node biopsy. The intraoperative course was uneventful, and he was subsequently started on NGT feeding and progressed to regular diet. Nifedipine and anti-TB medications were also resumed. Histopathological examination of the perigastric lymph node showed chronic granulomatous lymphadenitis with Langhans giant cells, presumptive of tuberculous etiology. He was discharged improved on the 10th post-operative day.

Conclusion: Laparoscopic Heller myotomy with anterior fundoplication was a safe and doable surgical treatment in our elderly, male patient with achalasia and co-existing miliary tuberculosis.



Dr. Amani Mokbel[1*], Dr. John Day[2]

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An audit into the time taken between presentation and diagnosis of malaria, and adherence to malaria treatment guidelines at Southend University Hospital, UK

Malaria is a life-threatening illness, caused by infection of red blood cells by Plasmodium parasites. It is transmitted through the bite of infected female Anopheles mosquitoes. Symptoms tend to be non-specific, such as fever and malaise, which can make it difficult to detect. Complications can be fatal, and can include coagulopathy, hypoglycaemia, severe anaemia and splenic rupture. Diagnosis is done through rapids tests and examination of thick and thin blood smears by microscopy. Treatment is dependent on whether the malaria species is falciparum or non-falciparum.

In the UK, the approach to malaria is informed by the 'UK malaria treatment guidelines 2016' published by the BIA. In 2023, 2,106 cases of malaria were reported in the UK.

The aim of this project was to reduce the interval between presentation and diagnosis of malaria, and to improve adherence to malaria treatment guidelines at Southend University Hospital, a district general hospital in UK.

The standards were set that 90% of cases should be diagnosed within 6 hours of presentation, and 100% of patients should receive the appropriate treatment for their malaria type (non-falciparum, falciparum complicated and falciparum uncomplicated).

All malaria testing requests made between 1/10/2018 to 30/9/2023 were reviewed. 9 positive cases of malaria were identified. Electronic patient records were reviewed, and the following information was retrieved: Time presented to ED, time malaria test was requested, time results came back, malaria type, what treatments were started and if specialist advice was sought.

Data analysis showed that 67% of malaria cases were diagnosed within 4 hours of presentation, 78% of malaria cases were diagnosed within 6 hours of presentation and 22% of malaria cases took 10+ hours to diagnose. In terms of treatment, 7/9 cases (78%) received the correct treatment for their malaria type.

The sample size for this project was extremely small, however, there were crucial learning points. Risk factors for delayed diagnosis included no travel history gained, poor interpretation

of travel history, alternative diagnosis suspected, difficulty interpreting results, and not clarifying if prophylaxis was taken and completed.

Moving forward, making guidelines more easily available to all emergency staff, knowing what team to seek advice from, incorporating malaria into medical education curriculums, and involving a range of specialties such as pharmacy and lab colleagues in discussions may help to improve detection and treatment of malaria. Due to the very few cases seen, this project can only be re-audited after a few years.

Biography

Dr. Amani Mokbel graduated from Lancaster Medical School in 2022. Has completed foundation training, where Dr. Amani gained experience in surgery, geriatrics, cardiology, endocrinology, infectious diseases, acute medicine and public health. Dr. Amani achieved a masters with distinction in Biomedicine, during which she produced a group publication called ‘Structural Bases of Zoonotic and Zooanthroponotic Transmission of SARS-CoV-2’, done during the height of the pandemic. Currently, Dr. Amani works as a clinical teaching fellow and senior house officer in the emergency department and passionate about teaching and is currently studying for a PgCert in Medical and Healthcare Education at Anglia Ruskin University.

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Association between tuberculosis and Guillain-Barré Syndrome: A systematic review

Background: Guillain-Barré Syndrome (GBS) is an acute autoimmune polyneuropathy commonly preceded by infections. Although bacterial or viral infections are well-known contributors to GBS, little is known about TB as a potential trigger. In this systematic review, we seek to assess the association between TB and GBS, outgoing clinical patterns and recognise gaps in comprehension of the underlying mechanisms.

Methods: A systematic literature search was performed with PubMed, Google Scholar, Scopus, and Web of Science, Semantic Scholar databases, until December 2024, according to PRISMA guidelines. Studies were eligible if they were case reports, case series or review articles that included at least one patient diagnosed with TB and GBS, without limitations on age, sex, or geographic location. Demographics, TB characteristics, GBS subtype, time interval of TB to onset of GBS, treatment modality, and outcomes were extracted and analyzed. The Joanna Briggs Institute (JBI) Critical Appraisal Checklist was used to assess quality.

Results: A total of 29 TB-associated GBS cases were identified, with the highest prevalence in India (44.8%). The median age was 43.7 years with male predominance (72.4%). The common type of TB is pulmonary TB (62.1%), followed by meningeal TB (13.8%) and disseminated TB (10.3%). Acute Motor Axonal Neuropathy (AMAN) and Acute Inflammatory Demyelinating Polyneuropathy (AIDP) both were the most frequent (20.7%) GBS subtypes, followed by Acute Motor-Sensory Axonal Neuropathy (AMSAN) (17.2%) and Miller Fisher syndrome (3.4%). The temporal onset of GBS ranged within 2 weeks post-TB diagnosis was 60.7%. In the sub-analysis, AMAN was common in pulmonary TB (27.8%), and AIDP predominated in extra-pulmonary TB (36.4%). Neurological residual deficits were higher in extrapulmonary TB (27.3%) compared to pulmonary TB (22.2%). The majority were given anti tubercular treatment (100%), intravenous immunoglobulin (51.7%), steroids (31%), and plasmapheresis (10.3%). 58.6% attained complete recovery, and 24.1% had residual neurological deficits. Mortality was reported in 17.2% of cases, mostly attributable to sepsis and respiratory failure.

Conclusion: The first line of evidence was case reports and series indicating TB must be a possible trigger for GBS, with the majority of cases presented within 2 weeks of TB onset. There may be a potential immune-mediated link between tuberculosis and Guillain–Barré syndrome. Due to the heterogeneity in reported cases and increased mortality rates, timely identification and consistent management strategies are necessary.

Keywords: Guillain-Barré Syndrome, Tuberculosis, Autoimmune Neuropathy, Systematic Review, Neuroinfection, Immunopathogenesis.

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COVID-19 is not over: The global COVID community council advocates for change to support medically vulnerable populations post-pandemic

Background: The decline in global COVID-19 testing has reduced attention to public health measures designed to mitigate infections among vulnerable populations at heightened risk of severe outcomes and long-term complications. With a lack of current guidance and misinformation around prevention, vaccination, and treatment, COVID-19 continues to have a pervasive impact on high-risk communities. Further, studies maintain a backward look at the pandemic and survey domains take a condition-led or regional approach to population data, leaving gaps in currently available evidence regarding the global impact of COVID-19 on the medically vulnerable post-omicron. To increase public awareness and inform policies addressing health inequities, it is imperative to understand how COVID-19 continues to affect the daily lives and mental wellbeing of medically vulnerable populations and their caregivers in the post-pandemic era.

Methods: The global COVID community council (The council), a collective of eight leaders of patient and citizen organizations across Europe, North America, and the UK, has united to raise awareness and seek innovative solutions to combat the ongoing health challenges faced by medically vulnerable populations. To date, the council has convened three virtual meetings, supplemented with preparatory work and a literature review, providing an opportunity for collaborative discussions around the unmet needs of the patients they represent and the continued impact of COVID-19 on a global scale. The work of the council has since paved the way for a global patient survey to address data gaps in COVID-19 care post-pandemic, targeting several thousand medically vulnerable patients.

Results: The council has identified key barriers to testing and the widespread impacts of COVID-19 on the mental wellbeing of medically vulnerable populations. The council aimed to translate this knowledge into action by co-defining a community call-to-action statement and developing recommendations for future COVID-19 interventions. The council calls for better protection of those at greatest risk of severe illness, emphasizing the role of patients, healthcare professionals, pharmacists, policymakers, and the general public in the education and awareness of the burden on vulnerable communities, as well as strategies to improve health outcomes and mental wellbeing for all. When discussing a global patient survey, the council agreed that the Knowledge, Attitudes, and Practices (KAP) approach, focusing on three key themes (current risk management strategies, impact, and treatment), was an effective framework to promote insights into medically vulnerable populations previously infected with COVID-19. Understanding how COVID-19 continues to affect the daily lives and mental wellbeing of these communities may create opportunities to implement meaningful change that closely aligns with patient needs.

Conclusion: The shared motivation of the council to empower medically vulnerable populations has fueled the co-creation of tangible outputs to influence public health policy and evidence-based practices around COVID-19 testing and treatment, as well as support mental wellbeing in the post-pandemic era.

Biography

Mariano Votta has over 20 years of experience in advocacy, stakeholder engagement, European projects, communication, and civic information. In 2015, Mariano Votta led the launch of the MEP Interest Group "EU Patients' Rights & Cross-Border Healthcare," endorsed by nearly 100 organizations across Europe. Mariano had worked on various initiatives to improve COVID policy and keep COVID at the forefront of the national/European health agenda.

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Risk of Visceral Leishmaniasis (VL) resurgence in India: A compartmental modelling study

Visceral Leishmaniasis (VL) is a Neglected Tropical Disease (NTD) caused by the parasite *Leishmania donovani* and transmitted by sandflies. In India, the elimination target for VL is defined as less than 1 case per 10,000 population per year at the block level. As the country approaches VL elimination, a critical challenge is mitigating the risk of disease resurgence. While VL cases have fallen below the elimination threshold across all blocks, Post-Kala-Azar Dermal Leishmaniasis (PKDL) persists as a significant reservoir, posing a considerable threat to sustained elimination. To address this, it is essential to establish the PKDL threshold required to sustain VL elimination. This study represents the first attempt to propose such a threshold, addressing a critical gap in existing research. To determine the optimal PKDL level necessary to prevent resurgence within a specified time frame, we modified an established deterministic model of VL transmission. We choose realistic model parameters, such as the vector-to-human ratio, the proportion of the susceptible population, and a range of epidemiological rates, from existing estimates. Our findings indicate that these factors significantly influence the average time to resurgence. The results of this study provide critical insights for policymakers, enabling the design of region-specific targeted control measures to sustain VL elimination.

Biography

Dr. Ashvini Gupta earned an M.Sc. in Mathematics and Computing from IIT(ISM) Dhanbad, India, in 2019, then joined the Mathematical Biology research group at BITS Pilani, Pilani Campus, India, and obtained a Ph.D. degree in 2024. Dr. Ashvini Gupta received an award for women empowerment in research from Springer Nature and the Ministry of Education, Government of India. Also received financial support under SERB's International Travel Grant to participate in DSABNS-2024, held in Portugal. Currently, Dr. Ashvini is working as a post-doctoral associate at NDMC, IIT Bombay, India and had published nine research articles in SCI (E) journals.

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Aetiology, risk factors and early outcomes of meningoencephalitis in East Africa: The role of multiplex PCR

Background: Meningo-encephalitis in Sub-Saharan Africa is accompanied by a mortality rate documented as high as 90%. It is linked to diverse immunosuppressive states. The etiology has remained largely undefined by traditional diagnostic tools with studies reporting an unidentifiable cause in up to 62% of patients. These studies were conducted before the era of Multiplex PCR and Gene Xpert. Globally, there is a paucity of studies on the etiology of Meningoencephalitis where these novel and older diagnostics are combined.

Objectives: To determine the etiology, risk factors and outcome of Meningoencephalitis among adult patients admitted to the Moi Teaching and Referral Hospital, Western Kenya.

Methods: A longitudinal study was conducted between October 2022 and January 2023 at MTRH. All consecutive participants with features of meningitis were recruited (n=94). Ethical approval was obtained, consent received and participants recruited based on history and physical exam findings suggestive of Meningoencephalitis. Lumbar puncture and Cerebrospinal Fluid analysis (CSF) were performed (Microscopy, Culture, Cryptococcal Antigen testing (CRAG), Gram Staining, GeneXpert, Multiplex PCR, Biochemistry and Cell Count). Data on a priori determined risk factors (HIV (Human immunodeficiency Virus) infection, chronic steroid use, malignancies, chronic lung disease and chronic alcohol use), hospital admission status and mortality of meningoencephalitis patients by day 14 of admission was abstracted from patient records. Means and medians were calculated for categorical variables while frequency distribution for categorical variables.

Results: Out of 94 participants, 49 (52.1%) were female. The mean age was 42 years. The most common presenting features were headache 70 (74.5 %), neck stiffness 59 (62.8%), fever 57(60.6%), altered consciousness 50 (53.2%) and Seizures in 17 (18.1%). The classic triad of meningitis was present in 21 (22.3%). The most common causative organism was *Cryptococcus neoformans* in 40 (42.4%) of participants, followed by *Mycobacterium tuberculosis* 15 (16%), Cytomegalovirus 6 (6.3%), Varicella zoster virus 3 (3.2%) and *Streptococcus pneumoniae* 1(1.1%). The etiology was undetermined in 23.4 %. HIV seropositivity was reported in 78 (83.0 %), chronic alcohol use in 23 (24.5%) and chronic lung disease in 13 (13.8%) of the cohort. All participants with Cryptococcosis, tuberculosis, Cytomegalovirus and Varicella zoster meningitis were co-infected with HIV. By the 14th day of follow up, 55.3% of participants remained

hospitalized. A mortality of 15 (16%) was observed; 7/15 had *Cryptococcus neoformans* infection, 4/15 Mycobacterium tuberculosis infection,1 participant had multiple organisms implicated (Cytomegalovirus, Mycobacterium tuberculosis and Human herpesvirus - 6) and 4/15 had an undetermined etiology.

Conclusion: The most common causes of Meningoencephalitis are Cryptococcus neoformans and Mycobacterium tuberculosis. HIV is the most common risk factor associated with Meningoencephalitis. Majority of patients remained hospitalized by day 14. The aetiology of meningoencephalitis remained unidentified in nearly a quater of participants despite using multiplex PCR and GeneXpert.

Chengjun Jin

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Advancing biosafety in microbial sorting: A novel approach to containment and contamination prevention

Sorting of microorganisms and infectious materials presents significant biosafety challenges, including aerosol formation, contamination risks, and hazardous waste disposal. Traditional cell sorting methods rely on fluidic systems, which increase the likelihood of cross-contamination and pose risks to both personnel and instrument integrity. The need for a safer, more controlled approach to microbial sorting is essential, particularly in research and clinical laboratories handling pathogenic samples.

The MACSQuant® Tyto® Family of cell sorters addresses these challenges through its innovative, fully enclosed, disposable cartridge system. Unlike conventional sorters, where samples interact with fluidics and nozzles, the MACSQuant Tyto ensures complete containment of samples within a sealed environment, eliminating the risk of aerosol formation and minimizing hazardous waste. The unique closed-system design enhances biosafety without requiring additional containment measures, such as biosafety cabinets or costly laboratory modifications.

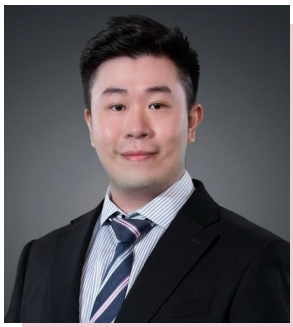
While traditional sorters require complex decontamination procedures and generate hazardous liquid waste, the MACSQuant Tyto significantly reduces these concerns. The only waste product is the disposable cartridge itself, simplifying waste management while reducing potential biohazard risks. Additionally, by eliminating the need for external sheath fluids, the system minimizes operational complexity and maintenance requirements.

Beyond safety, the MACSQuant Tyto offers gentle sorting capabilities, making it ideal for fragile microorganisms, including bacteria, yeast, delicate parasites, and sensitive infected cells. The absence of fluidic-based sorting prevents shear stress, thereby improving the viability and integrity of sorted samples. This makes it a valuable tool in infectious disease research, where sample preservation is critical for downstream applications.

The MACSQuant Tyto provides an unparalleled combination of biosafety, efficiency, and precision, making it a groundbreaking solution for microbial and infectious disease research. By mitigating the risks associated with traditional cell sorting methods, this technology ensures a safer and more effective approach to handling potentially infectious samples, ultimately advancing biosafety standards in microbiology and beyond.

Biography

Dr. Jin obtained an M.S. in Medical Nutrition from the University of Hohenheim, Germany, in 2013, and completed Ph.D. at the Institute of Nutritional Science, Friedrich Schiller University Jena, in 2017. After a 2.5-year postdoctoral fellowship at the University Clinic Düsseldorf, Dr. Jin transitioned to industry in 2020, taking on the role of Global Product Manager for the MACSQuant Tyto Cell Sorter, focusing on advancing cell sorting technologies. Dr. Jin's expertise includes medical nutrition, liver metabolism, and cell sorting technologies, bridging academic research with industry applications.



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Universal PCR assays to detect Candida FKS and ERG11 mutations

The emergence of antifungal resistance in *Candida* species presents significant challenges in managing infections, particularly among immunocompromised patients. This study aimed to develop rapid molecular assays for detecting mutations in the FKS genes across four clinically significant *Candida* species: *Candida albicans*, *C. glabrata*, *C. tropicalis*, and *C. parapsilosis*, as well as mutations in the ERG11 gene in *C. albicans*, *C. tropicalis*, and *C. parapsilosis*. Mutations in the FKS genes are known to confer resistance to echinocandins, while ERG11 mutations are associated with resistance to azoles. Therefore, the detection of these mutations is crucial for effective patient management and treatment outcomes.

To achieve this, we developed two universal Polymerase Chain Reaction (PCR) assays: One for detecting FKS mutations and another for ERG11 mutations. Also, antifungal susceptibility testing was performed against echinocandins (micafungin and anidulafungin) and azoles (fluconazole and voriconazole) in accordance with the Clinical and Laboratory Standards Institute guidelines (M27-A3 for testing and M27M44S for interpretation).

In this study, we included six American Type Culture Collection (ATCC) type strains, six blood culture isolates, and eight laboratory-derived strains exhibiting resistance to echinocandins or azoles. We identified five FKS mutations and two ERG11 mutations, both of which correlated with elevated minimum inhibitory concentrations for the antifungal agents tested. These findings indicate significant relationships between specific mutations and antifungal resistance.

The two assays have a test turnaround time of approximately six hours for amplification and sequencing of the target regions, allowing mutation detection results to be readily available on the same day blood cultures become positive. Identifying these mutations enables healthcare providers to predict treatment outcomes before the antifungal susceptibility tests results are available and to assess the potential for therapeutic failure due to antifungal resistance. This information is critical for informing therapeutic strategies in clinical settings. For patients infected with *Candida* carrying FKS and/or ERG11 mutations, alternative treatment options may be necessary, underscoring the importance of rapid and accurate diagnostic tools for the detection of the mutations. Moreover, the developed assays can facilitate on-going surveillance of antifungal resistance patterns in clinical isolates as the resistance landscape continues to evolve.

In conclusion, the developed universal PCR assays for detecting FKS and ERG11 mutations in this study are potential rapid diagnostics tools for antifungal resistance. The established correlation between these mutations and elevated MICs underscores the clinical utility of these assays as valuable tools in microbiology laboratories. By enabling timely detection of the mutations, these assays have great potential to optimize antifungal therapy and improve patient outcomes.

Biography

Dr. Cheung is currently an Assistant Professor in the School of Science and Technology at the Hong Kong Metropolitan University. Dr. Cheung received B.Sc. in Molecular Biotechnology from the Chinese University of Hong Kong (CUHK). In 2014, completed M.Phil. in Microbiology at the University of Hong Kong. In 2020, Dr. Cheung obtained Ph.D. in Microbiology at CUHK and has more than 10 years of experience in microbiology testing in the private sector and public sector. Before joining HKMU, Dr. Cheung was a Scientific Officer (Medical) in Public Health Laboratory Services Branch, Department of Health and mainly research focuses on antimicrobial resistance mechanisms and emerging infectious diseases including COVID-19. Dr. Cheung has been appointed HOKLAS Technical Expert and Technical Assessor (ISO 15189 Medical Testing), Hong Kong Accreditation Service, Innovation and Technology Commission since 2022 and has published more than 10 research articles in SCI journals.

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[2]Centre for Health Informatics, Statistics and Computing (CHICAS), Lancaster University, Lancaster, UK

Geostatistical modelling of serological multiplex bead assays responses: A case study from Malaysia

In the literature, multiplex immunoassays are primarily used to evaluate the current and past seroprevalence of diseases, identify potential risk factors, determine populations eligible for vaccination and targeted public health interventions, and establish integrated surveillance systems for multiple pathogens.

The primary objective of this study is to develop geostatistical methods of analysis to understand the correlation structure across different pathogens, as well as relevant environmental and socio-economic risk factors. We demonstrate that geostatistical models can effectively identify and characterize these relationships, providing new insights into the interplay of various exposures at the population level. These results enable the design of integrated serological surveys and support standardized sample collection protocols.

The study was conducted in four districts of Northern Sabah in Malaysia, using an environmentally stratified, population-based cross-sectional serological survey from September to December 2015. Serological multiplex bead assays measured IgG responses to twelve antigens from six diseases: lymphatic filariasis (Bm33, Bm14, BmR1, Wb123), strongyloidiasis (NIE), toxoplasmosis (SAG2A), yaws (Rp17, TmpA), trachoma (Pgp3, Ct694), and giardiasis (VSP3, VSP5). Additionally, twelve socio-economic risk factors and twelve environmental covariates were included to better understand disease transmission.

Geographical and population seroprevalence data can enable targeted public health interventions, highlighting the potential of integrated serological surveillance as a valuable public health tool. By examining the relationships between different diseases, this study contributes to improving disease management and control strategies in resource-limited settings.

Biography

Ms. Chiara Romano studied Statistics at the Sapienza University of Rome, Italy and graduated as MS in 2023. She then joined, as a PhD student, the research group of Prof. Ciccozzi at the Università Campus Bio- Medico di Roma, Italy. During her Ph.D. studies, she is currently conducting a research period at the Centre for Health Informatics, Statistics and Computing (CHICAS), UK supervised by Prof.Giorgi. She has published more than 20 research articles in SCI (E) journals.

Chuanshan Zhang[1*], Hui Wang[2]

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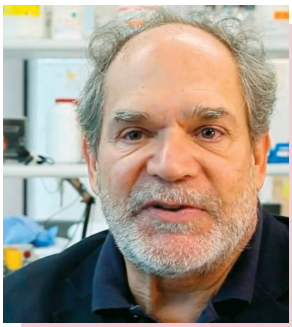
The regulatory mechanism and therapeutic application of immune checkpoint in alveolar echinococcosis

Alveolar Echinococcosis (AE) is a tumor-like disease predominantly located in the liver caused by persistent infection with the cestode *Echinococcus multilocularis*. Much evidence has demonstrated that *E. multilocularis* is a successful parasite through its ability to shape an “immunosuppressive” liver microenvironment to maintain its persistent infection. Therefore, how the parasite evades host immunity becomes an interesting question in several aspects of the pathogenesis of *E. multilocularis* infection. The role of immune checkpoint receptors has come to the forefront in cancer and chronic viral infection, in which these receptors are highly expressed and are being targeted clinically (such as checkpoint blockade) to improve antitumor and antiviral T-cell responses. Here, based on our series of innovative research in recent years, we demonstrated that immune checkpoint receptors (TIGIT, PD-1 and LAG3) expression were significantly upregulated and associated with T-cell or NK-cell dysfunction in advanced AE patients and in *E. multilocularis*-infected mice and promoted disease progression. Blocking TIGIT may reverse the functional impairment of T and NK cells and represent a possible approach to immunotherapy against AE. In addition, we found that the resistance to anti PD-1 checkpoint interventions observed in chronic *E. multilocularis* infection is mainly attributed to the accumulation of G-MDSCs around liver lesions, and targeting MDSCs promotes antiparasitic T-cell immunity and enhances the efficacy of PD-1 blockade. Our findings provide preclinical evidence in support of targeting MDSC or combining such an approach with checkpoint blockade in patients with advanced AE, a severe disease with only limited treatment options.

Biography

Dr. Chuanshan Zhang studied biotechnology at the Anhui Medical University, and graduated as bachelor MS in 2003. Dr. Chuanshan joined the echinococcosis research group at the Clinical Medicine Institute, the First Affiliated Hospital of Xinjiang Medical University in 2009 and received a PhD degree in 2017 at Xinjiang Medical University. Dr. Chuanshan obtained the position of a researcher at the Clinical Medicine Institute in 2020 and has published more than 20 research articles in SCI (E) journals.



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Cognitive behavioral sequelae of non-severe malaria and potential strategies for its mitigation

Human and Experimental Malaria (EM) are associated with Neurocognitive Sequelae (NCS), especially in the most severe form of the disease; Cerebral Malaria (CM). NCS, related to learning and memory, are also observed in human non-Severe Malaria (nSM), mainly in children and the elderly. In classical nSM experimental models, NCS were not reported. We studied nSM using the classical CM EM, Plasmodium berghei ANKA (PbA) infected C57BL/6 mice treated on the fourth day after infection, before any sign of CM that occurs from the sixth day of infection. This may mimic the most common form of human malaria; nSM by P. falciparum, which, can develop into CM, if left untreated. With this nSM EM, we demonstrated short and long-term NCS at days 12, 80 and 145 after curative malaria treatment. An EM unsusceptible to CM development (PbNK65 infected C57BL/6 mice) and its histopathological and molecular brain aspects are being studied in parallel. We aim to investigate the potential cognition promotion effects of immunization and Physical Exercise (PE) in mitigating NCS of murine nSM. C57BL/6 mice are infected or non-infected with PbA, treated with chloroquine and subjected or not to immunization and/or PE practice at 14 days after the end of treatment. Immunization consists of three doses of Tetanous-diphteria (Td)-vaccine; and PE of a moderate aerobic involuntary practice performed on a motorized treadmill for mice. Animals were then subjected to tasks such as open field, novel object recognition and light-dark to analyze long-term memory and anxiety-like behavior. We observed a positive effect of both immune stimulation with Td-vaccine and PE practices in mitigating NCS or even restoring neurocognitive homeostasis after n-SM. Thus, both approaches may be promising strategies as complementary therapy of malaria to avoid expression of NCS in human. We are currently investigating this possibility in children in the Amazon endemic region.

Keywords: Immunization, Neurocognitive Alterations, Neuroimmunomodulation, Non-Severe Malaria, Physical Exercise.

Biography

Cláudio Tadeu Daniel-Ribeiro, a MD (1976), DSc (*Université de Paris VI, 1983), Doctor honoris causa (Universidade Nova de Lisboa, 2016*), is Full professor (1987) at the "Instituto Oswaldo Cruz, Fiocruz" and Head (1991-) of the *Laboratório de Pesquisa em Malária and the Centro de Pesquisa, Diagnóstico e Treinamento em Malária*, a Reference Centre for Malaria in Brazil. Prof Cláudio is an Academician of the National Academies of Medicine of Brazil and France and *Chevalier dans l'Ordre des Palmes Académiques* by the French government. Prof Cláudio studies brain processes in malaria, focusing on immunomodulatory and physiological events that attenuate the cognitive behavioural sequels of the disease.

Dániel Steve Bednárik[1,2*], Kincso Csepke Földvári-Nagy[3,4], Viktor Simon[4], Anett Rancz[1], Noémi Gede[1], Dániel Sándor Veres[1,5], Panagiotis Paraskevopoulos[1], Tamás Schnabel[6], Bálint Eross[1,7,8], Péter Hegyi[1,7,8], Katalin Lenti[9,10], László Földvári-Nagy[9,10]

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Comparative effectiveness of different therapies for Clostridioides difficile infection in adults: A systematic review and network meta-analysis of randomized controlled trials

Background: Clostridioides Difficile Infection (CDI) is the most common and serious causes of healthcare-associated diarrhea, with significant morbidity and mortality. The incidence of CDI is increasing worldwide and it is therefore essential to carefully evaluate the efficacy of currently used therapies.

Methods: Potential therapies for the treatment and prevention of CDI were analysed using a network meta-analysis of data from randomised controlled trials published up to 19 August 2024. Data collection was performed in MEDLINE, EMBASE and the Cochrane Central Register of Controlled Trials databases using a research protocol registered in PROSPERO (CRD4202222371210). The treatments were ranked according to P-score.

Results: We assessed 73 RCTs with 28 interventions, involving 27,959 patients (49.2% female) in five networks. Fecal Microbiota Transplantation (FMT) was the most effective treatment in terms of the cure rate overall (P-score: 0.9952) and in recurrent cases (P-score: 0.9836). For recurrent cases, fidaxomicin (P-score: 0.67) showed significantly greater efficacy than vancomycin (P-score: 0.37) and tolevamer (P-score: 0.36), while for non-recurrent infections, ridinilazole, fidaxomicin, FMT and nitazoxanide were equally effective. For the prevention of recurrence, ridinilazole (P-score: 0.77) and fidaxomicin (P-score: 0.76) were the most effective. Probiotics were not effective in preventing CDI, with no significant difference between probiotics

and placebo (even in old age). There was no difference between oral and colonoscopic routes of administration of FMT.

Conclusion: The superiority of FMT in the treatment of CDI highlights the potential for increased use of FMT in clinical settings. Further research on optimizing FMT protocols and exploring its long-term safety and efficacy in larger samples is needed. Our findings suggest that the preventive use of probiotics might be questioned.

Biography

Daniel S. Bednarik graduated in 2020 at University of Szeged as a medical doctor. In September of the same year, Daniel started residency at Heim Pál National Pediatric Institute, as a pediatrician, meanwhile working on PhD with a special interest in infectiology and gastroenterology. Daniel's main research field is related to Clostridioides difficile infection. Most recent publication on the effectiveness of different therapies for Clostridioides difficile infection in adults was published in The Lancet Regional Health–Europe.

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[2]Internal Medicine S Orsola University, Bologna, Italy

Tissue-invasive disease and cytomegalovirus: Cytomegalovirus trigger or killer? Two cases observed in an internal unit

Background: Human Cytomegalovirus (CMV) is a herpesviridae virus with a wide spectrum of pathology in humans. The major determinant of the clinical manifestation of CMV is host immunity and clinical manifestations can vary widely in the pratical setting. Immunocompetent patients generally has a benign and self-limited mononucleosis-like syndrome, whereas a tissue-invasive disease (an acute condition characterized by an uncontrolled overactivation of the immune system) is more frequent in immunocompromised patients.

While polymerase chain reaction is a reliable detection test of CMV infection in the human host, the clinical value depends on a variety of factors: Latent CMV, CMV infection, and CMV disease has different significance depending on the patient setting, and the decision to initiate antiviral therapy can be complex and patient-specific. Indeed in some of these conditions CMV is only a trigger, in others the etiology.

Case Series

We present two cases:

- The first case is a 51 years old man, admitted to our Internal Medicine Unit for persistent fever, sore throat, arthralgia, weight loss, lymphadenopathy, severe acute hepatitis (biopsy performed, without CMV in histology), neutrophilic leukocytosis, hyperferritinemia.
  A diagnosis of still's disease was made (yamaguchi criteria) and treatment with anakinra was performed. The significant elevation of CMV DNA determined the need for treatment with antivirals (ganciclovir), with control of viremia post-discharge. A progressive clinical improvement occurred.
  The major clinical hypothesis is that the inflammatory syndrome was triggered by CMV in an immunosuppressed patient.
- The second case is that of a 45-year-old woman, without apparent immunodeficiency conditions, who was admitted in our Internal Medicine Unit for fever, abdominal pain, severe splenomegaly with multiple splenic infarcts, high ldh, anemia. Multiple diagnostic tests were performed, including two bone marrow biopsies, a lymph node biopsy, a liver biopsy, autoimmune and infection tests, all negatives, except for the presence of high CMV DNA in the blood.
  Symptoms resolved with steroid and antiviral therapy with ganciclovir. Howewer during tapering of the steroid, gradual reappearance of symptoms (not fever, but asthenia) and

anemia occurred. She was taking the steroid again with clinical benefit, except for mild dyspnea and hair loss. The PET scan with FPDG, repeated after one month, showed several FDG-enhancing lymph nodes. The biopsy on peripheral lymph node with SUV 8 was negative. Finally the CT scan, done in suspicion of sarcoidosis, was negative for lymphadenopathy, but the patient has been on steroid therapy for months. The doubt of an inflammatory etiology (sarcoidosis?) and a lymphoma remains (negative histology, but during steroid therapy).

Steroid tapering was planned to do a new study.

At this moment the CMV seems the cause of the inflammatory picture in an immunocompetent patient, but it is not possible to exclude that it was a trigger of the disease.

Conclusion: In our two cases one of the main problems was to understand the role of CMV. The most common clinical status of CMV in humans is latent infection and mononucleosis-like syndrome, but also tissue-invasive disease is described. Initial symptoms are often unspecific and similar to bacterial infections or sepsis or hematological diseases, as in our cases, so a rapid diagnosis, a fast diagnostic work, and initiation of treatment are important prognostic factors.

After discussions and reasoning on the clinical case, both patients were treated with the antiviral: In the first case there was a total remission, in the second a partial remission. First-line treatment of CMV infection is ganciclovir or its oral prodrug valganciclovir. The importance of antiviral treatment is further highlighted when considering potential damage caused by long-term use of the immunomodulating treatment agents, as in our first patient. Indeed it is possible a reactivation of the triggering infection.

It is important to understand in these situations whether CMV is a trigger or a cause of the inflammatory syndrome, since it changes the type of treatment of a pathology, which can be severe and life-threatening, especially in immunosuppressed patients.

Biography

Dr. Daniela Tirotta studied Internal Medicine at the Ancona University, Italy and worked as an internist in the Rimini AUSL, then in the Forlì AUSL. Dr. Tirotta attended the Clinical Governance master's degree in Internal Medicine, at the Carlo Cattaneo University, Milan. Has published more than 25 research articles in SCI (E) journals, HI 15.

Dong H. Kwon Ph.D.

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Effect of glutathione on antibiotic susceptibility and resistance in bacteria

Infections with antibiotic resistance are associated with millions of deaths annually and are a significant healthcare challenge. A new antibiotic or strategy is an urgent priority to reduce antibiotic resistance. Glutathione (GSH) is a biogenic thiol compound for an optimal intracellular redox potential required for various normal cellular processes. My laboratory has studied the effects of intracellular and extracellular GSH of *Pseudomonas aeruginosa* on antibiotic susceptibility. We further examined the effects of GSH on other bacterial pathogens, such as *Acinetobacter baumannii* and *methicillin-resistant Staphylococcus aureus*. Our results concluded that i) intracellular GSH is associated with antibiotic susceptibility, ii) extracellular GSH exhibited antibacterial activity regardless of antibiotic susceptibility and resistance, iii) the antibacterial activity of GSH synergistically enhanced susceptibility of conventional antibiotics, and iv) GSH-mediated acidity was partially associated with the antibacterial activity of GSH. These findings suggest that GSH provides a clue to finding a drug target or strategy to reduce antibiotic resistance in bacterial infections.

Biography

Dr. Kwon's research has centered on pharmaceutical biotechnology, focusing on molecular details of drug susceptibility and resistant mechanisms. Dr. Kwon's research aims to develop a new drug and a novel strategy to treat drug-resistant pathogens. Dr. Kwon's early studies focused on a gastric pathogen (Helicobacter pylori) causing gastric ulcers/cancers and has expanded to other pathogens (Acinetobacter, Pseudomonas, and Staphylococcus) causing various human diseases. Has published more than 80 research articles in SCI journals. He was educated at Georgia State University (Atlanta, GA, USA) and Baylor College of Medicine (Houston, TX, USA). Before moving to Long Island University (Brooklyn, NY,USA), Dr. Kwon was a faculty member of Baylor College of Medicine.

Prof Edmund Ong

Newcastle University Medicine Malaysia & Faculty of Medical Sciences Newcastle UK

Dengue fever: The silent threat, risks and realities

Dengue fever is endemic in more than 100 countries, mainly in the tropical countries and is the most common communicable disease in Malaysia, with an incidence rate of 397.71 per 100,000 individuals. Globally, it is estimated that there are 100-400 million dengue infections annually, with 500,000 cases require hospitalisation each year [WHO, 2024]. The case fatality rate (CFR) of dengue varies significantly across countries, influenced by factors such as healthcare infrastructure and accessibility, timely diagnosis and case management, and vector control measures. Management of severe dengue remains a clinical challenge. A retrospective study will be highlighted which evaluated clinical features and laboratory biomarkers of patients associated with severe dengue at Hospital Sultanah Aminah Johor Bahru, Malaysia admitted from 1st January 2022 to 31st March 2023. Records of 99 patients, categorised into ICU (51) and non-ICU (48) groups, were identified and analysed using SPSS version 28.0. Sociodemographic details, clinical features and laboratory biomarkers were collected. Patients aged 50 and older, with obesity, and pre-existing comorbidities were significantly more likely to be admitted to ICU. The four commonest warning signs in both cohorts were lethargy/restlessness/confusion, abdominal pain, persistent vomiting and diarrhoea. Fever, or history of fever and thrombocytopenia were the two commonest severe dengue criteria present in both cohorts. ICU patients exhibited more signs of plasma leakage and abnormal laboratory findings, including normal white cell count, hypoalbuminemia, hyperbilirubinemia, and elevated creatine kinase. In contrast, leukopenia and normal albumin, bilirubin, and creatine kinase levels were more common in non-ICU patients. Hyponatremia and raised lactate dehydrogenase were seen in both groups. This study highlighted key differences and similarities in clinical features and laboratory biomarkers between ICU and non-ICU patients, emphasizing the need for further research to develop a comprehensive risk assessment tool for predicting severe dengue that resulted in ICU admission. Key principles of management on severe dengue will be emphasized.

Biography

Dr Edmund L C Ong MBBS MSC FRCP FRCPI DTMH graduated from University of Newcastle Medical School, UK and trained in UK in Infectious Diseases, Tropical Medicine and General Internal Medicine. His research interests are in the field of opportunistic infections, evaluation of anti-infective agents, clinical epidemiology and innovations in healthcare quality improvement and clinical audit. He is a principal investigator and collaborates in numerous research projects including HIV, Tuberculosis, Dengue fever in Nigeria, South Africa and Myanmar. Dr Ong has contributed to numerous text books of infection and has co-authored more than 160 papers in peer reviewed journals. He is an examiner for both undergraduate and postgraduate examinations including MRCP, Dip

in HIV Medicine and MMed qualifications. He is an International Global Advisor (Malaysia) for the Royal College of Physicians, London. He is a member and a former Chairperson of the British HIV Association Audit and Standard of Care Committee. He is a trustee of the Charity Health and Hope (UK).

Elsa B Phillips, Brielle J Smidt-Wallis, Charlotte A Hoy, Joanne M Mushi, Amy Udall

College of Medicine and Health, University of Birmingham, Birmingham, West Midlands, UK

Preventing Early Onset Group B Streptococcus (EOGBS): A narrative review of bacteriological screening practices in the UK

Introduction: 20-40% of UK adults carry Group B streptococcus (GBS) in their intestines, urinary tract or genital tract. Vertical transmission of GBS to neonates during birth is the leading cause of neonatal sepsis in the UK and can also result in neurodevelopmental delays, meningitis and death. The UK currently does not conduct routine GBS screening, instead using a risk-based approach to determine if intrapartum antibiotic prophylaxis is necessary, in line with the 2017 Royal College of Obstetricians and Gynaecologists (RCOG) guideline. However, many other countries take a more rigorous approach, using universal screening, as recommended by the 2024 World Health Organisation (WHO) guideline.

Objectives: To review the current literature on GBS screening strategies to determine whether a risk-based approach or universal screening is superior in preventing early-onset neonatal GBS disease (EOGBSD) and its complications.

Methods: To conduct this narrative review, a literature search was implemented according to PIRO (Population, Index test, Reference standard, Outcome), a modified PICO approach, alongside pre-defined inclusion criteria. Two independent reviewers used the Appraisal of Guidelines for Research and Evaluation (AGREE II) tool to appraise the selected RCOG and WHO guidelines. There was also a dual independent appraisal of three systematic reviews and two primary studies using the Critical Appraisal Skills Programme (CASP) checklist.

Results: The UK National Screening Committee's systematic review, which the RCOG guideline is based on, favoured a risk-based approach. However, it was a rapid-review which only contained three studies and had significant methodological limitations. Comparatively, Panneflek et al.'s systematic review, a key piece of evidence for the WHO guideline, favoured universal screening. It consisted of 72 studies and was methodologically stronger. Other related factors were considered: a cost-effectiveness systematic review, as well as primary studies on clinical effectiveness and acceptability were also found to favour universal screening. There are no high-quality randomised control trials (RCTs) published to date, however a cluster RCT (GBS3) is currently being undertaken in the UK.

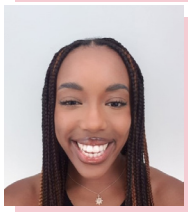
Conclusions: This review found evidence to suggest that universal GBS screening is more effective than a risk-based approach in preventing EOGBSD and would therefore support a change to the UK's current screening strategy. However, the ongoing GBS3 trial will be essential for reviewing the RCOG guideline, and its results should allow for more definitive conclusions.

Biography

Elsa is a medical student at the University of Birmingham, expected to graduate in 2027/28. Since presenting her audit ('Surgical Surprises! Are Same-Day Cancellations Avoidable?', BJOG, 2024), she has been exploring clinical academia and surgery. She has further demonstrated her interest in paediatrics by presenting additional research ('From Cradle to Grave, When and Why Do We Laugh?', British Academy, 2024) at the International Laughter and Medicine Conference.

Brielle is a University of Leeds graduate with a BSc in Neuroscience. She is currently researching GUM and maternal-foetal medicine. Additionally, she is a medical student at the University of Birmingham, expected to graduate in 2027/8.

Amy is a medical student at the University of Birmingham, graduating in 2027/8. She has conducted research into early-onset scoliosis and the role of AI in healthcare. Her interests include paediatric medicine and general surgery.



Joanne M Mushi is a medical student at the University of Birmingham, graduating in 2027/8. She has completed research on maternal-foetal telemonitoring and hepatology and is currently exploring academic medicine and neurology.

Charlotte is a medical student at the University of Birmingham, graduating in 2027/8. She has contributed to an audit in obstetrics and is currently undertaking research at Birmingham Women's Hospital.

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First application of CUT&Tag in bacteria reveals unconventional g-quadruplex landscape in *Mycobacterium tuberculosis*: A novel defense mechanism against oxidative stress

Mycobacterium tuberculosis (Mtb), the causative agent of tuberculosis, remains a global health threat due to increasing drug resistance and high mortality rates. To combat tuberculosis effectively, novel therapeutic targets are urgently needed. G-quadruplexes (G4s) represent promising candidates for this purpose. G4s are non-canonical nucleic acid structures that form within guanine-rich sequences and are involved in the regulation of key cellular processes in eukaryotes. Conversely, the G4 field in the prokaryotic kingdom is still poorly investigated: G4 formation has never been described in vivo and the physiological role of G4s in bacteria has been only scantily elucidated so far. The Mtb genome is highly enriched in GC content (~70%) and has been bioinformatically predicted to potentially form more than 10,000 G4 motifs, but in vivo evidence of their formation is still missing.

In this study, we successfully applied the Cleavage Under Targets and Tagmentation (CUT&Tag) technique for the first time in bacteria, mapping the G4 landscape in Mtb under standard and oxidative stress conditions, the latter mimicking the environment Mtb faces within macrophages. We validated the CUT&Tag protocol using an antibody against the RNA polymerase β-subunit, confirming its association with actively transcribed genes. Employing the anti-G4 antibody BG4, we discovered that Mtb G4s, unlike their eukaryotic counterparts, predominantly localize within gene coding sequences and consist of two-guanine tract motifs. Notably, oxidative stress increased G4 formation, correlating with reduced gene expression.

Our findings provide the first evidence of G4 formation in Mtb cells and suggest their potential role in bacterial survival within macrophages. This study demonstrates the successful application of CUT&Tag in bacteria and unveils an unconventional G4 landscape in Mtb, offering new insights into bacterial stress response mechanisms and potential therapeutic targets.

Biography

Dr. Emanuela Ruggiero studied Medicinal Chemistry at the University of Naples, Federico II, Italy and graduates as MS in 2010. Dr. Emanuela received PhD degree in Pharmaceutical Sciences in 2014 at the University of Ferrara. In 2015, Dr. Emanuela joined Prof. Sara Richter group at the University of Padova, Italy, as a postdoc. Currently, Dr. Emanuela an Assistant Professor of Microbiology at the University of Padova and works on the biological role of alternative nucleic acid structures in microbial genomes. Dr. Emanuela ultimate goal is to understand how the host-cell interaction exploits non-B DNA and how this mechanism can be targeted for antimicrobial purposes.

Eriko Padron-Regalado

Division of Engineering, Universidad Politecnica del Valle de Toluca, Almoloya de Juárez, Estado de Mexico, Mexico

Informatics approach to assess mumps vaccination

Despite the high success of mumps vaccination as a public health measure, mumps outbreaks have been described in the United States. Differences in antibody cross-neutralization potential induced by the mumps vaccine (Jeryl-Lynn strain) has been pointed out as one of the reasons for these outbreaks. Immunoinformatic approaches have been shown to be valuable in the identification of B- and T-cell epitopes. In order to shed light on the cross-reactivity potential of the current mumps vaccine, we developed high-throughput computational workflows for B- and T-cell epitope identification and comparison using available informatic tools. The B-cell epitope prediction results agreed with empirical methods. Nevertheless, the T-cell epitope prediction results did not agree with the empirical data. The present workflow facilitated the analysis and comparison of circulating mumps virus sequences. In a yearly evaluation, the average number of mutations in the HN proteins did not increase since 2013. These results support the continuous evaluation of the mumps vaccine.

Biography

Dr. Eriko Padron-Regalado has a Ph.D. in vaccine design from the University of Oxford and graduated in 2020. He then joined the Vaccine Immunology group of the Division of Viral Diseases of the U.S. Centers for Disease Control and Prevention (CDC) as a research fellow. He has a Master´s degree in molecular epidemiology from the King Abdullah University of Science and Technology (KAUST, Saudi Arabia). Among other accomplishments, he helped to characterize the vaccine platform called ChAdOx1, which was later exploited for the COVID-19 AstraZeneca-Oxford vaccine. Overall, he has worked in academia, government and industry, both national and international, strengthening vaccine development, evaluation and approval. Currently, his scientific publications have an average citation of 100 citations per paper.

Dr. Erin Liz John[1*], Dr. Shibin Thamban[2], Dr. Anup R Warrier[3]

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[2]Internal Medicine Trainee, Department of Internal Medicine, Aster Medcity, Kochi, Kerala, India

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Disentangling the diagnostic knot: Uncovering subcutaneous panniculitis-like T cell lymphoma in a presumed case of actinomycosis- A case report

Background: Subcutaneous Panniculitis-like T Cell Lymphoma (SPTCL) is a rare skin lymphoma characterized by infiltration of the subcutaneous tissues with cytotoxic T cells without associated lymph node involvement. STPCL is diagnostically challenging, particularly in early stages, due to symptoms mimicking common skin conditions like eczema, dermatitis, and cellulitis. The treatment is not standardized and may include systemic steroids, multidrug chemotherapy or cyclosporine.

The case: A 43-years old Indian woman presented a fever and right orbital swelling with discharge for 5 months. She was diagnosed with actinomycosis following initial examination and investigations and was treated with targeted antibiotics for months but to no avail. A second opinion was immediately requested regarding the primary histopathological results and following reexamination and investigative analysis the patient was re-diagnosed as an unusual presentation of SPTCL.

Conclusion: STPCL requires meticulous clinical and pathological investigation. This case exemplifies on an unusual presentation of SPTCL and how initial diagnostic assumptions without re-analysis especially in cases of targeted treatment failure can lead to prolonged inappropriate treatment, potentially compromising patient outcomes.

Biography

Dr. Erin Liz John, an MBBS graduate from Government Medical College, Calicut, Kerala, completed a one-year internship at Calicut Medical College, gaining experience in Medicine, Surgery, and allied specialties, along with primary care in peripheral centers. As a Junior Resident in Infectious Diseases at Aster Medcity, Kochi, a JCI-accredited hospital, worked under Dr. Anup R. Warrier and contributed to the Antimicrobial Stewardship Program, gaining expertise in managing complex infections. Dr. Erin has also represented adolescent health care at state and national pediatric conferences and is currently preparing for advanced studies in medicine to further enhance skills.

Fang Yuan[1*], Cui Lei, Li Yuanyuan, Zhang Yi*

[1]National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention (Chinese Center for Tropical Diseases Research); NHC Key Laboratory of Parasite and Vector Biology; WHO Collaborating Center for Tropical Diseases; National Center for International Research on Tropical Diseases; Shanghai, China

[2]School of Global Health, Chinese Center for Tropical Diseases Research, Shanghai Jiao Tong University School of Medicine; Shanghai, China

Co-circulation of leishmania, phlebovirus in kala-azar resurgence area in China

Visceral Leishmaniasis (VL), also known as Kala-azar, is a zoonotic disease caused by leishmania and transmitted by the bite of vector sand fly, which has already been listed as one of the neglected tropical diseases by World Health Organization. In recent years, the canine VL has been reemerged significantly in many regions of China, posing a serious threat to local people and society. The resurgence of VL is mainly for the expansion, and increasement of population density of sand fly. To clarify the pathogen spectrum of sandflies in Leishmaniasis epidemic area, *Phlebotomus chinensis* were collected in both Shanxi, and Henan Provinces to detect the presence of *Leishmania, Bartonella*, Phlebovirus, and *Trypanosoma*. The infection rate of *L. infantum* ranged from 1.39% to 4.98%. Both Wuxiang virus, and Hedi virus, belonging to Phlebovirus were observed, with the infection rate of up to 4.59%, and 2.84%, respectively. Attentionally, *Trypanosoma* was firstly detected in *P. chinensis*, and even showing biodiversity with the presence of *T. lewisi, T. conorhini*, and *Trypanosoma sp.*. This study shows the co-circulation of zoonotic parasite and virus transmitted by sand fly in Leishmaniasis resurgence areas. The silent transmission of zoonotic pathogen in *P. chinensis* can not be neglected. With the view of One Health, further sero-epidemiological survey to evaluate the prevalence status of Phlebovirus, and explore the nature reservoir is necessary.

Biography

Dr. Fang Yuan is an associate researcher of National Institute of Parasitic Diseases, China CDC, adjunct faculty member of School of Global Health, Shanghai Jiao Tong University School of Medicine, a professional member of the Tropical Diseases Committee of Chinese Endemic Disease Association. Dr. Fang is mainly engaged in reverse etiology of vector-borne diseases, genomic tracing, transmission risk assessment, and control strategy research. Also interests in transmission mechanism of flavivirus, mosquito insecticide resistance mechanism. As the first author, Dr. Fang has published more than 20 SCI papers on Advances in Parasitology, Infectious diseases of Poverty, Frontier in Cellular and Infection Microbiology.

Dr. Fawzy Abdelatty
Heidelberger Center for Cellular Therapy, Heidelberg, Germany

Fawcells, the universal alternative for antibiotics!!

FawCells are Methylation Induced Pluripotent Cells which are prepared from peripheral blood samples. For patients, these samples can be obtained from autologous, heterologous or xenographic sources. These cells are very potent in infection prevention and control. They have the potential to eliminate infections (viral or bacterial) and antibiotics resistant hospital infections within hours. The preparation and handling of these cells is very simple and has no negative side effects. The cells do not only remove the infection but can also regenerate the organs damaged due to this infection effectively. FawCells will make it possible to start treating a pandemic infection, even before characterizing the microbe. They can even be used as a prophylactic measure in such cases. Examples for treating different pathogens are presented.

Biography

Dr. Fawzy Abdelatty completed their B.Sc. in Biology at the Faculty of Science, Cairo University, in 1980. They went on to earn an M.Sc. in Hormone Research from the Weizmann Institute of Science in Rehovot, Israel, in 1987, and the same year received a Ph.D. fellowship at the European Molecular Biology Laboratory (EMBL) in Heidelberg. In 1992, Dr. Fawzy was awarded a Dr. Sc. hum. degree from the Institute of Human Genetics at the University of Heidelberg, Germany. Currently, Dr. Fawzy serves as the Chief Scientific Officer (CSO) of the Heidelberger Center for Cellular Therapy.

Dr. Goutham Krishna T. C[1*], Dr. Danish E[2*], Dr. Asuma Rahim[3]

[1]Junior Resident, Department of General Medicine, Government Medical College, Kozhikode, Kerala, India
[2]Assistant Professor, Department of General Medicine, Government Medical College, Kozhikode, Kerala, India
[3]Professor and Head, Department of Preventive and Community Medicine, Government Medical College, Kozhikode, Kerala, India

Risk factors of mortality and development of a scoring system for predicting mortality among patients with leptospirosis

Background: Leptospirosis, a potentially fatal zoonotic infection, has been on the rise in Kerala, India particularly among individuals involved in water-related occupations and activities. With increasing incidence and mortality rates, there is an urgent need to identify key risk factors for mortality and develop effective intervention strategies. Currently, the only existing scoring system to predict mortality in leptospirosis is the quick lepto score, which was based on retrospective study data and lacks external validation. This study aims to identify the risk factors and propose a mortality predictive scoring system to guide early management and improve patient outcomes.

Objective: The primary objective was to study the risk factors associated with mortality among leptospirosis patients admitted to Kozhikode Medical College, Kerala, India. The secondary objective was to develop and validate a scoring system for predicting mortality in leptospirosis patients.

Methodology: A cross-sectional study with a prospective component was conducted among leptospirosis patients admitted to the Department of General Medicine, Government Medical College, Kozhikode. Over one year and six months, 250 patients aged 13 and above were enrolled based on specific inclusion criteria. Detailed clinical evaluations and data collection were performed using a structured pro forma. Parameters were compared between survivors and non-survivors, and associations with mortality were analyzed. A scoring system was subsequently developed and validated to predict mortality and guide early management.

Results: Out of the 250 cases, 15.5% succumbed to the illness, resulting in a case fatality rate of 15.5%. Several independent risk factors associated with mortality were identified: Age over 50 years, presence of jaundice, dyspnoea, hypotension (BP<90/60 mm Hg), pulse rate of 100 bpm or higher, serum albumin level below 3.5mg/dL, creatinine level above 3.2mg/dL, and platelet count below 40000/µL. These predictors were used to develop a scoring system for assessing mortality risk. The total score was 12, with scores above 7 indicating a 35 times increased risk of mortality. Validation of the scoring system in 25 new patients demonstrated an NPV of 100%, a PPV of 88.9%, a sensitivity of 72.7%, and a specificity of 64%.

Conclusion: The developed scoring system enables clinicians to quickly identify patients at risk of mortality, facilitating early intervention. This tool is cost-effective, easy to use at the bedside, and requires minimal training, making it particularly valuable in resource-limited settings where leptospirosis is more prevalent. By using our scoring system, clinicians can effectively triage leptospirosis patients, ensuring those in need of intensive care are transferred to higher-level healthcare facilities.

Keywords: Leptospirosis, Zoonotic Infection, Mortality, Risk Factors, Scoring System, Quick Lepto Score.

Biography

Dr. Goutham Krishna T.C, Junior Resident in the Department of General Medicine at Government Medical College, Kozhikode, Kerala, India. Dr. Goutham completed M.B.B.S from Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry in 2019 and has presented at various national and international conferences, including the 28th International Medical Students Conference in Krakow and the 64th Annual Conference of Indian Society of Haematology and Blood Transfusion in Bhubaneswar. Dr. Goutham has authored over five articles in leading journals, including the Indian Journal of Nephrology and the Journal of Neuroinfectious Diseases.

Dr. Danish E completed his MBBS from Government Medical College, Calicut in 2006 and MD in Internal Medicine from Government Medical College, Kottayam in 2011. He has 16 years of teaching experience and is currently Associate Professor in the Department of Internal Medicine at Government Medical College, Calicut. He has presented papers at international and national conferences and has multiple publications in reputed journals. His research interests include infectious diseases and neurological syndromes. Dr. Danish has served as UG examiner across various medical colleges and actively contributes to medical education and academic coordination.

Dr. Graham Betts Symonds
Advisor, Global Hub for Community Based Health in Detention, Irish Red Cross

Engaging red cross inmate volunteers to raise awareness and advocate for disease control in Irish prisons

The value of engaging prison inmates as Irish Red Cross peer-educators in all Irish prisons over the last fourteen years for health promotion, awareness-raising, advocacy for testing, 'case-finding' and 'seek and treat' have been impressive. This successful recruiting technique has been successful in campaigns relating to case HIV, HCV and Latent TB in various Irish prisons (UWO 2024; Phillips 2024; Crowley et al 2018; 2019.

In addition, the pre-COVID 19 established and active teams of Red Cross inmate peer educator/advocates in every prison in Ireland, matched with state-of-the-art infection control systems, had a significant impact in Irish prisons, reducing prisoner deaths to the lowest in Europe and boosting a 70% uptake of COVID 19 vaccines estate-wide.

Bannon *et al* (2016) report on voluntary mass 'point of care' testing for HIV with Irish Red Cross volunteer advocates in Irish prisons. The role of inmate peer-educator IRC volunteers was to create community HIV awareness, stimulating discussion, reducing stigma and to advocate 'knowing your status' by participating in voluntary testing (UWO 2016; IRC 2018).

The outcome of the campaigns indicated an average of 50% test attendance-a level never previously realized through staff awareness-raising. Whilst no new cases were identified, the exercise raised awareness, reduced stigma and demonstrated the value of using peer education in stimulating greater recruitment for BBV testing in prisons (Bannon *et al* 2016).

In 2017, a coordinated a voluntary mass viral screening campaign was planned and implemented in Mountjoy Prison, reported in Crowley et al (2018); Crowley et al (2019). This was a working example of the WHO (2007) 'Whole Prison Approach' to health with the planned participation of prison healthcare, prison teachers, mater hospital, Irish Red Cross volunteers and staff, prison officers and prison management.

The outcome of the campaign indicated that 80% of prison inmates attended for testing and that 19 new cases of hepatitis C were identified and able to be entered into treatment (UWO 2024; Crowley et al 2018; 2019). This included, where necessary, the continuation of treatment in the wider community on release.

Post-testing, qualitative data analysis indicated the importance that inmates placed on the role of the IRC inmate volunteers in securing their participation. It indicated a level of trust, different to that placed in professional staff and resulted in greater compliance (IRC 2028; UWO 2024).

The University of Bath (Ward et al 2021) undertook a cost-effectiveness study on this project. This compared the cost of the campaign versus the societal savings projected in terms of QALYS and chronic illness management indicated significant savings in societal costs compared with the investment.

This proven partnership between approach between national Red Cross/Red Crescent and Detention Services is a cost effective and replicable model that could be adopted in other European states to support the ECDC toolbox for the elimination of HCV in European Prisons Strategy 2030.

Biography

Dr. Graham Betts-Symonds, developed the Community Based Health and First Aid methodology for the IFRC, published in 2009 which operates in over 120 countries in local communities. In 2009, Graham adapted the programme for use in a detention setting as another type of community within the wider community on behalf of the Irish Red Cross and Irish Prison Health Services. Graham has 35 years of experience in public and community health, community disaster preparedness and risk reduction with extensive teaching and research experience.

Dr. Himanshu Gul Mirani

Emergency Department, Midland Metropolitan University Hospital, SWBH NHS Trust, UK

Beyond the clinical eye: POCUS as the critical differentiator in emergency skin and soft tissue infection management

Introduction: Point-of-Care Ultrasound (POCUS) is increasingly recognized as an invaluable diagnostic tool in emergency medicine. This case series demonstrates the utility of POCUS in evaluating soft tissue and musculoskeletal infections, highlighting its superiority over clinical examination alone and its role in expediting appropriate management.

Methods: We present three cases where POCUS was employed in the Emergency Department (ED) to evaluate suspected soft tissue and musculoskeletal infections. Each case demonstrates a distinct clinical scenario where POCUS provided crucial diagnostic information that influenced management decisions.

Results:

Case 1: A man in his 40s with learning difficulties presented with cellulitis unresponsive to outpatient antibiotics. Clinical examination was limited due to communication barriers, and findings were equivocal for an underlying collection. POCUS revealed a deep abscess not apparent on clinical examination, prompting surgical referral for incision and drainage. This facilitated timely source control that would have been delayed if relying on clinical assessment alone.

Case 2: An 80-year-old male presented with erythema and atraumatic swelling over the dorsum of his foot, unresponsive to antibiotics. The patient was referred to the ED for possible septic arthritis or abscess drainage. POCUS demonstrated a bony growth without cobblestone changes characteristic of cellulitis and ruled out abscess or joint effusion. Comparative imaging of the contralateral foot showed nil similar changes, and subsequent radiography confirmed midfoot osteoarthritis with prominent osteophytes. POCUS prevented an unnecessary invasive procedure and inappropriate surgical referral. The associated erythema was likely secondary to friction from footwear.

Case 3: A 65-year-old female with diabetes presented with rapidly progressing erythema and swelling of the left thigh, with pyrexia and hypotension. Necrotizing Fasciitis (NF) was suspected based on clinical features. Bedside POCUS in the resuscitation bay demonstrated subcutaneous thickening, deep fascial fluid accumulation, and gas locules within tissue planes—findings

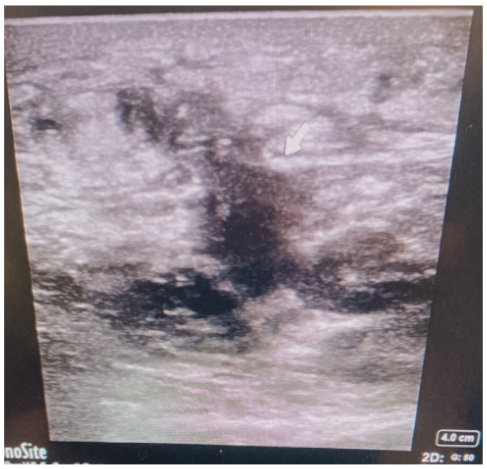
consistent with NF. This prompted immediate broad spectrum antibiotic administration and expedited surgical intervention. CT done enroute to operation theatre confirmed the diagnosis.

Discussion: These cases demonstrate how POCUS provides critical diagnostic information beyond that obtainable through clinical examination alone. In Case 1, POCUS identified a deep collection in a patient with limited examination capabilities. In Case 2, POCUS distinguished between infectious and non-infectious pathology, preventing iatrogenic harm. In Case 3, POCUS confirmed the suspected diagnosis of necrotizing fasciitis, facilitating rapid surgical intervention.

Conclusion: POCUS should be considered an essential component in the diagnostic armamentarium of emergency physicians evaluating soft tissue and musculoskeletal infections. It offers the advantages of being rapid, non-invasive, and repeatable, while providing real-time information that can distinguish between conditions requiring conservative management, procedural intervention, or emergency surgery. Integration of POCUS into routine assessment of suspected soft tissue infections may improve diagnostic accuracy, reduce unnecessary procedures, and expedite life-saving interventions.

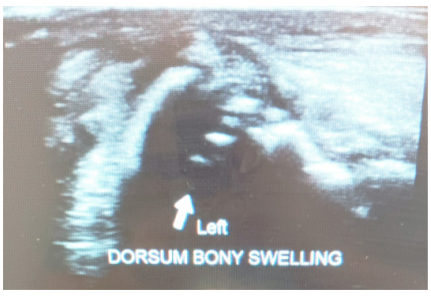
Case 1:

Subcutaneous cobble stone like appearance suggestive of cellulitis and underlying anechoic/ hypoechoic fluid collection suggestive of abscess

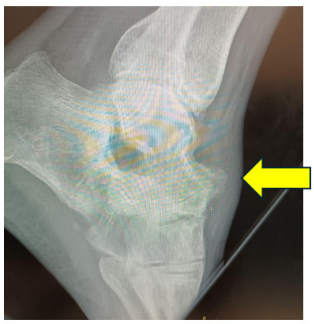


Case 2:

Bony spur in midfoot seen on POCUS

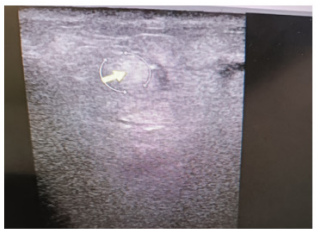


Spur seen on x-ray

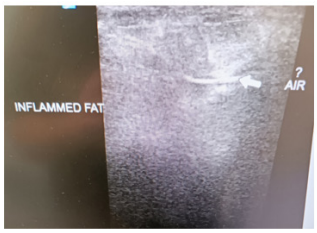


Case 3:

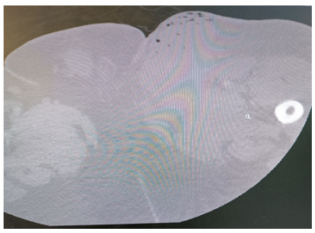
Inflamed fat with deep facial fluid and air in subcutaneous tissue



Subcutaneous air with thickening of subcutaneous tissue



CT confirms subcutaneous gas locules



Biography

Dr. Mirani is a Consultant in Emergency Medicine and Quality Improvement Lead with over five years of consultant experience across both adult and pediatric emergency departments. Dr. Mirani obtained FRCEM (UK) complemented by Fellowship of the European Board of Emergency Medicine (FEBEM) and MRCP (Glasgow) with Specialty Certificate Examination in Acute Medicine. Dr. Mirani holds an extensive array of postgraduate qualifications including PG Diplomas in Emergency & Resuscitation Medicine (QMUL) and Critical Care (UB), Diplomas in Geriatric Medicine (RCP), Child Health (RCPCH), and Legal Medicine (Faculty of Forensic and Legal Medicine of RCP, UK). With particular interest in Point-of-Care Ultrasound (POCUS), Dr. Mirani serves as faculty for ultrasound courses, integrating ultrasonography into daily clinical practice for rapid bedside diagnosis. Dr. Mirani is the author of the Contemplating Lessons in Emergency Medicine series, a collection of case-based reviews that contribute to education and advancement in the specialty. And a Fellow of Higher Education Academy, UK, also holds an MBA in healthcare, supporting commitment to quality improvement and system-level change.

Dr. Himanshu Gul Mirani*, Mr. Jaspreet Sehmbi

Emergency Department, Midland Metropolitan University Hospital, SWBH NHS Trust, UK

Early detection of hip joint infections using Point-of-Care Ultrasound (POCUS): A case series

Introduction: Hip infections from diverse etiologies—including septic arthritis, psoas bursa infection, tracking of psoas abscess, and infected chronic deep vein thrombosis—represent limb-threatening emergencies requiring prompt diagnosis and management. Point-of-Care Ultrasound (POCUS) has emerged as a valuable diagnostic tool in the emergency department, potentially enabling earlier differentiation between these infectious causes affecting the hip joint region, facilitating appropriate source control.

Case Presentations: We present two cases demonstrating POCUS utility in diagnosing septic arthritis. In the first case, an 88-year-old immunosuppressed female with rheumatoid arthritis presented with progressive atraumatic left groin pain without fever. She was unable to bear weight in the emergency department. POCUS revealed a 5.9 mm effusion along the anterior recess of the left femoral neck not identified on the other side. Proximal deep vein thrombus in lower limbs and psoas abscess were excluded using POCUS. Subsequent CT imaging, which instead showed insufficiency fractures but did not pick on the effusion. Despite an initially negative joint aspirate, elevated inflammatory markers (WCC 25.97×10^9/L, CRP 114 mg/L) and unilateral effusion prompted early orthopedic review for joint irrigation and empirical antibiotic therapy. Blood cultures later confirmed Staphylococcus aureus infection.

The second case involved a 30-year-old male with intravenous drug use history presenting with acute, severe right hip pain. Despite being apyrexial, he demonstrated significantly elevated inflammatory markers (CRP 180 mg/L, WCC 18×10^9/L). POCUS identified a 2.5 × 3 cm fluid collection in the right hip joint. Likely differentials were joint effusion or infected psoas bursa. POCUS also demonstrated bilateral calf abscesses at the injection site. Proximal deep vein thrombus was excluded on bilateral legs by POCUS.

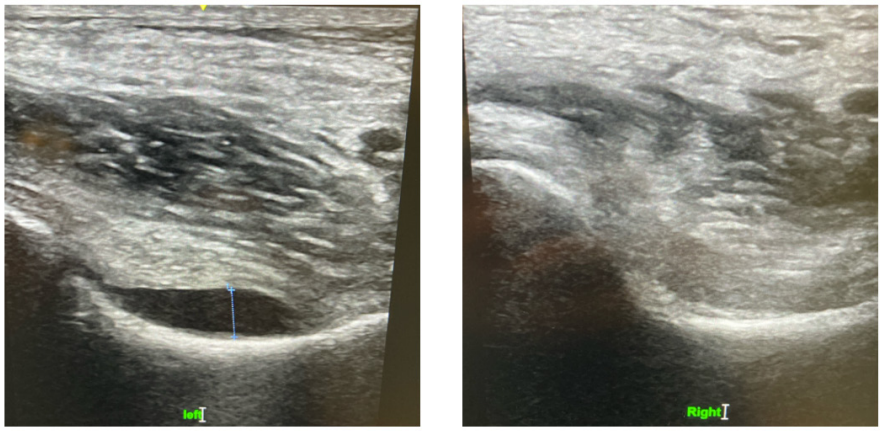
Discussion: Diagnosing hip joint infections remains challenging due to their non-specific clinical presentation, particularly in high-risk populations including the elderly, immunosuppressed patients, and intravenous drug users. Joint aspiration yields false-negative results in many cases, with gram stains positive in <40% of cases. Computed tomography effectively detects bony pathology but has limited sensitivity for early joint effusions or cartilage destruction. Furthermore, standard hip views may miss infections tracking from psoas bursa, which communicate with the hip joint in approximately 15% of cases. While MRI offers superior

assessment of early joint infections, its availability in emergency settings remains limited.

POCUS provides immediate bedside assessment with several advantages: It enables dynamic comparison with the contralateral hip, improving detection of subtle effusions; assists in ruling out differential diagnoses such as deep vein thrombosis or psoas abscess; and can guide joint aspiration procedures. These capabilities support early specialist referral and prompt antibiotic initiation.

Conclusion: These cases highlight the critical role of POCUS in diagnosing hip joint infections like joint effusion and psoas bursitis. CT imaging alone may result in missed diagnoses when early joint effusions or psoas bursa involvement are present. Negative joint aspirate does not exclude infection, necessitating a multi-modal diagnostic approach integrating POCUS findings, inflammatory markers, and clinical suspicion. Early detection through POCUS and prompt surgical input for source control are essential for preventing joint destruction and improving patient outcomes.

CASE 1: Images



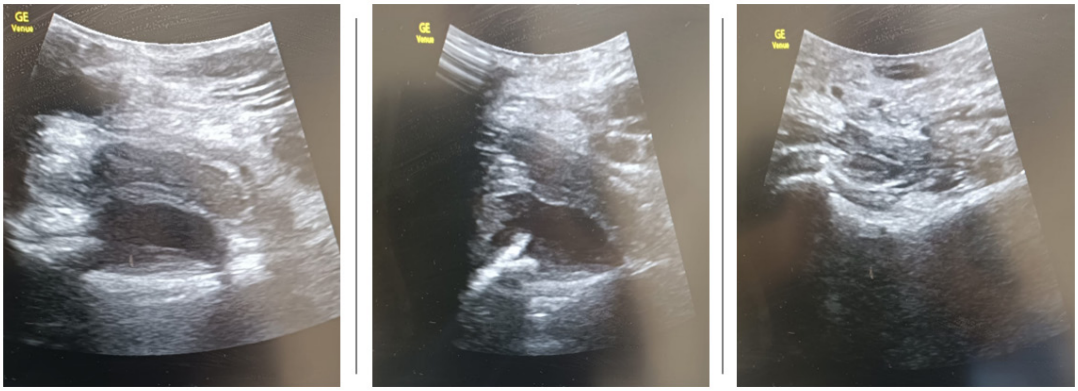
Left hip joint has an effusion which measures around 6 mm compared to the right side which does not have effusion.

CASE 2: Images

Right hip – transverse view: Demonstrates effusion

Right hip – longitudinal view: Demonstrates effusion

Left hip – longitudinal view: No effusion



Biography

Dr. Mirani is a Consultant in Emergency Medicine and Quality Improvement Lead with over five years of consultant experience across both adult and pediatric emergency departments. Dr. Mirani obtained FRCEM (UK) complemented by Fellowship of the European Board of Emergency Medicine (FEBEM) and MRCP (Glasgow) with Specialty Certificate Examination in Acute Medicine. Dr. Mirani holds an extensive array of postgraduate qualifications including PG Diplomas in Emergency & Resuscitation Medicine (QMUL) and Critical Care (UB), Diplomas in Geriatric Medicine (RCP), Child Health (RCPCH), and Legal Medicine (Faculty of Forensic and Legal Medicine of RCP, UK). With particular interest in Point-of-Care Ultrasound (POCUS), Dr. Mirani serves as faculty for ultrasound courses, integrating ultrasonography into daily clinical practice for rapid bedside diagnosis. Dr. Mirani is the author of the Contemplating Lessons in Emergency Medicine series, a collection of case-based reviews that contribute to education and advancement in the specialty. And a Fellow of Higher Education Academy, UK, also holds an MBA in healthcare, supporting commitment to quality improvement and system-level change.

Iva Rrugia*, Lumturi Merkuri, Kristi Cela, Jonila Gabrani
Public Health Research Center, European University of Tirana, Albania

Misinformation and stigma: Barriers to STI prevention among Albanian youth

Background: Sexual health awareness and the uptake of STI prevention services remain critically low among young people in Albania. National data show limited use of condoms, low STI testing rates, and insufficient sexual health education. While misinformation and stigma are frequently cited as possible contributing factors, empirical evidence on their influence in the Albanian context is lacking.

This study addresses that gap by examining how misinformation (e.g., reliance on social media and STI myths) and stigma (e.g., embarrassment around condom use or discussing sexual health) are associated with young people's knowledge, preventive behaviors, and engagement with healthcare services.

Findings aim to inform public health strategies by identifying key barriers and actionable entry points for intervention.

Methods: We conducted a cross-sectional survey of 7,679 university students in Albania. Data were collected on STI knowledge, sources of information, stigma indicators, and healthcare access. Statistical analyses included chi-square tests, logistic regression, and Pearson correlation. To contextualize our findings, relevant literature and official reports were reviewed for Western European data.

Results: Reliance on social media correlated with lower STI awareness and inconsistent condom use ($p<0.001$). Only 54% of participants reported adequate sexual health education, and embarrassment purchasing condoms increased the odds of inconsistent use (OR=2.5, $p<0.001$). STI testing rates remained below 15% in Albania, compared to over 60% in Western Europe. Knowing where to access STI testing significantly increased knowledge scores ($p<0.001$).

Conclusions: Misinformation and stigma hinder STI prevention, resulting in inadequate testing and low condom use. Strengthening sexual health education, improving youth-friendly testing, and combating stigma are essential to reduce the STI burden.

Main Message: Misinformation and stigma hinder STI prevention among Albanian youth: They need comprehensive sex education, accessible testing, open dialogue, digital platforms for greater progress.

Biography

Iva Rrugia holds a Bachelor's (2012) and Master's degree (2018) in Physiotherapy from Our Lady of Good Counsel University, Tirana. Since 2021, Iva has pursued doctoral studies in Kinesiology at Ss. Cyril and Methodius University in Skopje and is completing her dissertation. With over eight years of teaching experience and several scientific publications, Iva has contributed as an expert in EU-funded projects on public health, awareness, and prevention. This article is part of a broader study funded by the National Agency for Scientific Research and Innovation, titled “Assessment of knowledge and behaviors related to sexual health among Albanian university students.”

James Kinoti Njue[1*], Margaret Muturi[2], Lucy Kamau[3], Raphael Lwembe[4]

[1]Department of Microbiology and Parasitology-Moi University, Kenya

[2]Medical Laboratory Science Department-Kenyatta University, Kenya

[3]Department of Animal Science, Kenyatta University, Kenya

[4]Centre for Virus Research, Kenya Medical Research Institute (KEMRI), Kenya

Human Papillomavirus types by cervical dysplasia, HIV-status and the diagnostic value of cervical screening methods in Eastern Kenya

Background: Human Papillomavirus (HPV) causes over 99% of all cervical cancer globally. In 2022, it was responsible for over 3200 deaths in Kenya. Data on the epidemiological distribution of HPV genotypes by cervical dysplasia and HIV status which is important in designing prevention strategies and monitoring treatment of cervical cancer is lacking in Eastern Kenya.

Objective: The study aims to determine HPV type's prevalence, diagnostic value of primary and sequential triage tests, and awareness of cervical cancer among HIV-infected and non-infected women aged 18-48 years in Eastern Kenya.

Methods: HPV genotyping, Pap smear, and VIA tests were conducted on the cervical transformation zone, squamocolumnar junction, and endocervical canal exudates, with social-demographic and awareness data collected using a questionnaire. Statistical relationships between laboratory outcomes and questionnaire data were computed using SPSS software.

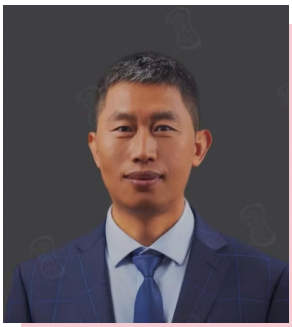
Results: 317 women (161 (50.8%) HIV-positive and 156 (49.2%) HIV-negative, mean age: 34.3, range 18-46 years) were recruited. Of these, 27.4% (21.5% HIV-positive and 5.9% HIV-negative) had abnormal VIA (81/317 (25.6%)), HPV-genotyping (84/317 (26.5%)), Pap smear (96/317 (30.2%)), and histology (78/122 (63.9%)) test. A wide spectrum of HPV types was detected by CIN2+ (HIV-positive: HPV81 (18/317 (5.6%)) and HPV11 (3/317 (0.9%)); and Invasive cervical cancer: (HIV-positive: HPV16 (1/317 (0.3%)); HIV-negative: HPV16 (1/317 (0.3%)). HPV genotyping and Pap smear tests showed high diagnostic accuracy and specificity in HIV-infected women, with increased specificity in both primary and triage testing approaches. High awareness of cervical cancer disease was established, but it lacks understanding of its causes, signs, symptoms, and risk factors.

Conclusions: The study reveals higher HPV type frequency in HIV-infected women, with non-vaccine HPV types linked to cervical dysplasia, highlighting the need for accurate cervical screening methods. High cervical dysplasia is likely due to inadequate and inaccurate understanding of cervical cancer disease and risk factors.

Key words: Human Papillomavirus, Cervical Cancer, Dysplasia and HIV.

Biography

James Kinoti Njue a lecturer in the Department of Microbiology and Parasitology, at Moi University, Kenya received a PhD in Medical Virology from Kenyatta University in 2022. James Kinoti holds a Master of Science in Infectious diseases degree (Kenyatta University, Kenya), a bachelor's degree in Medical Microbiology from the Jomo Kenyatta University of Agriculture and Technology, Kenya and a fellowship in Monitoring & Evaluation, Bioinformatics and Epidemiology from the University of Nairobi, Kenya. James Kinoti's research interests include molecular biology, diagnosis and epidemiology of viral infections especially Human papillomavirus-associated diseases such as cervical cancer, and expanding scientific knowledge to benefit the entire research community.



Jintang He

Department of Thoracic Surgery, Kunming Third People's Hospital Kunming, Yunnan Province, China

Application of minimally invasive surgical techniques in pericardial and macrovascular diseases associated with infectious diseases

Objective: Infectious diseases are still a serious public health problem in the world. Millions of people die from infectious diseases every year, and cardiovascular events account for a very important proportion. Through the treatment of infectious diseases (tuberculosis) in our department in recent years. The application results of minimally invasive surgical techniques related to constricted tuberculous pericarditis, false aneurysms involving the aortic arch and pulmonary embolism were demonstrated, providing innovative thinking and technology promotion to global peers, allowing more colleagues to participate, and avoiding the loss of treatment for some patients.

Methods: In the past 5 years, 2 cases of tuberculosis infection involving active arch and 1 case of false aneurysm of thoracic aorta were treated in our department by endovascular repair + vascular bypass hybrid technique. The treatment effect of thoracoscopic thrombus removal in 1 case of left pulmonary artery thrombosis associated with the COVID-19 Pandemic novel complicated with pneumothorax and 15 cases of thoracoscopic constrictive tuberculous pericarditis pericardiectomy were evaluated.

Results: All the tuberculous pseudoaneurysms involving the aortic arch and thoracic aorta were successfully cured. After removal of pulmonary artery thrombosis, vascular recanalization, respiratory function recovery and pneumothorax absorption were achieved. 15 patients with tuberculous constrictive pericarditis recovered successfully, except 1 patient died in perioperative period.

Conclusion: Pericardium and macrovascular lesions associated with infectious diseases can obtain good curative effect through minimally invasive technology, which is worthy of application and popularization.

Biography

Dr. Jintang He graduated from Kunming Medical University in 1995, has been engaged in thoracic surgery for more than 20 years, and is good at tuberculosis thoracic surgery diagnosis and surgery. Dr. Jintang has rich clinical experience in thoracic surgery of tuberculosis, bronchopleural fistula, pulmonary tuberculosis and hemoptysis, pericardiectomy for tuberculosis and complicated aspergillus operation, thoracoscopic resection of lung lobectomy, lung segment, lung wedge resection, total lung resection, pericardiectomy, mediastinal disease, chest tumor and other operations. Completed 1 municipal scientific research, published 11 articles and SCI: 6, 1 book, 1 invention patent.

Dr. Jose Agustin Carrillo Rodriguez[1*], Dr. Angelica Janeth Gutierrez Sanchez[2]

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Antibiotic profile in a second level hospital, in Tepic Nayarit Mexico 2023

In Latin America, antimicrobial resistance is an urgent public health priority. Currently, the indiscriminate use of antibiotics is associated with increased costs in care and the emergence of multi-resistant germs. There are few studies that evaluate the impact of antibiotic use in hospitals and there is no published information on the impact of antimicrobial resistance. The microorganisms identified with the greatest resistance, according to the WHO, are *E. coli* (20%), *P. aeruginosa* (6.8%) and *K. pneumoniae* (4.6%). The most lethal microorganism during 2021 was *A. baumannii*.

Empirical antimicrobial treatment guidelines are a tool for decision-making in infectious processes Goals:

1. Promote quality antimicrobial therapy that contributes to reducing the appearance of antimicrobial-resistant strains.
2. That users benefit from the quality of care received, due to the reduction of unnecessary prescription of antimicrobials.

Methodology: Our data source is the INOSO institutional base, where we capture all associated infections in health care, different variables are captured such as: type of infection, culture, collection site, clinical data, risk factors, culture result with resistance and sensitivity.

Bacteriological Profile: *E. coli* (15%), *P. aeruginosa* (12%), *S. aureus* (9%), *K. Pneumoniae* (7%) and *A. baumannii* (6%). If they are not treated with empirical treatments based on local antibiotic guidelines, they are at high risk of increasing resistance.

Resistances:

- *E. coli* has 70 to 90% resistance to 3rd generation cephalosporins, quinolones and sensitivity to tigecycline, amikacin, meropenem, ertapenem, cefoxitin and imipenem between 80 to 90% and is found more frequently in surgical site infections, bloodstream Infections and ventilator-associated pneumonia.
- *P. aeruginosa*, the main site of infection is ventilator-associated pneumonia, is resistant to cephalosporins and tigecicillin, however its sensitivity helps us with 60% amikacin and imipenem, meropenem sensitivity (58%).

- *E. aureus*, presents resistance to penicillins; sensitivity in amoxicillin, linezolid, tigecilicna Tmp-Smz, vancomycin between 80 to 100%.
- *K. pneumoniae*, resistance to cephalosporin (80%) sensitivity to amikacin, tigecillicne and carbapenems 80 to 90%.
- *A. baumannii*, resistance to carbapenems, cephalosporins, piperacillin with tazobactam, Amikacin and cefepime is of concern. The sensitivity of *A. baumanni* to tigecicillin and gentamicin is 50 to 100%; giving a double scheme is an option to look for synergies.

Recommendations:

1. No Every fever is an infection and not every infection causes a fever
2. Do not confuse severity of infection with multi-resistance
3. Analyze the cultures with the clinical evolution of our patient and his isolation site
4. It is important to start empirical treatment. AND IF IMPROVEMENT WITH EMPIRICAL TREATMENT DO NOT MODIFY TREATMENT (in vitro response is not the same as in vivo)
5. The crops grown today govern the empirical schemes of the future

Biography

Dr. Jose Agustin Carrillo Rodriguez Medical Epidemiologist, Diplomas: Administration Management and Certification of Hospitals by EP of Mexico, Management Development by the Autonomous University of Nayarit, Master in the Specialty of Neonatal Epidemiological Surveillance and the Diploma of Certification and Accreditation of hospitals in EP from Mexico; Radio co-host on the program: Ask the Specialist Saturdays, Third place in the Inter-American Congress of Pediatric Infectious Diseases, collaborator with the topic Measles in the Treaty on Primary Care in Pediatrics. Participant in the international francophone congress adel-epiter new epidemiological transitions at the university of Limoges, France July 2024.

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Prevalence of secondary bacterial pneumonia co-infection in SARS-CoV-2 infected patients, their treatment and outcome: A hospital-based study

Introduction: Viral pulmonary infections have caused high morbidities worldwide since the advent of outbreaks of SARS-CoV, H1N1 influenza, MERS-CoV and the more recent SARS-CoV-2 virus discovered in China in 2019. This novel virus has caused a global pandemic in the year 2020 with increased mortality worldwide. In the treatment of these viral infections, the initial focus of the clinical management was to treat the primary viral infection, however little emphasis has been given on the secondary bacterial infection that could ensue in the course. Like some viral respiratory diseases, SARS-CoV-2 infection predisposes the patient to a bacterial infection. The primary objective of this study was to determine the prevalence of secondary bacterial pneumonia co-infection on patients with SARS-CoV-2 infection, their demographic profile, treatment and outcome.

Methodology: This was a single-center retrospective analysis conducted over a period of one year from March 2020 and December 2021 in a secondary hospital in Iloilo City, Philippines. The sample population included 153 patients admitted with confirmed SARS-CoV 2 infection using RTPCR testing. All statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 26.

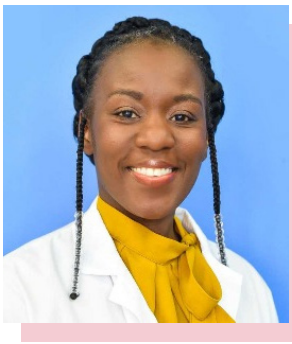
Results: The mean age of participants was 51.33±16.9 years and majority are of the male population. 76.5% of patients have confirmed bacterial pneumonia co-infection. Those with bacterial pneumonia co-infection have significantly increased incidence of cough, fever, shortness of breath, difficulty of breathing and lower oxygen saturations ($p<0.05$). Patients with diabetes mellitus (40.2%, $p<0.05$) have significantly higher incidence of bacterial pneumonia and hypertension, bronchial asthma and coronary artery disease were among the common comorbidities. Lactate Dehydrogenase (LDH), C-Reactive Protein (CRP), D-dimer and Ferritin levels were significantly higher in patients with bacterial pneumonia co-infection. The predominant agent identified was *Klebsiella pneumoniae* (14.4%), followed by *Candida albicans* (4.8%) and *Staphylococcus haemolyticus* (4.8%). Empiric antibiotic treatment at the time of admission was significantly increased in both with bacteria pneumonia and without bacterial pneumonia at 95.7% and 72.2% respectively ($p<0.05$). In terms of treatment, 97 (85.9%) of patients with bacterial pneumonia co-infection were admitted at the regular ward while 20 (17.1%) were admitted at the Intensive Care Unit and were significantly higher ($p<0.05$) than

those without bacterial pneumonia co-infection. Patients with bacterial pneumonia co-infection have increased risk of intubation (5.1%, $p<0.05$), critical care admission (17.1%, $p<0.05$) and higher mortality of 4.3% ($p<0.05$).

Conclusion: In patients with SARS-CoV-2 infection and bacterial pneumonia co-infection they have significantly lower oxygen saturation, higher levels of inflammatory markers, higher incidence of gram-negative bacteria, higher use of oxygen support indicating a more debilitating disease with higher mortality rate. The initiation of oxygen support, glucocorticoids, antibiotics and anti-viral therapy have decreased mortality. The empiric use of antibiotics was high even in patients with no bacterial pneumonia co-infection. The study would like to highlight the rampant use of antibiotics and to urge clinicians to improve efforts on antimicrobial stewardship and judicious use of antibiotics.

Biography

Dr. Amojedo studied Medical Laboratory Science at Central Philippine University, Philippines and graduated as Bachelor in 2012. Pursued Doctor of Medicine at the same university and received her degree in 2018 and entered West Visayas State University Medical Center for Internship in 2019 and passed Licensure examination the same year. Dr. Amojedo began residency training in Internal Medicine at The Medical City Iloilo in 2020 and obtained board certification in 2023. Currently Dr. Amojedo works at The Medical City Iloilo as co-investigator for research and at Ramon Tabiana Memorial District Hospital as medical officer and research associate.



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Cooling tower culprit or community clue? A modern approach to legionella surveillance

Introduction: Legionella disease (LD) is primarily transmitted through the inhalation of aerosolized water droplets containing Legionella bacteria, often originating from water sources such as cooling towers. In August and September 2021, an Infection Prevention team at a New York City acute-care hospital identified an outbreak of Legionnaires' disease affecting 13 patients across two adjacent zip codes in northern New York City. This study evaluates the utility of the Legionella Early Risk Assessment (LERA) tool in diagnosing Legionella-associated healthcare-associated pneumonia (HAP) and its potential role in mitigating risks associated with building water systems and preventing future outbreaks.

Methods: A two-phased approach was implemented. In the retrospective phase, electronic medical record surveillance identified pneumonia cases occurring ≥3 days post-admission, followed by Legionella testing if not previously performed. The prospective phase, from September 2021 to February 2022, employed the LERA tool to identify LD cases.

Environmental surveillance included testing three cooling towers, one of which tested positive for Legionella species. Statistical analysis, including Spearman correlation, was performed to assess relationships among variables due to the small sample size.

Results: Significant correlations were observed between the number of patients identified/suspected of HAP and those tested for Legionella ($p < .04$), as well as between the number of HAP patients tested for Legionella and those tested using the urinary antigen method ($p < .04$). However, no significant correlations were found between cumulative hospital-wide patient days and the number of patients identified/suspected of HAP ($p < .34$), the number of HAP patients tested for Legionella ($p < .73$), or the number of patients tested using the urinary antigen method ($p < .91$). Additionally, no significant correlation was observed between the number of patients identified/suspected of HAP and those tested using the urinary antigen method ($p < .23$).

From September 2021 to February 2022, six patients were identified/suspected of HAP, and four were tested for Legionella. All patients identified/suspected of HAP and those tested for Legionella were associated with periods where cumulative hospital-wide patient days exceeded 5100. Notably, in January 2022, despite 6730 hospital-wide patient days, no HAP patients were tested for Legionella, suggesting inconsistencies in testing practices. Environmental testing identified one Legionella-positive cooling tower, but this finding did not explain the community-based outbreak.

Conclusion: The outbreak, initially presumed to be healthcare-associated, was ultimately determined to be community-based. Misclassification of this pseudo-outbreak heightened concern among healthcare and public health stakeholders and delayed appropriate response measures. This study highlights the critical role of the LERA tool in accurately diagnosing LD, guiding antimicrobial stewardship, and enhancing public health surveillance. Importantly, the detection of an infectious disease after hospital admission does not inherently imply hospital acquisition, underscoring the necessity of tools like LERA to account for incubation periods and clarify the origin of infections. Adoption of the LERA tool could prevent misattribution of outbreaks, ensure targeted interventions, and reduce unnecessary hospital resource utilization.

Biography

Dr. Alexander, Director of Infection Prevention at NYC Health + Hospitals | Harlem, CEO of MICRO Consulting Corporation, and Adjunct Professor of Public Health at Long Island University, is a New York Academy of Medicine Fellow and reviewer for the American Journal of Infection Prevention. Her leadership at Mount Sinai Brooklyn established system-wide Candida auris protocols, earning NYSDOH commendation and the United Hospital Fund 2019 Excellence in Health Care Award. A global thought leader, she has presented at ICPIC in Geneva, APIC, the World Antimicrobial Resistance Congress, and the 2024 Disease Prevention Control Summit. Her publications span CLABSI, CRE, and CAUTI, while championing equity, mentoring, and diversity in Infection Prevention research.

Dr. med. Kurt E. Müller

Dermatology, Venereology, Occupational Dermatology, Allergology, Environmental Medicine, Functional Medicin, Lecturer for Environmetal Medicine, Functional Medicine and Preventive Medicine of Dresden International University (DIU), Leutkircher Strasse 27b, D-87439 Kempten, Germany

Loss of ballance

Most human functional systems are dual organized, with a supporting and a controlling system that maintains the balance of both through feedback mechanisms. In the case of illness, dysregulation is a temporarily necessary process that should end with the restauration of balance.

Over the passed 40 years, there has been a tendency towards ongoing deregulation of many functional systems which was also caused by environmental influences, infections, leaky gut, disturbences of the microbiome and vaccinations.

The loss of ballance of TH1 and TH2 cells, the complex population of B-cells, monocytes and macrophages, and the coincidence of long-terme changes in cytokine profiles and their interaction with microglia are highlighted and discussed as are the frustrating efforts to compensate actually developing trends in functional systems for preventive purposes.

Biography

Kurt E. Müller pursued medical studies at the Universities of Cologne and Würzburg from 1966 to 1972, followed by specializing in Internal Medicine and Oncology from 1972 to 1976. Between 1977 and 1981, mainly focused on Dermatology and Venerology, fields in which Muller has been practicing since 1981. In addition to medical practice, Kurt E. Müller pursued a specialization in Environmental Medicine from 1985 to 1991 and have been a lecturer on the subject across Germany, Austria, and Luxembourg since 1992. From 1996, served as a board member of the German Association of Environmental Physicians ("Deutscher Berufsverband der Umweltmediziner e.V.") and held the position of president for a decade. Also on the scientific board of the "Journal of Environmental Medicine" from 1998 to 2002 and participated in the "MCS-Study" at the Robert Koch Institute, Berlin, between 1999 and 2002. From 2002 to 2004, Kurt E. Müller contributed to quality control and immune diagnostics in Environmental Medicine as part of government commissions in Germany and Stuttgart and was recognized as an expert for the Belgian National Action Plan on Environment and Health in 2003 and chaired the European Academy for Environmental Medicine (EUROPAEM), where currently serve as president. Involvement extended to various international environmental health initiatives, such as participating in the Environment & Health Action Plans in the Netherlands and Luxembourg in 2004 and 2005. In 2004, Muller also attended the 4th Ministerial Conference on Environment and Health in Budapest. Between 2004 and 2005, was a part of the strategic group for continuing education in Environmental Medicine at the University of Liège. Muller‘s expertise includes Occupational Dermatology, added in 2006, and from 2007 to 2024, served as an Adjunct Professor for Clinical Environmental Medicine in the Master's program of Preventive and Functional Medicine at Dresden International University (DIU). Kurt E. Müller became a board member of the German Society for Lyme Borreliosis (DBG) in 2007 and served as president from 2010 to 2012. In 2021, Dr Kurt was invited by the Luxembourg Government to help establish an Environmental Unit as an expert.

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California State University-Fullerton, CA, USA

Rickettsial disease serodiagnosis–Current trends

Background: Clinical Rickettsial diseases are found worldwide, yet these agents are not amenable to in vitro propagation outside of proper BSL-2 facilities. Diagnosis has utilized both PCR and antibody detection, with serology products currently available for automated (ELISA), manual (IFA and MIF), and rapid test formats for both IgG-specific and IgM-specific antibodies.

Methods: Our current ELISA assays are made using specific and highly purified antigens with high specificity and reproducibility. For Spotted Fever Group (SFG) we utilize the SFG lipopolysaccharide antigen for IgG-specific assays and a recombinant β-peptide antigen for IgM-specific assays. Although IFA and MIF assays require a fluorescence microscope to visualize rickettsia, the IFA IgG titers are specifically required by CDC for our national epidemiology. Although the specific methodology is not described, the acute phase diagnostic use of IFA and MIF assays for IgG requires a serum pre-treatment step utilizing goat anti-human IgM antiserum to diminish competition for antigen binding by the IgM peak response. The same serum pretreatment is required for IgM-specific testing by IFA and MIF, except that the serum diluent used contains goat anti-human IgG antiserum.

Results: Both IFA and MIF assays are enhanced by pre-treating the acute phase sera with diluted goat anti-human IgG for IgM-specific assays and goat anti-human-IgM for IgG-specific assays. The difference observed is a several-fold enhancement that depends upon the timing of the acute phase serum, generally >/= 8-fold from <1:64 to at least 1:256. The initial appearance of IgG titers can be seen earlier in the time course of the acute response and the IgM is seen for a longer time, as well.

Conclusion: When IFA is the only acceptable assay, the serum pre-treatment protocol enhances both IgG and IgM titers, quite often turning otherwise negative results into positive titers. Otherwise, the appropriate ELISA assays are more accurate and sensitive.

Biography

Lee Fuller did baccalaureate studies at the University of California (UCSB-1968), then became a medical technologist in the USAF. Studies resumed at CSU-Fullerton (MA, 1974) with an in vitro study of the cellular immune response in mice against a syngeneic mastocytoma. This was followed by new companies, Microbiology Reference Laboratory and diagnostics (Hillcrest Biologics). In 1990 these companies were sold and Fuller Laboratories began developing and manufacturing vector-borne diagnostics. In 2024 this company was sold to VMRD, a veterinary diagnostics company and Lee has remained as the Product Developer for both clinical and veterinary vector-borne diagnostics.

Lidia Sierpińska

Command, Military Clinical Hospital No.1 with Polyclinic, Independent Public Health Care Unit, Lublin, Poland

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Liver cancer and cirrhosis as a complication of HCV infection - A case study

Introduction: Infection with hepatitis C virus (hepatitis C) is an important medical and social problem in Poland and worldwide. In Poland, approximately 2% of the total population is infected with Hepatitis C Virus (HCV) (estimated at 730,000 people). HCV is an etiologic factor of chronic hepatitis C. Hepatitis C is a chronic disease which, when untreated, may lead to cirrhosis of the liver and/or primary liver cancer. The routes of infection with HCV are various types of damage (disruption) of tissue continuity, and contact with infected blood, e.g. medical procedures and occupational exposure).

Objectives:

1. The aim of the study was analysis of the personal medical history of a patient with hepatocellular cancer from the aspect of infection with HCV.

2. The aim of the study was analysis of personal medical records of a patient with cirrhosis from the aspect of its relation with HCV infection.

Methods:

Case I: A case of a 63-year-old patient is presented with the diagnosis of hepatocellular carcinoma (HCC) (Carcinoma hepatocellular), who had undergone the procedure of thermal ablation of the pathological change in the liver. The patient was treated with chemotherapy on a daily basis; anti-HCV antibodies were detected. The research method was a retrospective case study; the technique–analysis of records (internal documentation of the Regional Hospital in Pionki, Poland; while the research tools–medical history with the results of diagnostic tests, the VAS scale and the Glasgow scale.

Case II: A case of a 36-year old patient was presented diagnosed with cirrhosis, admitted to the emergency department due to haemorrhage from the upper gastrointestinal tract. Anti-HCV antibodies were present. The method was a case study. The research technique was analysis of internal archive records of the University Clinical Centre of the Medical University of Warsaw, Poland. The re-search tool–case history with the results of diagnostic tests, Visual Analogue Scale (VAS) measuring pain intensity, the Hamilton Depression Rating Scale, fluid balance chart, and an author-constructed questionnaire to be completed by the patient.

Results: Based on internal documentation of the hospital a case of a patient was described with severe abdominal pain due to hepatocellular carcinoma, who had been previously diagnosed with HCV infection. Physical examination was presented, as well as epidemiological interview, medical history, the course of diagnostics and treatment of the patient qualified for further ambulatory treatment in the oncology outpatient clinic. Based on internal documentation of the hospital and patient medical records a case of a patient was described with gastrointestinal bleeding and cirrhosis, diagnosed with HCV. Physical examination was presented, as well as epidemiological interview, medical history, course of diagnostics and treatment of the patient qualified for follow up ambulatory care in the outpatient hepatology department.

Conclusions: An early diagnosis of infection with HCV, and implementation of antiviral treatment may prevent the development of hepatocellular carcinoma, cirrhosis of the liver. Health education of society is necessary from the aspect of risk factors of HCV infection in the medical environment, as well as in beauty salons and tattoo parlours.

Biography

Dr. Lidia Sierpińska, Master of Science in Nursing, Doctor of Medical Sciences. Specialist in public health and in the field of epidemiological nursing. 33 years of experience as a Head nurse in the Military Clinical Hospital No.1 with Polyclinic, Independent Public Health Care Unit, Lublin, Poland. 14 years of experience as the Plenipotentiary Commander for quality management systems. 18 years as an adjunct at the Radom School of Higher Education in the nursing specialty. Dr. Lidia Sierpińska was the National consultant for defence in the field of nursing for 16 years. 3 years as adjunct at Vincent Pol University in Lublin in the nursing specialty.

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Prevalence of strongyloidiasis and its risk factors in pregnant women in Guilan Province, North of Iran

Strongyloidiasis is a neglected tropical and subtropical disease affecting humans worldwide. While often asymptomatic, it can cause hyperinfection syndrome in immunocompromised individuals, leading to disseminated infection, frequently, fatal outcomes. Chronic strongyloidiasis poses a significant risk of malnutrition, particularly in vulnerable populations such as pregnant women, infants, and children. Pregnancy-induced immunosuppression heightens susceptibility to hyperinfection and disseminated strongyloidiasis. Therefore, this study aimed to assess the prevalence of strongyloidiasis among pregnant women attending Al-Zahra Hospital in Rasht (Guilan Province) in 2024.

Methods: This cross-sectional study was conducted between September 2024 and February 2025. Participants included pregnant women referred to Al-Zahra Hospital, a specialized obstetrics and gynecology center in Rasht. Following informed consent, blood samples and, where permitted, stool samples were collected alongside completed questionnaires documenting clinical symptoms. Stool samples, were cultured daily, and both serum and stool specimens were processed under standardized conditions. Serum samples were analyzed for *Strongyloides stercoralis* IgG antibodies using the NovaTec ELISA Kit (LOT:STRO-050N), while stool samples underwent parasitological examination at the Strongyloidiasis Laboratory, School of Public Health, Tehran University of Medical Sciences. Data were statistically using SPSS 25, with Fisher's exact test employed to assess associations.

Findings: The study included 384 pregnant women (gestational age: 1-8 months) aged 15-48 years, with 25% reporting a history of miscarriage. Seroprevalence of strongyloidiasis (*S.stercoralis* IgG antibodies) was 2.6%. No significant associations ($P>0.05$) were found between infection and factors such as vegetable washing practices, residential location (urban/rural), education level, occupational exposure, soil contact, clinical symptoms, animal contact, or hypereosinophilia. However, a significant association ($P<0.05$) was found between strongyloidiasis and underlying conditions (gestational diabetes was present in 30% of patients).

Conclusion: Given the overlap between strongyloidiasis symptoms and common pregnancy-

related complaints, including gastrointestinal and respiratory symptoms, as well as other hematological manifestations may contribute to underdiagnosis. Hormonal changes, like high progesterone in the first trimester, mainly cause respiratory symptoms in pregnancy. Persistent symptoms in later trimesters may indicate infections. In this study, 50% of strongyloidiasis cases showed respiratory symptoms during the second or third trimesters. Serological screening for *S.stercoralis* is recommended as part of preconception care, complemented by health education on proper hygiene and animal contact practices. Additionally, further research incorporating genetic analyses of both parasites and hosts (humans, dogs, and cats) is critical to elucidating the zoonotic potential of strongyloidiasis in endemic regions.

Keywords: Strongyloidiasis, Serology, Parasitological Methods, Pregnant Women, Risk Factors.

Biography

Mahdieh Sorouri Majd is a Master of Science (MSc) student in Medical Parasitology at Tehran University of Medical Sciences (TUMS), Iran with a strong passion for researching Neglected Tropical Diseases (NTDs). Mahdieh Sorouri's thesis focuses on the health consequences of strongyloidiasis in high-risk groups, particularly pregnant women, in endemic regions of Iran.

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Post COVID-19 syndrome in Honduras: Systems affected and its association with severity of first COVID-19 episode

Introduction: COVID-19 was an amplifier of global vulnerabilities such as climate change, poverty/social exclusion, curative health systems, poor surveillance capacity and a silent pandemic of chronic diseases. By the middle 2020, several studies described the so-called long COVID syndrome as an emerging and prevalent syndrome. Post-COVID-19 Syndrome (PCS) refers to a range of lingering symptoms that persist after the acute phase of COVID-19 infection has resolved; some individuals experience symptoms that can last for months and may have a significant impact on their daily lives.

Objective: The purpose of the study is to estimate the prevalence of PCS, systems affected, symptoms, duration and association with severity of first COVID-19 episode among ambulatory patients in Honduras.

Methods: Last-year medical students from the Faculty of Medical Sciences (UNITEC), during 2022-2023, were assigned by the Ministry of Health to Primary Health Clinics (PHC). They interviewed a convenience sample of adults that consecutively attended PHC. The protocol was approved by UNITEC's Bioethical Committee. Only subjects diagnosed with COVID-19, usually by a RT-PCR test, during years 2020-2021 were included. Date of first COVID-19 episode was established and a 12-week-period after the first COVID-19 symptom appeared was estimated; then, subjects were asked for the presence and duration of PCS' symptoms by body organ and systems.

Results: A total of 2967 participated, 59.6% female, 20.3% 51+ years of age, 71.6% overweight-obese, 17.4% hypertension and 12.2% diabetes mellitus. For first COVID-19 episode: 29.6% asymptomatic, 60.8% mild disease, 6.6% hospitalized, 2.0% severe disease and 0.4% admitted to intensive care unit. PCS' prevalence was 51.5% (95% CI: 49.7%-53.3%). Among the 1528 persons with PCS, systems affected were: Respiratoy (68.6%), Neurological (68.1%), Systemic (65.1%), Psychiatry (33.0%), Cardiological (31.7%), Cognitive (30.1%) and Gastrointestinal (20.6%). With regard to SPC's symptoms: 55.8% had 1-3, 24.2% had 4-6, 14.9% had 7-9 and 10.4% had 10+ symptoms. A total of 143 (9.3%) had persistent PCS' symptoms (≥24 months duration). For subjects with mild-asymptomatic disease, 9.9% had ≥ 7 PCS' symptoms and

3.9% had persistent PCS compared with 43.0% and 14.1%, respectively, among persons that reported hospitalized-severe disease ($p<0.001$). Mean symptom's duration (months) was also higher for each system evaluated for persons that reported hospitalized-severe disease ($p<0.001$). Discussion: There are still many PCS' unanswered questions and areas of controversy that require further research and discussion. There is ongoing debate about definition and diagnostic criteria for PCS. The wide range of symptoms reported by individuals has led to discussions about whether it represents a single syndrome or a collection of related conditions.

Conclusion: PCS' prevalence was 51.5% (95% CI: 49.7%-53.3%); systems most affected were respiratoy, neurological and systemic; 9.3% had persistent PCS; subjects who reported hospitalized-severe disease had more symptoms, persistent symptomatology and higher mean duration of symptoms.

Biography

Dr. Manuel Sierra graduated from T Chen Harvard School of Public Health obtaining an MPH in epidemiology and a PhD with concentration in Tropical Pubic Health and Infectious Diseases. Dr. Sierra was called to assess the national response to the pandemic and has published several articles and a couple of books related with COVID-19. Dr. Sierra coordinates research at the Faculty of Health Sciences (UNITEC).

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Epidemiological survey with antigenic fragments of Hsp83 and kPCR in population at risk for leishmaniasis

Leishmaniasis in Peru is a public health concern and affects inhabitants of endemic areas and also people who go to jungle regions for short or long time, where the leishmania parasite fulfills its life cycle. There is a high incidence of cutaneous and mucocutaneous leishmaniasis in the country, and infections vary from mild cutaneous lesions to disfiguring mucocutaneous lesions. Mucosal lesions can be expressed in the patient from 1 year to 20 years after the first lesion, so it is important to have a sufficient sensitive and specific technique to detect the disease in its early stages. To carry out the study we used ELISA with antigenic fragment of the Hsp83 protein, which has a high potential for the diagnosis of leishmaniasis and PCR whose target is the DNA of the kinetoplast, with 75pb amplicon. This study aimed to know the scope of each of the tests for the diagnosis of patients with diverse clinical aspects, who live in or have visited endemic regions. The study was done between 2023-2024, 100 biological samples were analyzed using ELISA and kPCR. The epidemiological data was obtained of patient's survey and we are going to analyze and discuss the potential of the molecular and serological technique, and the use of both of them in accord to the epidemiological and clinic characteristics.

Key Word: Leishmaniasis, ELISA, PCR.

Biography

Dr. María Quispe received a Ph.D. at the University of La Laguna (Spain) and worked in the field of infectious diseases. Dr. Quispe focus work on the search and application of diagnostic methods in the field. Dr. María is currently a professor at Biological science Faculty, at University of San Antonio Abad of Cusco (Perú).

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Disseminated fusariosis - Management conundrum - A fatal case in an immunocompromised patient

Disseminated fusariosis is a rare but often fatal opportunistic fungal infection that predominantly affects immunocompromised individuals with a mortality rate of over 80%. Prognosis is determined by the degree of immunosuppression and extent of infection.

A 55-year-old caucasian female was admitted to the haematology unit after seeing her GP for fatigue, bruising, recurrent pyrexia and mouth ulcers. She was found to be profoundly cytopenic hence requiring admission and further investigations. The haematology team diagnosed this patient with aplastic anaemia following a bone marrow aspirate. She was commenced on a prophylactic course of acyclovir, levofloxacin and posaconazole. She developed a suspected drug rash shortly thereafter which was attributed to the posaconazole and therefore this was switched to fluconazole resulting in a resolution of the rash.

The underlying cause of the aplastic anaemia was unclear prompting further investigations including an autoimmune panel which revealed a positive ANA and dsDNA, positive crithidia with normal complement levels (C3 and C4). An early CT thorax, abdomen and pelvis showed no acute abnormal findings except for a large pericardial effusion which was aspirated showing macrophages and no evidence of malignancy. The patient was treated with a short course of high dose oral steroids (60mg once daily) by the rheumatology team for suspected systemic lupus erythematosus. Following the completion of the one-week course of oral steroids, an acute rash was observed with erythematous papules, nodules with areas of central necrosis and haemorrhagic crust.

A skin biopsy was performed revealing the presence of short, branching, septate fungal hyphae within the superficial and mid-dermis. On deeper sectioning, there were occasional vessels within the superficial dermis showing fibrin thrombi and possible infiltration by fungal hyphae. The patient was commenced on high dose antifungal-Amphotericin B (5mg/kg) following involvement of the microbiology team. A tissue culture confirmed the presence of Fusarium species which was resistant to all anti-fungals except for Amphotericin B.

Despite two weeks of treatment with high-dose Amphotericin B, the patient continued to develop new cutaneous lesions. She was persistently cytopenic and the rheumatology team intermittently treated her with low doses of methylprednisolone to try and treat her underlying

likely autoimmune-related cytopenia. A further skin biopsy revealed fungal hyphae in the dermis once more with evidence of angio-invasion. The patient deteriorated with systemic sepsis and required ITU admission and despite inotropic support, treatement with IVIG and GCSF, she did not recover and subsequently died from systemic disseminated fusariosis.

This case highlights the rare but serious complication of disseminated fungal infections and the complexity of treating such in a patient with suspected systemic lupus erythematosus (SLE) and confirmed aplastic anaemia.

Biography

Dr. Mariam Abu Jubain is a graduate from the University of Birmingham medical school in the United Kingdom. Dr. Mariam completed medical foundation training in the West Midlands and internal medical training in Essex. Also, completed Post-Graduate Diploma in Clinical Dermatology from the University of South Wales. Now, Dr. Mariam is a senior dermatology registrar/resident working in the East Midlands. And growing interest in skin infections and global dermatology.

Mortaza Baky Haskuee

School of Computer Science and Technology, Algoma university/Professor of Mathematics, Brampton, ON, Canada

A game theoretic approach to optimal containment policies under uncertainty of individuals' compliance

At the onset of a pandemic, when no effective medicine or vaccine is available, governments implement non-pharmaceutical interventions to control the outbreak. The effectiveness of these policies depends on individuals' compliance, which is inherently uncertain, necessitating an optimal decision-making approach. This paper proposes a robust control framework that integrates H∞-optimal control and Cooperative Differential Games (CDG) to design adaptive, individual-centered containment strategies. By modeling pandemic dynamics as a nonlinear stochastic system and incorporating control inputs to capture individual adherence and response variability, we derive a feedback law that minimizes worst-case policy outcomes. Our approach combines H2/H∞ control, ensuring optimal performance while maintaining robustness against uncertainties. Additionally, Adaptive Dynamic Programming (ADP) is employed to obtain pareto-optimal strategies within a cooperative game framework, while a Non-Cooperative Differential Game (NCDG) formulation ensures nash equilibrium under adverse conditions. This integrated framework provides a robust and adaptive approach to designing containment policies that balance effectiveness and resilience in uncertain compliance environments.

Biography

Dr. Mortaza Baky Haskuee is currently a Professor of Mathematics at Algoma University and a Research Associate in the Department of Mathematics at the University of Toronto. Previously served as a Research Fellow at the Fields Institute for Research in Mathematical Sciences, contributed to the Mathematics for Public Health project from January 2023 to July 2024. Also joined the Laboratory for Industrial and Applied Mathematics at York University to contribute to the mathematical modeling of infectious diseases in June 2021. Dr. Mortaza's research has been published in journals such as Theoretical Biology, PLOS Computational Biology, and Advances in Mathematical Sciences and Applications.

Myra Tariq
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A case of late-stage HIV diagnosis despite multiple healthcare encounters

This case highlights a delayed HIV diagnosis in a 78-year-old female despite multiple clinical encounters over four years. The patient presented with multiple HIV indicator conditions, including unexplained weight loss, lymphadenopathy, and esophageal candidiasis. Due to demographic biases and lack of routine HIV screening in non-traditional populations, the diagnosis was missed until a late stage. This report emphasizes the importance of HIV testing in patients with persistent unexplained symptoms, regardless of demographic risk factors.

Introduction: HIV diagnosis in older adults remains a challenge, particularly in populations not traditionally considered high risk. This case demonstrates how failure to recognize HIV indicator conditions led to multiple investigations and delayed diagnosis. The case underlines the necessity of a broader approach to HIV testing, especially in patients with persistent, unexplained symptoms.

Case Presentation: A 78-year-old Caucasian female with a history of bilateral hip replacements was first seen in 2012 for routine follow-up. In 2016, she underwent a low-dose CT thorax as part of a lung health check, which revealed small pulmonary nodules. Over the next few years, she developed progressive lymphadenopathy, weight loss, dysphagia, and recurrent infections.

Between 2017 and 2021, the patient was evaluated over 20 times by multiple specialties, including respiratory, gastroenterology, breast services, and hematology. Imaging consistently showed progressive lymphadenopathy and stable pulmonary nodules. Multiple biopsies of lymph nodes demonstrated reactive changes but no malignant pathology.

In early 2020, worsening dysphagia and significant weight loss prompted further investigations, including esophageal endoscopy, which revealed candidiasis. Despite the presence of multiple HIV indicator conditions, an HIV test was not performed. It was only in 2021, after referral to the Infectious Diseases (ID) team, that an HIV test was conducted, revealing a CD4 count of 8 and a viral load of 346,000.

Discussion: This case underscores several key issues in delayed HIV diagnosis:

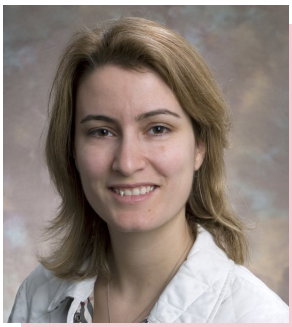
1. **Demographic Bias:** The patient did not fit the traditional profile of an HIV-positive individual (elderly, heterosexual, caucasian female), leading to a lack of consideration for HIV testing.

2. **Missed Indicator Conditions:** Weight loss, lymphadenopathy, and esophageal candidiasis are well-recognized HIV indicator conditions that should prompt testing.
3. **Fragmented Care:** The patient was seen by multiple specialties without a cohesive approach to her unexplained symptoms.
4. **Travel History:** The patient had annual travel to Gambia, a country with a known HIV prevalence of 1.8% in 2020, which was not considered in earlier assessments.

Conclusion: This case highlights the need for increased awareness and routine HIV screening in patients presenting with persistent, unexplained symptoms. The implementation of Emergency Department (ED) opt-out testing programs has successfully identified undiagnosed cases, but similar strategies should extend to specialist clinics and outpatient settings. Removing demographic biases and integrating HIV testing into routine assessments of lymphadenopathy and unexplained weight loss could lead to earlier diagnosis and improved patient outcomes.

Key Takeaways:

1. HIV should be considered in any patient with persistent, unexplained symptoms, regardless of age or perceived risk factors.
2. Cohesive, multidisciplinary communication is critical in recognizing patterns of illness.
3. Travel history should be actively explored in patients with undiagnosed chronic conditions.



Nadine Rouphael, MD
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Systems Vaccinology

Vaccines are among the most transformative public health tools, yet translating findings from animal models to humans poses challenges. Translational immunology bridges basic science and clinical applications, fostering advancements like systems vaccinology. This systems-based approach integrates “omics” technologies—genomics, transcriptomics, proteomics, and metabolomics—to elucidate molecular interactions of vaccines with the immune system. Systems vaccinology identifies immune signatures that predict vaccine efficacy, informing tailored vaccine strategies and addressing variability in responses due to factors such as genetics, microbiota, and health conditions.

Groundbreaking studies have unveiled universal vaccine signatures linked to antibody responses, validated across platforms like live-attenuated and recombinant vaccines. These findings, supported by initiatives like the Human Immunology Project Consortium, emphasize early immune signatures as predictors of vaccine durability. Exploring tissues such as the bone marrow and germinal centers further aids understanding of immune longevity.

Innovations in vaccine delivery, including microneedle patches and intranasal methods, aim to enhance systemic and mucosal immunity. Similarly, adjuvants bolster vaccine efficacy, particularly in vulnerable populations like the elderly. Systems vaccinology enables comparisons across vaccine platforms, guiding pandemic preparedness and next-generation vaccine design.

Notably, microbiota and medications like statins significantly influence vaccine responses. Disruptions, such as antibiotic use, impair immunity, highlighting the interplay of environmental and pharmacologic factors.

Despite its promise, systems vaccinology faces challenges, including complex datasets and operational costs.

This multidisciplinary approach is vital for developing personalized vaccines, ensuring safety and efficacy across diverse populations while addressing emerging infectious threats.

Biography

Dr. Nadine Rouphael is the Sumner E. Thompson, III Distinguished Professor of Vaccinology and Infectious Diseases at Emory University and Executive Director of the Hope Clinic, the clinical arm of the Emory Vaccine Center. Dr. Nadine serves as the Emory PI for NIH's Vaccine Treatment and Evaluation Unit (VTEU) and co-PI for the Clinical Core of the Stanford Human Immunology Project Consortium (HIPC). Dr. Rouphael has led over 90 clinical studies and published 230+ peer-reviewed articles. Mainly research focuses on vaccine clinical trials, delivery methods, immune aging, and correlates of protection.

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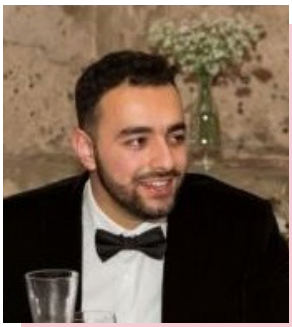
CRISPR-Cas-powered pen-side diagnostic tests for the early detection of the tick-borne pathogens *Theileria parva*, *Anaplasma marginale* and *Babesia bigemina*

The apicomplexan parasite *Theileria parva* causes East Coast Fever (ECF), one of the most important and lethal tick-borne diseases of cattle in sub-Saharan Africa, resulting in annual losses exceeding US $300 million to the livestock industry. ECF diagnosis primarily relies on clinical signs, serology, and microscopic identification of parasites in blood or lymph fluid samples, but these methods may not detect low-level infections or ongoing disease. Molecular tests, such as nested and quantitative PCR assays, offer higher sensitivity, yet they are often impractical for use in resource-limited settings where economic losses are most severe. Therefore, a field-deployable, point-of-care test would be highly valuable in managing and controlling ECF in endemic areas. In response to this need, we have developed a CRISPR-Cas12a-powered pen-side diagnostic tool for the sensitive and specific detection of *T. parva*, targeting the *p104* gene. This tool combines a 20-minute Recombinase Polymerase Amplification (RPA) reaction followed by a 60-minute CRISPR-Cas12a reaction with a FAM/Biotin lateral flow strip readout. We tested two RPA primer pairs and four CRISPR-RNAs (crRNAs), and the p104-based assay demonstrated high sensitivity, detecting as few as one infected lymphocyte per three microliters of blood. It was able to universally detect eight T. parva strains without cross-reactivity to other *Theileria* species, such as *Theileria mutans* and *Theileria lestoquardi*. The assay detected the pathogen as early as day three post-infection and showed a kappa coefficient score of 0.74 (good) when compared to the gold standard qPCR assay. Additionally, building on the development of the T. parva test, we created two more CRISPR-Cas12a assays for detecting *Anaplasma marginale* and *Babesia bigemina*, two other important tick-borne pathogens of cattle. These assays target the Major Surface Protein 5 (MSP5) for *A. marginale* and the rhoptry-associated protein 1a (RAP1a) for *B. bigemina*. The results from these assays demonstrated high specificity, with no cross-reactivity against other tick-borne pathogens, and a limit of detection of 10^2 DNA copies/µL for each target marker. This work lays the foundation for the development of sensitive, user-friendly, field-applicable diagnostic tools for detecting *T. parva, A. marginale,* and *B. bigemina* infections.

Biograph

Dr. Svitek studied Microbiology and Immunology at the University of Montreal, Canada, and graduated with an MSc in 2004, then joined Prof. von Messling's research group at the INRS-Centre Armand-Frappier Santé-Biotechnologie (University of Quebec/Institut Pasteur International Network), Canada. Dr. Svitek received a PhD degree in Virology and Immunology in 2010 at that institution. After a one-year postdoctoral fellowship in Virology at the Duke-NUS Emerging Infectious Diseases Programme in Singapore, then joined Prof. Vish Nene's group in 2011 at the International Livestock Research Institute (ILRI), Kenya, as a postdoctoral fellow in Cellular Immunology and Reverse Vaccinology. In 2014, Dr. Svitek became a scientist and, in 2019, a senior scientist at that same institution. Has been published more than 30 research articles in SCI(E) journals and contributed to more than 35 papers presented at international scientific conferences.



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The underestimated threat: A review of ocular leptospirosis

Background: Ocular leptospirosis, a severe yet underrecognized complication of systemic leptospirosis, is an emerging global health concern. Primarily affecting tropical and subtropical regions, this neglected zoonotic disease contributes to significant morbidity and vision loss, disproportionately impacting resource-limited settings where surveillance and healthcare access are often inadequate.

Objective: This review aims to provide a comprehensive overview of ocular leptospirosis, focusing on its diverse clinical manifestations, diagnostic challenges, and global public health implications. It also highlights opportunities for advancing diagnosis, treatment, and prevention strategies to address this underestimated threat.

Methods: An extensive review of the literature was conducted, synthesizing data on the epidemiology, ocular presentations, diagnostic modalities, and public health challenges associated with leptospirosis. Emerging diagnostic technologies and integrated health approaches were evaluated for their potential to improve outcomes.

Findings: Ocular leptospirosis encompasses a spectrum of clinical manifestations, from acute conjunctival congestion to sight-threatening complications such as uveitis, hypopyon, vitreous membranes, and rapid cataract maturation. Diagnostic delays are common, driven by the non-specificity of ocular symptoms and limitations of traditional methods like serology and PCR. Recent advancements, including electrochemical biosensors and metagenomic sequencing, offer promising avenues for improving diagnostic accuracy and accessibility. Public health impacts are profound, with vision impairment affecting quality of life, productivity, and economic stability, particularly in vulnerable populations.

Conclusions: Ocular leptospirosis is a critical yet underestimated cause of preventable vision loss worldwide. Urgent action is needed to enhance surveillance systems, raise awareness, and develop accessible, accurate diagnostic tools. A One Health approach, integrating human, animal, and environmental health efforts, is vital to addressing transmission dynamics and reducing disease burden. Early diagnosis and intervention are essential to preserving vision and improving outcomes. Through coordinated global efforts, the impact of this neglected disease can be substantially mitigated, protecting individuals and strengthening public health systems worldwide.

Biography

Dr. Orkun Kaymaz graduated with merit from Norwich Medical School, University of East Anglia, earning distinctions in several disciplines, including ophthalmology, neurology, and general surgery. Dr. Orkun has extensive clinical experience across diverse specialties, including general practice, geriatrics, renal medicine, and trauma and orthopaedics and has a strong academic focus, with multiple publications and presentations at international and national conferences. Recognized for his contributions to medical education and research, received the Best Oral Presentation Prize at a regional medical conference. Having completed a Postgraduate Certificate in Medical Education, Dr. Orkun continues to integrate clinical expertise with innovative approaches to healthcare education and research.

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Improving intravenous vancomycin monitoring practices: A multi-centre quality improvement project at University Hospitals Birmingham

Background: Vancomycin level monitoring is essential for optimizing therapeutic efficacy and minimizing toxicity. Inconsistent practices and unclear guideline dissemination across hospital sites may compromise patient outcomes and increase healthcare costs.

Methods: A retrospective quality improvement project was conducted across three sites (QEHB, BHH, GHH) from July to September 2024, following a guideline update. Data from 327 patients receiving intermittent IV vancomycin were collected via a structured electronic form. Key parameters included timing and accuracy of trough level sampling, adherence to guidelines, dose timing, renal monitoring, and documentation in the PICS system.

Results: 24% of patients experienced significant dose delays (>4 hours).
Only 39% of samples were collected at the correct time; among these, 59% achieved target levels.
More than 85% of patients had their renal functions monitored regularly. However, 7% still experienced renal decline—an important finding given the known nephrotoxicity of vancomycin.

Patients within the target range had significantly shorter hospital stays (mean 32.3 vs. 41.0 days; $p = 0.048$).
Patients achieving target vancomycin levels had shorter hospital stays and reduced complications, reflecting a significant improvement in treatment efficiency and resource utilization.

Conclusions: Adherence to vancomycin monitoring guidelines remains suboptimal, contributing to prolonged hospital stays and increased risks. Key issues include sampling delays, insufficient renal function tracking, and poor documentation. Guideline revisions, IT enhancements, and dedicated staff support are recommended to improve safety, compliance, and antimicrobial stewardship.

Biography

Dr Özge Öztürk graduated from Dokuz Eylul University Faculty of Medicine in Izmir, Turkey. She worked for two years at the Tuberculosis Clinic in Adana/Turkey, gaining experience in TB diagnosis and management. She later moved to the UK to continue her medical career and is currently working in the Infectious Diseases Department at Heartlands Hospital under the supervision of Dr Christopher Pollard. Her main clinical interests include tuberculosis, and tropical diseases. She is also involved in quality improvement and clinical research projects, particularly focusing on infectious diseases.

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A multi-region discrete time chain binomial model for infectious disease transmission

Conventional mathematical models of infectious diseases frequently overlook the spatial spread of the disease concentrating only on local transmission. However, spatial propagation of various diseases has been noted between geographical regions mainly due to the movement of infectious individuals from one region to another. In this work, we propose a multi-region discrete time chain binomial framework to model dependencies between the multiple infection time series from neighbouring regions. It is assumed that the infection counts in each region at various time points is not only governed by local transmissions but also by interactions of individuals between spatial units. Effect of intervention strategies like vaccination campaigns used in disease control and various other socio-demographic factors like, live births, population density, vaccination coverage, disruption in disease surveillance, sudden surge in birth rates have been taken into account while modelling the multiple infection time series. For estimating this multi-region model with spatial autocorrelation among the units, an appropriate likelihood function maximization approach is proposed. Simulation results considering effects of seasonal pattern in disease outbreaks, out of sync outbreaks in connected geographical regions, variations in reporting rates in connecting regions have been considered to depict realistic disease scenarios. Various methods of forecasting of infections and effect of spatial heterogeneity on future infections have also been studied. A real world application based on measles counts from adjoining spatial regions is presented to motivate the proposed modelling approach.

Biography

Pallab Kumar Sinha is a Senior Research Fellow at the Indian Institute of Technology Bombay and holds a postgraduate degree in Statistics and is currently pursuing a PhD at this institution. Under the supervision of Professor Siuli Mukhopadhyay, his research focuses on infectious disease modeling.

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Sex, vaccination status, and comorbidities influence long COVID persistence

Background: There is interest in the public health impact of Long COVID, defined as symptoms that persist or begin after SARS-CoV-2 infection. We aimed to identify demographic and clinical risk factors associated with Long COVID over time in an Upper Middle-Income Country (UMIC) and potential biomarkers predictive of symptom trajectory.

Methods: Prospective cohort study of adults with mild SARS-COV-2 during the Omicron period. We tracked symptom persistence and IgG antibody titers against the spike S1 subunit.

Results: Of 383 participants, 276 had confirmed SARS-CoV-2 infection. Long COVID persisted for ≥ two months in 21 % and ≥ 12 months in 5 %. The most common symptoms were fatigue, upper respiratory symptoms, and myalgia/arthralgia: 15 % had fatigue for ≥ one month, 10 % for ≥ two months, and 5 % ≥ three months. Upper respiratory symptoms lasted ≥ one month in 17 %, ≥ two months in 7 %, and ≥ three months in 3 %. Fully 9 % reported myalgia/arthralgia lasting ≥ one month, 6 % ≥ two months, and 4 % ≥ three months. Risk factors for symptom persistence included female sex, not being fully vaccinated, and comorbidities. Participants experiencing persistent fatigue had lower anti-S1 IgG titers.

Conclusions: In this population, symptom persistence declined after the acute phase, but 5 % of participants did not fully recover. Even in a population that was almost fully vaccinated, women, individuals with comorbidities, and the few remaining people who were unvaccinated were at greater risk for Long COVID. Immunoglobulins may have utility as a biomarker of Long COVID fatigue in this population.

Keywords: Cohort Studies; Immunoglobulin G; Post-Acute COVID-19 Syndrome; Risk Factors.

Biography

Head of the Acute-Fever Illnesses (AFI) clinic at Fundação Oswaldo Cruz (FIOCRUZ) in Rio de Janeiro, where she also works as an Infectious Diseases (ID) Clinical Researcher/Attending Physician. She is a Professor of Tropical Medicine and Clinical Research focused on acute febrile illnesses, more specifically, malaria, and arbovirosis. Over the last four years, her focus has been on the study of COVID-19.

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Multipronged interventions to reduce surgical site infections: A multicenter implementation research protocol

Background: Surgical Site Infections (SSIs) are a major yet preventable cause of poor post-operative clinical outcomes, prolonged ICU/hospital stay, increased antibiotic consumption and added cost of therapy. Low-and Middle-Income Countries (LMICs) have disproportionately higher rates of SSIs as compared to high-income countries despite various national and international guidelines in place as multipronged, combined interventions are seldom used. The IMPRESS project aims to respond to this urgent need to identify and evaluate the quality improvement measures contextualized to the logistic constraints of LMIC settings such as India.

Methods and Analysis: We plan to adopt a multi-center longitudinal mixed-methods study design to be conducted over a period of 2 years in various phases. Phase 1 will be formative research with the objective of identifying knowledge gaps and baseline data collection. Phase II will involve co-development of multipronged interventions addressing identified barriers. Phase III will focus on the deployment of the selected multipronged interventions. Phase IV will be the post-intervention phase to evaluate the impact of the interventions. The study has

been prospectively registered with CTRI and is supported by a funding grant from the Indian Council of Medical Research, New Delhi. The Institutional Ethics Committee approval has been obtained from all the sites involved in the study.

Article Summary: Various interventions have been explored in research for the prevention of SSIs. However, these measures have not been standardized and multipronged combined interventions are seldom used, especially in resource-constrained settings. The strength of our study lies in the design adopted and the semi-structured format, which will allow us to remain open to exploratory findings and help us develop the interventions that are scalable in our healthcare settings. Secondly, our study will be pragmatic. The study deployed over seven sites will enable an understanding of the practical challenges in adopting the interventions and enhance generalizability.

Biography

Dr. Rachna is MD, DM clinical Pharmacology, PGIMER Chandigarh. Presently working as Assistant Professor, Department of Pharmacology, All India Institute of Medical Sciences (AIIMS), Bathinda. Areas of interest are Antimicrobial Stewardship, Therapeutic-Drug-Monitoring, Pharmacokinetic-Pharmacodynamics, Critical appraisal of published literature and Evidence based decision-making. Having a various publications in national, international journals to her credit. Dr. Rachna is Secretary, Antimicrobial Stewardship Committee, AIIMS Bathinda; Assistant director, Training committee, SASPI and Editorial member “Antimicrobial stewardship”, JASPI, India. She is course director for “Critical appraisal of published literature and research methodology for clinicians” by Royal College of Physicians and Surgeons of Glasgow, UK.

Ranjan Ramasamy*, Jyotsna S. Shah

ID-FISH Technology and IGeneX Laboratory, 556 Gibraltar Drive, Milpitas, CA 95035, USA

Advancing serodiagnosis of tick-borne borreliosis

Species of spirochete bacteria of the genus Borrelia termed Lyme disease Borreliae (LDB) cause Lyme Disease (LD) and others of the Relapsing Fever Borreliae (RFB) group cause Tick-Borne Relapsing Fever (TBRF). Clinical diagnosis of LD relies heavily on serodiagnosis, notably a cumbersome two-tier test procedure. We recently described Immunoblot Tests (IBs) with recombinant proteins from LDB and RFB for the serodiagnosis and differentiation of LD and TBRF, which showed many suspected LD patients to have TBRF in different continents. We also developed a US FDA-approved one-step IB test for LD. Both findings significantly advance the serodiagnosis of LD and TBRF.

Biography

Ranjan Ramasamy graduated in 1971 and then obtained a PhD in 1974, both from the University of Cambridge, UK. He was the Chairman of the National Science Foundation of Sri Lanka, Professor of Life Sciences at the Institute of Fundamental Studies in Kandy in Sri Lanka, Professor of Biochemistry in the University of Jaffna in Jaffna Sri Lanka, Professor of Immunology in the University Brunei Darussalam Medical School and held institute appointments at the Babraham Institute, Cambridge, UK and Scripps Clinic and Research Foundation, La Jolla, USA. And has more than 280 publications.

Raymond Anthony[1*], Andreia De Paula Vieira[2*]

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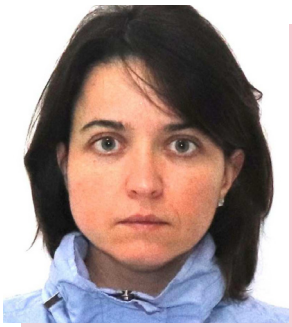
[2]Veterinarian and Independent Researcher, Curitiba, PR, Brazil



One Health Animal Disaster Management (OHADM) decision-making: Supporting veterinarians and animals in disasters

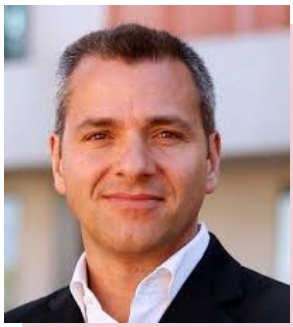
This presentation highlights how One Health Animal Disaster Management (OHADM) decision-making can support veterinarians, as members of incident management teams, to incorporate their professional duties regarding animal care and animal-human-environmental health in all stages of the disaster cycle, i.e., planning, mitigation, preparedness, response and recovery. We explore the role of veterinary expertise and positionality in disaster management through this integrated lens, which is aimed at improving the ethical standards for zoonotic disease management and animal health (including welfare) outcomes. Improving understanding of how veterinarians navigate the challenges they encounter while performing their professional duties throughout the disaster cycle can strengthen both disaster management practices and trust between these professionals and the communities touched by hazards like a spillover disease. OHADM is a moral and relational approach that is characterized by interdependency and interdisciplinarity. In the former case, human health is strongly interdependent with animal and environmental health. In the latter instance, interdisciplinary collaboration is vital to advancing interspecies health. OHADM can help set relationship-defined norms to minimize harms to vulnerable human and animal populations facing a hazard.

Our presentation examines the significance of advancing reflexive practices for veterinarians as members of incident command teams as a way to address key aspects of One Health Management. We consider the significance of positionality of veterinarians to mitigate and prevent harms to animals and people during a disease outbreak, in regards to duties to plan, safeguard and steward during a crisis. Positionality refers to the social location of the veterinarians, and may include their professional identity, their experience, expertise and norm-defined professional responsibilities or location in institutional hierarchies. We discuss how veterinarians address these duties when managing hazards involved in interspecies disease outbreaks that are magnified by imperfect knowledge, value judgments, power imbalances and accountability, many hands, technical challenges and personal or systemic biases associated with the design, development, and deployment of a disaster management plan. This work builds off the Wellanimal Project's results, which underscores that the development of plans and processes for One Health Management should be informed by animal health (including welfare) and the value commitments and ethical motivations of a diverse range of publics. The project underscores the pivotal role veterinarians play in all phases of disaster management in One Health collaboration and coordination.

Biography

Prof. Raymond Anthony is a Professor of Philosophy at the University of Alaska Anchorage, leads a research program on science-ethics communication, One Health, and emergency ethics. Prof. Anthony's work focuses on the intersection of agriculture, food, the environment, public health, and veterinary ethics and the Philosophy of Technology and has held posts at Iowa State University and the University of British Columbia.

Dr. Andreia De Paula Vieira graduated with her degree in Veterinary Medicine from Universidade Estadual de Londrina (2003) and has a M.Sc. in Animal Science from Universidade Estadual de Londrina (2006) and a Ph.D. in Animal Science from the University of British Columbia (2012). Dr. Andreia is a member of the SBEt Council for the Southern Region in Brazil and the general secretary of the Parana State Veterinary Council in Brazil.



Roberto Bobadilla*, Julia Gonzalez, Genevieve Vidal, Paola Basilio, Jaime Muñoz & Leandro Padilla

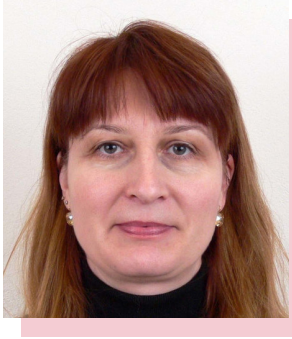
Research & Development Department, Desert King Chile S.A., Santiago de Chile, Chile

The characterization of a rhamnosilated triterpenic saponin from Quillaja saponaria Mol. reveals novel adjuvant, antibacterial, antiviral and antifungal properties

Quillaja is a rich source of triterpenic saponins known for their notable biological activities. In this study, we report the isolation, chemical characterization, and key biological properties of a novel saponin fraction designated as FR, which differs from traditional Quillaja saponins. Fraction FR primarily consists of a unique bidesmosidic glycoside of quillaic acid characterized by LC-MS/MS. It exhibits significant in vitro antibacterial, antifungal, and antiviral activities, as well as in vivo immunostimulant effects. These findings expand the potential applications of Quillaja saponins, particularly as vaccine adjuvants and antimicrobial or antiviral agents with promising clinical relevance.

Biography

Dr. Roberto Bobadilla studied Biochemistry at the Pontificia Universidad Catolica de Chile graduated as MS in 1998, and got his PhD degree in 2006 working at the German Research Center of Biotechnology (currently the Helmholtz Centre for Infectious Research). He has more than 15 years experience in the industrial sector with international patents granted in several countries including US, Europe, China and Japan. In 2021 joined Desert King, a leading company with offices in US, Chile and Mexico, focused on innovative natural ingredient solutions for the pharmaceutical industry.



Romana Moutelikova

Department of Infectious Diseases and Preventive Medicine, Veterinary Research Institute, Brno, Czech Republic

Zoonotic potential of rotaviruses detected in the Czech pig farms

Porcine Rotaviruses A (RVA) are known for their complex epidemiology, pathogenicity and great genetic diversity. From a veterinary point of view, RVA represents one of the most important causes of acute diarrhoea of young animals. Apart from the first days of life, piglets are at great risk of RV infection during the weaning period. Detailed characterization of rotaviruses provides valuable information on the presence of new genetic variants that may escape vaccine-induced herd immunity, as observed in the case of the human RVA vaccines. Phylogenetic analyses of rotavirus genome also reveal repeated intersections between the evolution of human and animal rotavirus strains which is probably a consequence of multiple events of transmission among various animal species. The interspecies transmission and subsequent gene reassortment are important mechanisms driving the diversity of rotaviruses and enabling the emergence of new pathogenic strains. Due to more specific detection methods, porcine Rotavirus C (RVC) is being reported in all parts of the world and is mostly associated with diarrhoea outbreaks in very young (<3 days) or weaned piglets. Rotavirus B (RVB) is another enteric pathogen of pigs which is (unlike RVA and RVC) mostly detected in co-infection with other rotaviruses. Generally, RV mixed infections seem to be frequent and may be triggered by weaning.

An ongoing epidemiological study focused on the prevalence of rotaviruses in Czech pig farms shows that more than 70% of the screened samples were positive for at least one rotavirus species. In the category of piglets after weaning, a high rate of rotavirus co-infections was detected (almost 90% of positive samples). All RVA-positive samples are submitted to sequencing and G-and P-genotypes are determined. So far, the most common G-types are G9, G3, G5 and G11, combined with different P-types, mostly with P[13] and P[6]. Phylogenic analyses of the Czech poRVA show some inter-species similarities (especially with human RVA) and also close relatedness with wild-boar RVA strains.

Acknowledgements: *This study was financially supported by the NaCeBiVet project of the Technological Agency of the Czech Republic (No. TN02000017) and by the Concept of Research, Development and Innovation of the Ministry of Agriculture (No. RO0523).*

Biography

Dr. Romana Moutelikova studied microbiology at the Faculty of Science in the Masaryk University in Brno, Czech Republic and graduated as MSc in 1994. Since then, Dr. Romana has been working at the Veterinary Research Institute in the Department of Virology. In 2015, received a Ph.D. degree from the University of the Veterinary Medicine in Brno. Also, participated in twelve research grants mostly dealing with viral swine pathogens and recently with viral pathogens of bees. Dr. Romana,s main scientific interest focuses on enteric viruses of pigs with zoonotic potential, primarily rotaviruses.

Dr. Sadia Faisal[1*], Dr. Zoya Malik[1], Samaah Fathima[2], Dr. Waqas Ahmed Khan[3], Dr. Abdul Salam[4], Dr. Snigdhendu Mandal[5], Dr. Ragunath Durairajan[5]

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An unusual presentation of Creutzfeldt-Jakob disease as a stroke mimic

A 56-year-old female patient presented with a five-week history of unsteadiness, progressively worsening double vision, unsteady handwriting and subtle cognitive decline with mild forgetfulness. She also had an intermittent dry cough.

A CT head scan was unremarkable. However, the subsequent MRI revealed bilateral diffusion restriction in the basal ganglia and thalami, more pronounced on the left. This raised suspicion for prion disease and prompted consideration of Creutzfeldt-Jakob disease (CJD) in the differential diagnosis. A cerebrospinal fluid (CSF) RT-QuIC test confirmed the diagnosis of CJD.

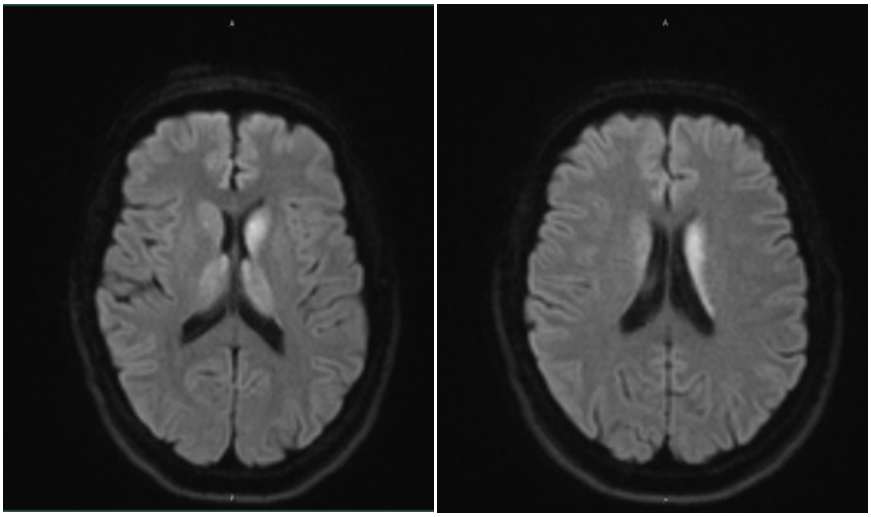
Her past medical history was significant only for hypertension. Extensive investigations, including neuroimmunology screening, serum immunoglobulin levels, and urine drug screening, were negative. Family history was non-significant for neurodegenerative disease.
On cognitive assessment, the patient scored 27/30 on the Mini-Mental State Examination (MMSE) and 16/20 on the MRC cognitive scale. Neurological examination revealed saccadic intrusions during smooth pursuit, which were hypometric in all directions. The patient had horizontal diplopia in all directions of gaze, more pronounced when looking to the left. This did not resolve with monocular occlusion or head tilt.

Her speech was slightly tremulous, although there was no evidence of dysarthria. Muscle tone was mildly increased in the right leg, and muscle strength was preserved throughout. Mild dysmetria was noted on the finger-to-nose test on the right side, with otherwise intact coordination. Ankle reflexes were absent, and all other reflexes were present.

The patient was unable to perform tandem walking and had an ataxic gait and required support from one person to mobilise. The patient was reviewed by the teams at the National Prion Clinic and the National CJD Surveillance Unit, both of whom confirmed the diagnosis based on her clinical features, MRI head and CSF RT-QuIC.

Following confirmation of diagnosis, the patient received community-based rehabilitation alongside palliative support and was subsequently discharged home.

This case report illustrates an atypical presentation of CJD. Patients presenting with cerebellar signs with other atypical features should have CJD considered in their differential diagnoses. This case also highlights the challenges in the early diagnosis of CJD, especially when initial symptoms are subtle. Advanced neuroimaging and specialized diagnostic tools such as the RT-QuIC assay are essential for accurate and timely diagnosis.



MRI HEAD WITH CONTRAST showing diffusion restriction in the bilateral basal ganglia and thalami, left more than right, findings were suspicious of CJD.

Biography

Dr Sadia Faisal, I completed my MBBS in 2017 from Jinnah Medical and Dental College, Karachi, Pakistan. Afterward, I undertook my FY1 role at Jinnah Postgraduate Medical Centre (JPMC). I then worked as a Resident Doctor for two years before relocating to the UK, where I successfully completed the PLAB exams. Currently, I am working as a Junior Doctor in the Stroke Department within the NHS.

Sanchutha Sathiananthamoorthy[1*], Farah Mahmood[2], Naomi Hughes[3], Preni Sinnakandu[1], Ryan Mate[1], Vinoy Ramachandran[1], Matt Lamaudière[1], Saba Anwar[1], Chrysi Sergaki[1]

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[2]School of Science and Technology, Department of Biosciences, Nottingham Trent University Nottingham, UK

[3]Cardiff School of Biosciences, Cardiff University, Cardiff, UK

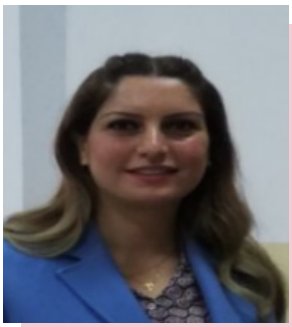
Development of AMR reference reagents for AMR gene detection and surveillance

Antimicrobial Resistance (AMR) is responsible for 4.95 million human deaths per year and is estimated to rise to 10 million deaths annually, if left uncontrolled. Accurate, sensitive and synchronised national and global AMR detection and surveillance efforts are crucial now more than ever and provide vital data that will help determine how we address this threat. Metagenomic sequencing has the potential to revolutionise AMR gene detection and surveillance. However, each step in the sequencing and analytical workflow is met with a variety of commonly used methods. Our previous work on validated World Health Organization Reference reagents for complex microbial communities has shown that different methodologies can lead to discrepant results. Furthermore, there are currently no means of standardisation in AMR detection and surveillance using genomic approaches, which renders the ground truth unknown amongst the plethora of available data.

With this in mind, we conducted a study with the following aims: (i) to develop and validate two AMR DNA bacterial community reference materials and (ii) to use these reagents to reveal any differences in community species and AMR gene representation, when sequenced using three different approaches: (1. Illumina 150bp and 2. 300bp metagenomic sequencing and 3. hybrid-Oxford Nanopore-Illumina metagenomic sequencing) and analysed by eight different bioinformatic pipelines. This work will shed light on the advantages and shortcomings of the different sequencing and analytical approaches and provide urgently required reference materials that can help establish the ground truth in future genomic studies.

Biography

Sanchutha Sathiananthamoorthy is a Microbiome Scientist at the Medicines and Healthcare Products Regulatory Agency (MHRA). Current work is on antimicrobial resistance detection and surveillance. Previously, Sanchutha focused on the role of the urobiome in urinary tract infections and the challenges faced with UTI diagnosis. Sanchutha completed her PhD in Microbiology at the Department of Renal Medicine at University College London (UCL), where she also worked as a postdoctoral researcher.



Sara Omar Swar Alahmady
Salahaddin University, Iraq

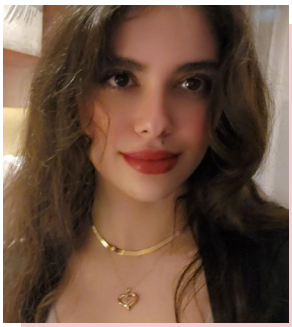
Ultrastractural and molecular characterization of sarcocystis apecies Derived from macroscopic sarcocysts of domestic sheep and goats in Soran City, Erbil, Iraq

This study aimed to identify Sarcocystis species isolated from macroscopic sarcocysts from naturally infected domestic sheep and goats using the molecular method, as well as investigating the morphological and the ultrastructural characteristics of the isolated species. A total of 1000 esophagi were collected from sheep and goats and examined for the presence of sarcocysts. Macroscopic sarcocysts were isolated from the infected esophagi, and Sarcosystis species were identified molecularly by 18S rRNA gene sequence analysis. Moreover, the ultrastructure of the sarcocysts was investigated by both scanning and transmission electron microscopy. The macroscopic sarcocysts were detected in 9.1% (91/1000) of the esophagi. The results of electron microscopy indicated the characteristic features of the macroscopic sarcocysts. The cysts contained numerous merozoites and banana-shaped bradyzoites. The bradyzoites were characterized by possessing a double-membrane pellicle and consisted of a conoid in one of the apices, numerous micronemes, two rhoptries, as well as a long, convoluted mitochondrion, subterminal nucleus, and several amylopectin granules. The partial analysis of the 18S rRNA gene presented that all isolates produced bands of expected sizes on gel electrophoresis. The findings from the phylogenetic analysis revealed that the identified Sarcocystis species were most closely related to S. gigantea, S. moulei, and S. medusiformis. To the authors' knowledge, this is the first time S. medusiformis has been recorded in goats. Goats and sheep can be proposed as alternative intermediate hosts for S. gigantea and S. moulei, respectively, cross-infection may also occur between them and the host specificity of these species of Sarcocystis is questionable.

Biography

Dr. Sara Omar Swar ALahmady studied Food science at the Salahaddin University, Erbil Kurdistan region, Iraq (2007-2012) Administration of Food Microbiology Laboratory in Department of Food Technology, College of Agricultural Engineering Sciences, Salahaddin University-Erbil, she was working as a technician in Food Microbiology Lab. Food microbiology (2014-2015). She finished M.Sc. degree on H. pylori bacteria (2015) and graduated as MS in 2014. Lecturer in the collage Teaching Practical Food Microbiology for undergraduate's student in Department of Food Technology, College of Agricultural Engineering Sciences, She received her PhD degree in 2021 at the Soran University in food microbiology, moleculer, parasite. Doctor of philosophy of Food Technology, (2018-2021) She finished Ph.D. on sarcocystis parasite in meat.

Responsibility: To help undergraduate's student in term of practical, e.g. enumeration of microorganisms (bacteria and fungi) in different food products by using culture media, isolation and identification of microorganisms via specific method and media.



Nabil A. Nimer, Seema N. Nimer*

University of Jordan, Jordan

Immunization against medically important human coronaviruses of public health concern

SARS-CoV-2 is a virus that affects the human immune system. It was observed to be on the rise since the beginning of 2020 and turned into a life-threatening pandemic. Scientists have tried to develop a possible preventive and therapeutic drug against severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) and other related coronaviruses by assessing COVID-19-recovered persons' immunity. This study aims to review immunization against SARS-CoV-2, along with exploring the interventions that have been developed for the prevention of SARS-CoV-2. This study also highlighted the role of phototherapy in treating SARS-CoV infection. The study adopted a review approach to gathering the information available and the progress that has been made in the treatment and prevention of COVID-19. Various vaccinations, including nucleotide, subunit, and vector-based vaccines, as well as attenuated and inactivated forms that have already been shown to have prophylactic efficacy against the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) and SARS-CoV, have been summarized. Neutralizing and non- neutralizing antibodies are all associated with viral infections. Because there is no specific antiviral vaccine or therapies for coronaviruses, the main treatment strategy is supportive care, which is reinforced by combining broad-spectrum antivirals, convalescent plasma, and corticosteroids. COVID-19 has been a challenge to keep reconsidering the usual approaches to regulatory evaluation as a result of getting mixed and complicated findings on the vaccines, as well as licensing procedures. However, it is observed that medicinal herbs also play an important role in treating infection of the upper respiratory tract, the principal symptom of SARS-CoV due to their natural bioactive composite. However, some traditional Chinese medicines contain mutagens and nephrotoxins and the toxicological properties of the majority of Chinese herbal remedies are unknown. Therefore, to treat the COVID-19 infection along with conventional treatment, it is recommended that herb-drug interaction be examined thoroughly.

Biography

Seema Nimer is a striving and passionate 3rd year medical student at the University of Jordan and had published a paper alongside the knowledgeable Dr. Nabil Nimer, whom she learned valuable and timeless experience from. Currently, Seema is one of the top-achievers at university and considers herself a research-enthusiast; and believes in the innovative promise of research and the undeniably vitality of discussing health-related events among her peers and it is worth mentioning love and strengths in public speaking and communication. Seema has a meta-analysis on its way to being published in the Expert Review of Hematology, also working on Cardiology-involved research, as well as another COVID-19 related research. She is optimistic about the destination her ambitions will get her to.

Shahd Mohammad[1,3*], Haneen Ghazal[3], Wafaa Rahimeh[3], Maqsood Khan[1], Mosab Al Balas[2], Faris El-Dahiyat[3]

[1]Clinical Pharmacy Department, Sheikh Khalifa Medical City (SKMC), Abu Dhabi, United Arab Emirates

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[3]Clinical Pharmacy Department, College of Pharmacy, Al Ain University, Abu Dhabi, United Arab Emirates

Comparative risk of acute kidney injury with piperacillin–tazobactam plus teicoplanin versus piperacillin–tazobactam plus vancomycin: A systematic review and meta-analysis of propensity score-matched studies

Background: Piperacillin–tazobactam combined with vancomycin is widely employed for broad-spectrum empiric coverage but has been increasingly associated with acute kidney injury (AKI). The comparative renal safety of substituting vancomycin with teicoplanin remains uncertain. This meta-analysis aimed to evaluate renal outcomes between piperacillin–tazobactam plus teicoplanin (TZP-TEI) and piperacillin–tazobactam plus vancomycin (TZP-VAN).

Methods: We searched PubMed, Scopus, and Cochrane Central for studies comparing TZP–TEI to TZP–VAN in hospitalized patients. The primary outcome was the incidence of AKI, defined according to KDIGO or RIFLE criteria. Statistical analysis was conducted using Review Manager 5.4 (Cochrane Collaboration), and heterogeneity was assessed using the I^2 statistic.

Results: A total of 908 patients were included from five cohort studies, four of which implemented propensity score matching to adjust for baseline confounding. The mean age of the included patients was 65 years, and the mean baseline serum creatinine concentration was 0.75 mg/dL. The TZP–TEI regimen was associated with a significantly reduced rate of AKI compared to TZP–VAN (OR 0.52; 95% CI 0.30–0.89; p = 0.02; I^2 = 51%). No statistically significant differences were observed between groups for AKI recovery (OR 0.68; 95% CI 0.41–1.12; p = 0.13; I^2 = 0%) or for 30-day all-cause mortality (OR 1.34; 95% CI, 0.77–2.32; p = 0.30; I^2 = 0%). Subgroup analyses stratified by AKI severity (KDIGO stages 1–3 or RIFLE criteria) demonstrated consistent directionality across stages, with no significant differences observed within propensity score–matched or non–matched cohorts.

Conclusion: The TZP-TEI combination was associated with a significantly lower incidence of AKI compared to TZP–VAN. Further studies are warranted to validate these findings, optimize teicoplanin dosing within the TZP–TEI combination, and inform TDM implementation in high-risk hospitalized patients.

Biography

Shahd Mohammad received her Bachelor's degree in Pharmacy in 2022 and completed her Master's in Clinical Pharmacy in 2025 at Al Ain University, UAE. She is currently a Clinical Pharmacy Resident at Sheikh Khalifa Medical City, Abu Dhabi. Her research interests include infectious diseases, antimicrobial stewardship, and antimicrobial therapeutics. She is dedicated to promoting evidence-based practice and aims to advance pharmacotherapy in infectious disease care.

Shova Shrestha*, Prakash Ghimire, Megha Raj Banjara

Central Department of Microbiology, Tribhuvan University, Kirtipur, Kathmandu, Nepal

Carbapenemase resistance genes in *K. pneumoniae* from clinical samples

Gram-negative *Klebsiella pneumoniae* are opportunistic pathogens and cause hospital and community acquired infections. Carbapenem-resistant *Klebsiella pneumoniae* (CRKP) are of particular concern due to the spread of antibiotic resistance genes associated with mobile genetic elements. Carbapenems are broad spectrum β- lactam antibiotics frequently used in the treatment of infections caused by multidrug resistant gram-negative bacteria. CRKP is a serious threat because it is significantly associated with higher mortality rate and hospital expenditures. This study aimed to determine the multidrug resistant and carbapenemase producing *K. pneumoniae* from a referral hospital in Nepal. The clinical isolates were collected from Tribhuvan University Teaching Hospital and processed at the laboratory of Central Department of Microbiology Tribhuvan University. The isolates were identified by Gram's staining, culture and biochemical tests. From different clinical specimens, *K. pneumoniae* were isolated and identified phenotypically. The MDR were determined by antibiotic susceptibility test using Kirby Bauer disk diffusion method following the CLSI guidelines. The phenotypic carbapenem resistance and ESBL producers were analysed by mCIM method and combination disk method respectively as per CLSI guidelines. The *VIM, NDM-1 and IPM* genes were detected by PCR. The high prevalence of CRKP and mobile genes emphasizes the need for continuous surveillance among the patients to detect the resistant strain and the implementation of infection control measures.

Keywords: *Klebsiella pneumoniae*, ESBL, Carbapenem resistance, CRKP genes, Clinical samples.

Biography

Mrs. Shova Shrestha is an Associate Professor at Trichandra Multiple Campus, Tribhuvan University, Nepal. She is currently pursuing her PhD at the Central Department of Microbiology, Tribhuvan University, Kirtipur, under the supervision of Assoc. Prof. Dr. Megh Raj Banjara, and co-supervision of Prof. Dr. Prakash Ghimire. Her research focuses on Antimicrobial Resistance (AMR) relevant to public health. She is now in the final stage of her PhD research. Mrs. Shrestha has published more than 15 research articles in scientific journals of Nepal.

Shree Govani

Kansas City University College of Osteopathic Medicine, Kansas City, Missouri, USA

Reactivation of human herpesvirus 6 in an immunocompetent patient with encephalitis: A case report

Human Herpesvirus 6 (HHV-6) is a common virus usually associated with roseola in children. However, reactivation in immunocompetent adults is particularly rare. This, however, can cause diagnostic challenges, which delays the identification and treatment. When HHV-6 reactivates in adults, it can lead to severe neurological conditions, such as encephalitis and viral meningitis. This case report describes a patient who was a previously healthy 54-year-old immunocompetent female. She presented to the emergency department with altered mental status, fever, and back pain. Initially, blood tests and imaging did not provide a diagnosis. We later performed a lumbar puncture due to concerns of a nervous system infection. Cerebrospinal fluid analysis revealed viral meningitis, and polymerase chain reaction testing confirmed HHV-6. The patient was initially treated with broad spectrum antibiotics and antiviral therapy, however following infectious disease consultation, the antibiotics and antiviral therapy was discontinued, and supportive care was initiated. The patient's symptoms significantly improved; however, she started experiencing postsequel symptoms, including a post dural headache, vestibular neuritis, neck pain, and dizziness. Further evaluation showed a cerebrospinal fluid leak as a complication of the lumbar puncture. This was treated with an epidural blood patch, which successfully resolved her symptoms. This case emphasizes the importance of considering HHV-6 when faced with unexplained nervous system infections in immunocompetent adults. Additionally, post-sequel symptoms, such as cerebrospinal fluid leaks following lumbar punctures, should be carefully monitored and appropriately treated. Early diagnosis and treatment of HHV-6 is crucial for favorable patient outcomes.

Biography

Shree Govani graduated with honors from Saint Louis University with a B.S. in Public Health and currently a medical student at Kansas City University College of Osteopathic medicine. Govani will receive her DO in 2026.

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A time-driven activity-based costing method to estimate the cost of personal protective equipment use in the emergency department during the COVID-19 pandemic

Background: During the COVID-19 pandemic, Personal Protective Equipment (PPE), including masks, gloves, gowns, and eye protection, became an essential safeguard for healthcare workers and patients. This study aimed to estimate the cost of PPE utilization in an Emergency Department (ED) from the perspective of the ministry of health within a universal healthcare system.

Methods: We used a Time-Driven Activity-Based Costing (TDABC) approach to determine the cost of a PPE bundle in the ED setting. In TDABC, the longer the duration of a care activity, the higher its associated cost. Observational data were collected for the 2021–2022 fiscal year from the CHUL ED, an academic hospital in Québec City, Canada, serving approximately 80,000 patient visits annually. The analysis included the time required for staff to perform donning and doffing protocols, the cost of disposable PPE items, and related overhead expenses. Donning and doffing durations were recorded in real-world conditions using time-motion software (UMT+, Laubrass), while financial data were retrieved from the hospital's accounting department. All costs are reported in 2021 Canadian Dollars (CAD).

Results: The mean time (95% Confidence Interval [CI]) for PPE donning and doffing was 2.2 minutes (2.1–2.3). The overall mean cost (95% CI) of a single PPE bundle in the ED was $14.45 (12.40–16.49). Since costs per minute differ by staff role, the PPE cost per bundle was estimated at $12.96 (10.89–15.03) for nursing assistants, $13.96 (11.91–16.00) for nurses, and $22.08 (20.00–24.16) for emergency physicians. For physicians, labor costs associated with donning and doffing PPE accounted for 49% of the total cost, compared to less than 20% for other roles. During the pandemic, expenses for enhanced protective equipment (e.g., respirators, face shields, fluid-resistant gowns, long gloves) were over seven times higher than those for standard PPE. In 2021, the total expenditure on PPE in the CHUL ED was estimated at $2.2 million (equivalent to €1.56 million), representing 8.5% of the department's $26 million annual budget.

Conclusion: This study highlights the substantial financial burden of PPE usage on healthcare systems and underscores the need for efficient resource allocation. Optimizing resource management is essential not only during routine operations but also in preparation for future public health emergencies.

Biography

Dr. Simon Berthelot is a Canadian emergency physician and researcher at the CHU de Québec – Université Laval, also an associate professor at the Faculty of Medicine of Université Laval since 2015 and a clinician-researcher funded by the Fonds de recherche du Québec–Santé (FRQS). Dr. Simon's research focuses on the clinical, economic, and environmental efficiency of healthcare services. Applies time-driven activity-based costing to estimate the costs of care and life cycle assessment to estimate the ecological footprint of healthcare services. Dr. Simon projects aim to reduce the overuse of healthcare resources and develop more efficient care pathways.

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Comparison of the ecological footprint of disposable versus reusable gowns in protecting healthcare providers and patients against the transmission of SARS-CoV-2

The healthcare sector has undergone significant transformation since the events of 2019, which marked the beginning of a major health crisis requiring substantial shifts in policies and practices. In response to increased concerns about the safety of healthcare workers, the use of Personal Protective Equipment (PPE), especially single-use items such as disposable gowns, soared. However, this increase raised important questions about the environmental impact of such practices and their potential effects on public health.

This study explores the ecological footprint and health consequences of using disposable versus reusable gowns in the emergency department of the CHU de Québec-Université Laval (Canada). Using a thorough Life Cycle Assessment (LCA) methodology, the study identifies key ecological challenges at each stage of gown production, use, and disposal. The findings indicate that reusable gowns present lower environmental impacts than disposable ones. Specifically, reusable gowns provide significant advantages, with 48 times lower human health impacts, nine times less pollution, and six times more favorable outcomes in terms of fossil resource conservation, highlighting the potential benefits of reusing gowns in healthcare settings.

However, the analysis also revealed that transitioning to reusable gowns requires careful attention to laundry management and operational decisions. While the manufacturing and disposal stages of reusable gowns show reduced environmental impacts, the cleaning process Generates High Greenhouse Gas (GHG) emissions. Sensitivity analyses suggested that the environmental impact on human health could be further reduced by 26% if the gowns were washed on-site at the hospital rather than being cleaned at another location.

Ultimately, this study underscores the importance of adopting sustainable practices to reduce the ecological footprint of healthcare systems, while also emphasizing the ongoing need to protect public health. Incorporating environmental factors into healthcare decision-making is essential for achieving sustainable development goals and ensuring the resilience of healthcare systems in the face of global challenges.

Biography

Dr. Simon Berthelot is a Canadian emergency physician and researcher at the CHU de Québec – Université Laval, also an associate professor at the Faculty of Medicine of Université Laval since 2015 and a clinician-researcher funded by the Fonds de recherche du Québec–Santé (FRQS). Dr. Simon's research focuses on the clinical, economic, and environmental efficiency of healthcare services. Applies time-driven activity-based costing to estimate the costs of care and life cycle assessment to estimate the ecological footprint of healthcare services. Dr. Simon projects aim to reduce the overuse of healthcare resources and develop more efficient care pathways.

Siwimol Phoomniyom*, Arisa Bromnavej, Chayanin Chanthara, Rujinan Thongsaard, Pathom Karaipoom

Public Health Laboratory, The Office of Disease Prevention and Control (ODPC) 11, Nakhon Si Thammarat, Thailand

Characterization of virologic-immunologic failure and discordance among new HIV-infected adults in the upper Southern Region of Thailand

Virologic-immunologic failure and virologic-immunologic discordance are vital for predicting clinical outcomes. In HIV-infected people, the CD4+ T lymphocyte count (CD4) and HIV viral load were used to track and assess the treatment response of Antiretroviral Therapy (ART). The objectives of this retrospective descriptive study were to examine the situation of virologic-immunologic failure and virologic-immunologic discordance, along with the study of factors, including sex, age, CD4 count before ART initiation, symptom, occupation, marital status, pregnancy status, previous infection, opportunistic infection while receiving ARV drugs, viral load >1,000 copies/ml after receiving ARV drugs, and changing ARV drug regimen during treatment to virologic and immunologic failure among new HIV-infected adults in the upper southern region of Thailand. They were treated with first-line ART for at least 6 months from 2021 to 2023. Data were analyzed using percentage, mean, median, chi-square, and odds ratio.

Of the 492 new HIV-infected adults, 68.3% were male and 31.7% were female, with an average age of 37.3 years. The median CD4 count before ART started was 250 cells/µl. Most participants (44.7% and 42.3%) received TDF+FTC+EFV and TLD for the first ARV drug. 31.5% of the participants worked as general employees. 54.9% of participants were single, and 70.7% were asymptomatic. Among these, 23 had virologic failure, 41 had immunologic failure, 2 had virologic and immunologic failure, 32 had virologic discordance, and 21 had immunologic discordance. Factors of age <30 years, viral load >1,000 copies/ml after receiving ARV drugs, changing ARV drug regimen during treatment, and pregnant participants were statistically associated with virologic failure (odds ratios of 3.5, 29.8, 0.4, 21.2, respectively). While the CD4 count <200 cells/µl before ART initiation was statistically associated with immunologic failure.

The percentage of new HIV-infected adults in this study was 2.2% of all new HIV-infected adult cases in Thailand, indicating that our measures for managing people with HIV were used well. Although the CD4 count before ART initiation in this study was higher than in the previous research in the eastern part of Thailand, most of the participants (43.9%) had a CD4 count of less than 200 cells/µl, reflecting the delay in HIV diagnosis, leading to a high chance of opportunistic infection. The proportion of virologic-immunologic failure and discordance in this study was low, which may be related to the high efficiency of current ARV drugs. Moreover, the proportion of immunologic discordance was higher than virologic discordance 2 times, indicating that only the CD4 count for monitoring the treatment may cause failure to diagnose. Therefore, to prevent

a misdiagnosis, viral load is crucial for testing. Several factors were statistically associated with virologic failure, but only a CD4 count <200 cells/µl before ART initiation was statistically related to immunologic failure. Interestingly, those with a viral load >1,000 copies/mL after receiving ARV drugs and those who were pregnant had a higher risk of developing a virologic failure, with odds ratios of 29.8 and 21.2 times, respectively.

Keywords: Virologic Failure, Immunologic Failure, Virologic Discordance, Immunologic Discordance.

Biography

Siwimol Phoomniyom studied medical technology at Thammasat University, Thailand, and completed her Master's in Microbiology in 2011 from the Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand. She is a medical technologist at the Office of Disease Prevention and Control Region 11, Nakhon Sri Thammarat, Department of Disease Control, Ministry of Public Health, Thailand. She specialize in AIDS, sexually transmitted diseases, and emerging diseases in the area of 11 Health Region and have about 7 years of experience in this field. Siwimol is interested in drug resistance research. She have published approximately 10 research articles.

Dr. Sowmitra Das*, Dr. Debarghya Chakraborty, Dr. Humayra Tabassum

Northern Care Alliance Foundation Trust, United Kingdom

Lemierre's syndrome following *Streptococcus anginosus* pharyngitis: An unusual case of a forgotten disease

Introduction: Lemierre's Syndrome (LS) is a rare complication of oropharyngeal infection characterized by septic thrombophlebitis in the Internal Jugular Vein. Despite this being a common occurrence before the era of antibiotics, with beta-lactam drug usage, this pathology has been a rare occurrence since the mid-1900s, especially in immunocompetent patients. While *Fusobacterium necrophorum* is the most common pathogen, other atypical microorganisms can also cause the syndrome. Progression of the acute infection further from the oropharynx leads to septic thrombus formation in internal jugular veins. This usually presents as unilateral neck swelling and tenderness. This gets further complicated as septic embolus can disseminate to other organs, most commonly being lungs resulting in end-organ damage.

Case Presentation: This case report presents a 42-year-old male with no significant medical history who developed Lemierre's syndrome following an atypical infection of *Streptococcus anginosus* pharyngitis. The patient initially presented with a sore throat, fever, neck pain, and swelling, which did not improve with standard antibiotics. The patient kept on worsening with increasing inflammatory markers and ongoing pyrexia. After one week of initial presentation, the patient developed pain and swelling in the neck. At this stage, imaging by CT scan of the neck revealed thrombosis of the internal jugular vein, a hallmark of LS as shown in Figure 1. Blood cultures identified Streptococcus anginosus as the causative organism. CT scan of the chest revealed multiple septic emboli in both lungs. The patient was started on antibiotics and anticoagulation therapy, leading to significant improvement, and he was discharged with a follow-up arranged by the multidisciplinary team.

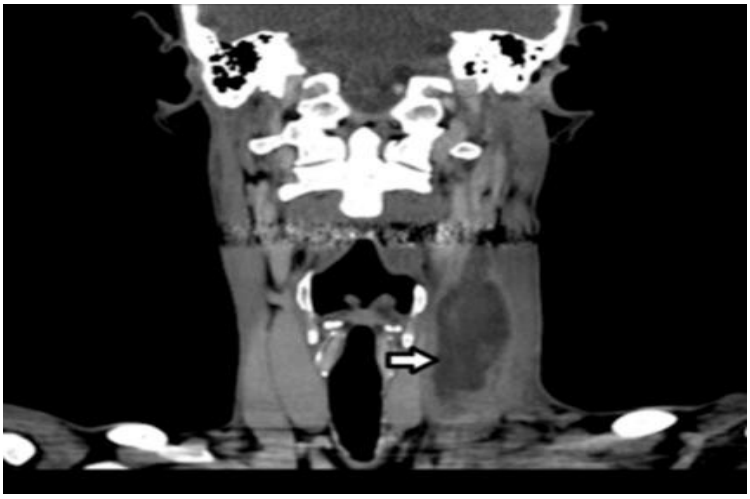

Figure 1: CT neck before anticoagulation: CT neck shows a thrombus within the left internal jugular vein measuring 2.6 x 2.6 x 8.2 cm (white arrow).

Discussion: This case emphasizes the importance of considering Lemierre's syndrome with high clinical suspicion in patients with persistent pharyngitis or unexplained neck pain and swelling. Early diagnosis and prompt intervention are crucial to avoid severe complications such as septic embolism and metastatic infections. While *Fusobacterium necrophorum* is typically associated with LS, this case demonstrates that other pathogens, such as *Streptococcus anginosus*, should also be considered. The patient's favorable outcome underscores the importance of timely treatment with appropriate antibiotics and anticoagulation. This case also highlights the need for larger population studies to ensure evidence-based guidelines for the treatment of Lemierre's syndrome are established. Further, it demonstrates how a multidisciplinary team approach and appropriate follow-up helped in the successful treatment of this rare yet serious condition.

Conclusion: In conclusion, clinicians should maintain a high suspicion of Lemierre's syndrome in patients with refractory pharyngitis or signs of internal jugular vein thrombosis, regardless of the pathogen. Early diagnosis and intervention are essential to prevent life-threatening complications and ensure complete recovery. This case serves as a reminder to remain vigilant for this often-overlooked condition.

Biography

Sowmitra Das, has completed MBBS in 2016 then worked in his own country for a couple of years in different specialities, since then joined in the Kings College Hospital NHS Foundation Trust as a clinical fellow and worked there more than 1.5 years and currently working as a register in the Northern Care Alliance Foundation Trust.

Maribel Acuña[1], Dilan Suárez[1], George Obregón[1], Carlos Yabar[1], Soledad Romero[1], Fany Cárdenas[1], Byelca Huaman[2], Carlos Benites[3], Fanny Valverde[1], Giovanny Vilcarino[1], Mariela Yaya[1], Susan Espetia[1*]

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HIV-1 subtypes and drug resistance in newly infected children through vertical transmission in Peru 2020-2022

Introduction: In Peru, the vertical transmission rate of HIV is 3%; however, the impact of Antiretroviral Treatment (ART) on the transmission of resistant HIV strains in infected newborns is unknown.

Objective: To determine molecular resistance to antiretroviral (ARV) and genetic diversity of HIV in children under 18 months of age infected by MTCT in the period 2020-2022.

Methodology: Blood samples from 51 HIV-1-infected children were genotyped using next-generation sequencing. The process consisted of RNA/DNA extraction, nested RT-PCR of the pol gene (protease-reverse transcriptase and integrase separately), preparation of genomic libraries, and sequencing by synthesis using the Illumina MiSeq platform. Consensus pol gene sequences at the 20% and 1% detection threshold were obtained using the HyDRA web server (https://hydra.canada.ca/). To verify the quality of the information obtained, the consensus sequences were imported into the WHO HIVDR QC Tool; those samples that did not pass quality control were discarded for subsequent analyses. The mutations associated with resistance and the ARV resistance profile were identified using the Stanford University HIV db program algorithm. Genetic diversity analysis was performed using phylogenetic program MEGA X, recombinant forms were identified using the consensus of the programs: Recombinant Identification Program (RIP-HIV), COMET HIV-1 and REGA HIV-1 Subtyping Tool 3.0.

Results: Sequence analysis at the 20% detection threshold (majority HIV population) revealed that 37.1% (19/51) of the samples presented at least one resistance-associated mutation; this resistance was mainly focused on Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs), with the most frequent mutations were K103N (42.1%) and G168S (26.3%). Genetic diversity analysis identified that 47 (92.2%) of the HIV sequences corresponded to subtype B, 4 (7.8%) were cases of intersubtype recombination of type A/G and B/F. On the other hand, only 38 cases passed the quality control at the 1% detection threshold (majority and minority HIV population), with resistance to any antiretroviral being found in 52.6% of cases, mainly focused on NNRTIs with 29 mutations, the most frequent mutations were K103N (45%), V106I (25%)

and G168S (20%), and more cases of intersubtype recombination (A/G and B/F) were also observed (13.2%).

Conclusions: These analyses suggest the importance of studying different minority populations that can add information on drug resistance and identification of more recombinant forms, which is key for the clinician when choosing the therapeutic regimen and thus improve the quality of life of this vulnerable population.

This work was funded by CONCYTEC, PROCIENCIA program, under contract No. 015-2019-Prociencia.

Biography

Susan Espetia Anco is a Biologist from the National University of Altiplano, Master in Microbiology from the Peruvian University Cayetano Heredia, second specialty studies in Genetics and Molecular Biology at the National University Federico Villareal. Principal Investigator and Co-Responsible for the HIV genotyping area at the National Reference Laboratory for Sexually Transmitted Viruses (LRN VTS) of the National Institute of Health, focused on the processing of HIV genotyping tests for the evaluation of resistance to antiretrovirals in patients receiving ART, also participates in the follow-up of molecular diagnosis in children exposed to HIV. She was a research assistant at the Infectious Diseases Research Laboratory of the Peruvian University Cayetano Heredia. She has participated in several investigations and publications on Chagas, rotavirus, norovirus and HIV.

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Novel antibiotic adjuvant exerts potent antimicrobial activity against MRSA and synergistically restores colistin activity in MDRO

Background: The rise in global burden of Antimicrobial Resistance (AMR) critically threatens human health. Multidrug Resistant Organisms (MDROs) are causing healthcare and community-acquired infections. In 2019, AMR of pathogens such as *Escherichia coli* (E .coli) and *Staphylococcus aureus* (S. aureus) were associated with 3.57 million deaths globally. AMR harboured by MDROs in particular affects last resort antibiotics' activity. There is a dire need for novel antibiotic adjuvants that can restore the activity of current antibiotics in MDROs.

Aim: This study is to investigate the antimicrobial activity of the novel antibiotic adjuvant (IL) alone or in combination with existing antibiotics to restore their effect against MDRO.

Method: The bacterial strains investigated are *S. aureus*, *Methicillin Resistant Staphylococcus Aureus* (MRSA), mcr-1 encoding Colistin resistant and sensitive E. coli. Bacterial growth curves were monitored for 4 hours and overnight in presence and absence of IL with or without ceftriaxone or colistin for MRSA and E. coli respectively. Various doses of IL were initially tested to identify the minimal inhibitory concentration.

Results: The novel antibiotic adjuvant IL exerted antimicrobial activity and inhibited the growth of S. aureus and MRSA in presence or absence of Ceftriaxone (10 µg/ml). The inhibitory effect was observed during the bacterial growth curve and remained highly significant after overnight incubation. In contrast, IL adjuvant alone did not inhibit E. coli strains' growth but exerted significant synergistic activity with colistin (10 µg/ml). The synergy of IL and Colistin inhibited E. coli strains encoding mcr-1 as well as those sensitive to Colistin. Taken together that data suggest that the novel antibiotic adjuvant IL can exert bactericidal activity and restore Colistin action against MDRO.

Conclusion: Novel antibiotic adjuvant IL alone possesses bactericidal activity against MRSA, whereas in combination with Colistin IL exerts synergistic activity against resistant E. coli strains.

Biography

Dr. Susu Zughaier is an Associate Professor of Microbiology at Qatar University College of Medicine and the Chair of Infectious Diseases Research Network. Obtained her MSc and PhD in Microbiology and Immunology from Cardiff University, UK. Postdoctoral training at Harvard Medical School in Boston, USA. Assistant Professor of Microbiology and Immunology, Emory University School of Medicine in Atlanta, USA. Research interests are antimicrobial resistance, vaccine development and AI in Medicine. Dr. Zughaier published more than 100 scientific research papers. Also, an active member of various international societies and serves as Associate Editor, Editorial board member and ad-hoc reviewer for multiple international journals.

Dr. Swati Kumari[1*], Dr. Padma Srikanth[2]

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Molecular characterisation of parvovirus B19 in patients with blood dyscrasias

Parvovirus B19 (B19V) is a single-stranded DNA virus that infects erythroid progenitor cells, often leading to complications such as transient aplastic crises, particularly in individuals with blood dyscrasias. This study focuses on the serological and molecular-genetic characterisation of B19V in a cohort of 109 patients with various blood dyscrasias. Real-time PCR detected Viral DNA in 2.8% of the patient cohort. Next-Generation Sequencing (NGS) identified unique genetic variants in the VP1/VP2 capsid protein genes, including mutations such as K4E, Q21K, and S247P, linked to immune evasion and increased pathogenicity. This study makes a significant contribution by providing India's first complete VP1 sequence of B19V to global databases, where submissions of this sequence are limited.

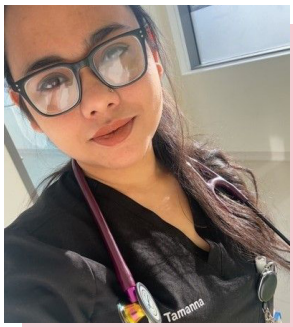
Phylogenetic analysis showed that most B19V strains were closely related to genotype 1A strains in the USA. The study also highlighted a strong association between B19V infection and chronic anaemia, underscoring the need for routine B19V screening in this vulnerable population.

These variants may influence viral pathogenicity by altering immune evasion mechanisms and structural stability. Such insights into the underlying mechanisms of B19V infections provide a foundation for future diagnostic and therapeutic strategies, especially in immunocompromised patients.

Keywords: Parvovirus B19, Blood Dyscrasias/Haematological Disorders, Molecular Genetics, Next-Generation Sequencing, Real-Time PCR, Viral Phylogenetics.

Biography

Dr. Swati Kumari, holding an MD in Microbiology and currently pursuing a PhD in Clinical Virology and Molecular Biology. Worked as an Assistant Professor at Sri Ramachandra Medical College, Chennai, India, since 2015. Dr. Swati has delivered numerous oral and poster presentations at various national and international conferences, primarily focusing on clinical virology. Her research centers on the molecular characterization of Parvovirus B19 and Adenovirus, particularly in immunocompromised individuals. Has been published research work in reputable peer-reviewed journals and contributed valuable genomic data to international repositories. Dr. Swati aim to enhance virological diagnostics and improve patient care through translational research.



Dr. Syeda Tamanna

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Surgical site TB— A hidden killer

With the constant modern approaches of minimizing surgical site infection, tubercular infection at the surgical site remains rare & undiagnosed for its delayed & atypical presentation in modern countries where TB is uncommon, which leads to marked deterioration in the patient's health & lifestyle.

Here I am discussing a case of a 43-year-old female with recurrent surgical site infection following abdominal abscess incision & drainage, not improving with multiple courses of antibiotics. With suspicion of atypical infection, tissue histopathology confirmed granulomatous inflammation, and wound culture confirmed *Mycobacterium tuberculosis*. The patient was commenced on anti-TB therapy for 8 weeks with an extension of isoniazid & rifampicin for 12 months, which resulted in tremendous improvement.

In the case of a chronic non-healing post-surgical wound, tubercular infection may be the hidden culprit, even if the patient doesn't have any contact history or typical signs & symptoms.

Immediate management may save the patient from long-term comorbidity. Also, proper investigation regarding the source of spreading TB may be beneficial for further control of the disease.

Biography

Dr. Syeda Tamanna has been working in the National Health Service in England as a junior specialist doctor in emergency medicine since 2024. Followed by MBBS degree in Bangladesh in 2020 & got GMC registration with a license to practice in 2023. Dr. Syeda has been working on various case studies & research projects, including national research trials. Recently her poster regarding the role of ultrasound in the diagnosis of purulent flexor tenosynovitis got accepted at the Oxford School of Emergency Medicine. Has been participating in local conferences regularly to build up a career in medicine.

Symonne Liu[1]*, Sofia Cadoret-Manier[2], Nicole Liu[2], Zane Ebel[2], Miguel Saucedo, Henry Bloom, Josh Pixley, Theresa Christiansen, Emily Scott, Team Thongthai, Leyton Lin, Tommy Elliot, Aneesh Mardikar, Max Huang, Daphne Volpp, Kevin Pomsanam, Evelyn Chua, Nico Rose

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[2]The College, The University of Chicago, Chicago, Illinois, United States

Virus-like-particle Inspired Particle-based Recombinant Schistosomiasis Vaccine (VIPR)

Schistosomiasis is a WHO-listed Neglected Tropical Disease characterized by the blood-dwelling trematode parasites of the genus Schistosoma. Currently, all schistosomiasis vaccine candidates based on recombinant subunit antigens have encountered setbacks at various stages of clinical trials, underscoring the formidable challenges in vaccine development. Critically, these subunit vaccines lack the three-dimensional macrostructure necessary for optimal recognition by B cells as pathogenic entities. Drawing inspiration from Professor Mark Howarth's group's SpyCatcher-SpyTag system, our objective is to conjugate schistosomiasis antigens onto virus-like-particle (VLP) scaffolds to create high-density antigen nanoparticles that are readily recognized as immunogenic by the immune system. Together with a batch of novel antigens discovered through unbiased phage display in January 2024, our aim is to present a diverse range of schistosomiasis antigens on VLPs and thoroughly characterize their biochemical properties.

Biography

Symonne Liu graduated from the University of Chicago with a double major in Molecular Engineering and Biological Sciences. With a strong background in genetics, bioengineering, synthetic biology, and computational biology, Symonne has been actively involved in research projects spanning RNA interference pathways, retrovirus resistance mechanisms, and Schistosomiasis vaccine development. At the Golovkina Lab, Symonne investigates the mechanism of retrovirus infection in congenic mouse lines. As a leader in UChicago Gene Hackers, Symonne spearheaded the development of a novel virus-like particle vaccine for Schistosomiasis and collaborated with the NIH-funded Schistosomiasis Resource Center to conduct immunogenic studies. Symonne is also a prominent figure in the field of synthetic biology, leading a team that was nominated for the Best Project in Infectious Diseases at an international synthetic biology competition. Their expertise in designing and engineering biological systems has contributed to groundbreaking advancements in vaccine development and therapeutic strategies. Beyond research, Symonne has engaged in biomedical entrepreneurship and pharmacogenomics initiatives, bridging the gap between lab discoveries and clinical applications. As the founder and board member of the Chicagoland Virology Journal Club, they are dedicated to fostering STEM education and scientific communication on infectious diseases.

Thomas Swift[1*], Stephen Rimmer[1], Prashant Garg[2]

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New materials to provide portable rapid diagnostic point of care detection of infectious diseases in 30 minutes - Gram-negative, gram-positive and fungal differentiation via enhanced hyperselective volume phase desolvation nanomaterials

New thermoresponsive polymer additive technologies have been employed to engineer targeted pathogenic organisms via capture / release technologies. The unique mode of action of binding allows them to target Gram-negative, Gram-positive, fungi, human dermal fibroblast, amoeba or other organisms via enhanced hyperselective volume phase transition (VPT) desolvation. This unique concept has been employed in a etiological swab to detect the presence of microbes in an animal in-vivo mixed infection model, with a 100% success rate at determining the infective species present with no toxicology observed.

A bespoke hydrogel formulation was developed to reduce non-specific binding outside of the VPT-additive hyper selectivity. An in-vivo animal trial was carried out to determine efficacy and safety. Test conditions were: G Control, G1 S. aureus, G2 P. aeruginosa, G3. C. albicans, G4a, S. aureus + P. aeruginosa, G4b P. aeruginosa + C. albicans. This study was performed on human ex vivo and animal cornea infection studies (rabbit) where after wear the rabbits were tested to determine prospective toxicity and immunogenicity of the device for a 4 week observation period post wear.

VPT-assisted binding of microbes was shown to provide excellent discrimination for reporting specified target organisms (S. aureus, P. aeruginosa and C. albicans) in all combinations studied. VPT-assisted binding of microbes was shown to provide excellent discrimination for reporting specified target organisms in all combinations studied. Ex-vivo corneas were used to develop the methodology of testing and established that a 30 minute wear time was ideal to provide accurate results. In the in vivo trial no issues with biocompatibility of apparent toxicity was indicated in any of the test specimens. Testing of the RDK showed 100% success in diagnosing single and mixed infections after half an hour of wear. Issues were found in the robustness of the test device (tearing) leading to a reformulation of our contact lens material to provide additional re-enforcement.

Further work has shown promising application in binding parasites and other biological species via thermoreversible binding. The VPT effect enhances binding affinity to the ligand meaning this novel technology has great promise in a range of scenarios across the health, food and biotechnology sectors.

Biography

Thomas Swift is an Associate Professor in Polymer Chemistry with a history developing functional biomaterials for medical devices. After graduating from the University of York he worked on functional materials at AkzoNobel Decorative Coatings Unit, before doing an industrially funded PhD in Polymer Chemistry at the University of Sheffield. In postdoctoral Research with the Wellcome Trust he was the lead materials scientist on an international team developing ophthalmic medical devices in collaboration with the LV Prasad Eye Institute in Hyderabad. Now at the University of Bradford he runs a research group and runs spin out company Molecular Titans Ltd.

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[2]National Hospital Kandy, Sri Lanka

Post COVID syndrome among COVID 19 patients at National Hospital Kandy, Sri Lanka

Introduction: Health care systems and societies being overloaded by long-term effects after SARS-CoV-2 infection. According to the UK's latest National Institute for Health and Care Excellence guidelines post-COVID-19 syndrome is when the symptoms persist beyond 12 weeks in the absence of an alternative diagnosis.

Method: Descriptive cross-sectional study, using 150 post covid patients done in post covid clinic of Medical Unit 1 (M1) at National Hospital Kandy (NHK) Sri Lanka. Simple random sampling method was used. Data collection was done by using interviewer administered data collection form. Data analyzed by SPSS 20.

Results: Out of 150 patients who had symptomatic covid 19 infections 79 (53%) were female. Mean age was 52y. Prevalence of post covid syndrome was 18%.out of 150 covid 19 patients 96 (64%) were completely vaccinated. Study showed that patients with ischemic heart disease, hypertension, and diabetes were more likely to develop post covid syndrome. Quality of life was adversely affected by post covid syndrome in 125 (83.3%) of patients. Also 22 (14.7%) lost their occupation. 54 (36%) post covid patients needed re-hospitalization. Chronic fatigue syndrome27 (18%), ischemic heart diseases17 (11.3%) and Interstitial lung disease 21 (14%) and hyperglycemia 10 (6.7%) were the commonly identified long term complications.

Conclusion: COVID 19 patients need long term follow up to detect development of post covid syndrome. Their quality of life gets adversely affected by post covid syndrome. Comprehensive rehabilitation services and special post covid clinics should be encouraged.

Biography

Dr. U A W L Perera studied medicine at Sri Jayewardenepura university Sri Lanka, graduated MBBS in 2009 and received MD-General Medicine from Sri Lanka in 2021. Also holds a Diploma in Elderly medicine. She completed MRCP part 1 and 2. Has been published several audits and quality improvement projects in journals and presented a research paper in EFIC conference in Spain.

Dr. Waleed Zahoor Bandey*, Dr. Himanshu Gul Mirani

Emergency Department, Midland Metropolitan University Hospital, SWBH NHS Trust, UK

"Not just a UTI": A rare presentation of acute urinary retention in a young woman due to genital herpes

Background: Acute Urinary Retention (AUR) is an uncommon emergency presentation in women and warrants a broad and systematic diagnostic approach. While obstructive, neurological, pharmacological, and infective causes are well-recognised, genital herpes is rarely considered the primary cause, especially in the absence of overt lesions or disclosure from the patient.

Case Presentation: A woman in her 30s, previously fit and well, presented with sudden-onset urinary retention and dysuria. She was sexually active but denied any history of trauma, recent illness, constitutional symptoms, or prior neurological issues. Her medical history was unremarkable, with no diabetes, no previous urinary symptoms, and no regular medications. Clinical examination revealed a non-pregnant abdomen, mild suprapubic tenderness, and no flank pain or Giordano's sign. Neurological assessment of the lower limbs was normal.

Despite no volunteered history of genital lesions, a meticulous genitourinary examination revealed vesicular lesions on the vulva, prompting consideration of genital herpes as the cause of her urinary retention. Elsberg syndrome, a manifestation of lumbosacral radiculitis often associated with HSV-2, was also considered as a differential.

She was catheterised and commenced on empirical treatment with oral valaciclovir, topical aciclovir, lidocaine jelly, and metronidazole, following collection of bloods, urine, Microscopy, Culture and Sensitivity (MCS), and genital swabs. Blood tests showed mildly elevated CRP (12 mg/L), WCC of 10.4×10^9/L, and normal renal and liver profiles. Urine microscopy revealed pyuria and haematuria, though cultures were negative. Genital swabs confirmed HSV-2 infection.

The patient was admitted for analgesia and monitoring for potential development of neurological signs. Over the next 48 hours, her pain improved and there was no clinical evidence of sacral radiculopathy. Post-catheter removal, she was able to void spontaneously. She was discharged with follow-up arranged through genitourinary medicine services.

Discussion: This case underscores the importance of a thorough history and physical examination in young female patients presenting with AUR. HSV-2 should be a differential in sexually active patients, especially when neurological symptoms or lesions are subtle

or unreported. Elsberg syndrome should be considered where lumbosacral radiculitis or neurogenic bladder features emerge. While obstructive, infective, and neurogenic causes are common considerations, functional and pharmacological causes should not be overlooked.

Conclusion: AUR in women is a red flag presentation and requires a comprehensive approach to diagnosis. Emergency physicians should be alert to rare infective causes such as genital herpes, even in the absence of overt symptoms. This case illustrates how thorough clinical examination and high index of suspicion can help avoid misdiagnosis and facilitate early targeted treatment.

Biography

Dr. Waleed Zahoor Bandey did Bachelor of medicine and Bachelor of Surgery from Acharya Shri Chander College of Medical Sciences, Jammu, India. After completing graduation, Dr. Waleed cleared his licence and registration to practice in United Kingdom. Currently has a work experience of more than 3 years in the NHS in United Kingdom rotating in various departments including emergency medicine and general and it's allied specialities.

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Cryptococcal meningitis without headache: A case report highlighting a typical presentation

Background: Cryptococcus neoformans meningoencephalitis is a common manifestation of cryptococcosis and disseminated infection, often seen in immunosuppressed patients and untreated AIDS. Common immunosuppression causes glucocorticoid therapy, organ transplantation, cancer, and other conditions. Symptoms include headache, fever, vomiting, and altered mentation.

Case Presentation: We present a 61-year-old female diagnosed with autoimmune hemolytic anemia on high dose glucocorticoid therapy who presented with dyspnea and febrile episodes. The initial workup suggested community-acquired pneumonia, but further testing with blood cultures revealed yeast cells, and the serum cryptococcal antigen titer was markedly elevated (1:4096). Even if with the absence of headache or other neurological symptoms, lumbar puncture was done due to a high index of suspicion, eventually revealing an elevated opening pressure of 51cm H_2O, and a positive CALAS in cerebrospinal fluid. The patient was then treated with liposomal amphotericin B and fluconazole as per treatment protocol, and with serial lumbar punctures showing a gradual decline in antigen titers and intracranial pressure. She remained clinically stable and was transitioned to consolidation therapy with fluconazole. This case highlights the need for early CNS evaluation in immunocompromised patients with high cryptococcal antigen titers, even in the absence of classical symptoms.

Conclusion: Cryptococcal meningitis should be identified in immunocompromised patients, especially when serum antigen titers are high, even if no neurologic symptoms. Early diagnosis, comprehensive evaluations, and prompt antifungal treatment are crucial for improved patient outcomes.

Biography

Dr. Rabe is currently a level IV neurology resident at Cardinal Santos Medical Center- University of the East Ramon Magsaysay Memorial Medical Center Consortium in Manila, Philippines. Plans to do a subspecialization either in Neurooncology or Stroke and Vascular Neurology. Dr. Rabe received his medical degree in 2019 at the same institution.

Zbigniew Dzialanski
Orebro University, Sweden

The baseline characteristics of patients with cognitive symptoms after COVID-19 infection- The PASC24 study

Background: A significant proportion of COVID-19 survivors experience persistent symptoms, which might include neurological and psychiatric disturbances. This phenomenon has been termed “Post-Acute Sequelae of COVID-19” (PASC). This study seeks to chart the cognitive effects of the COVID-19 infection among the patients referred to secondary care units in Örebro County, Sweden. The aim is to increase knowledge of the underlying biological processes; how biomarkers correlate with degree of symptoms, mapping their role as diagnostic markers over time (24 months).

Methods: Fifty-six participants with suspected PASC have been recruited and are undergoing neurocognitive, psychiatric, medical, and cognitive testing. They are being followed for 24 months with repeated measurements of their physical, psychological, and neurocognitive performance over time (three visits: Baseline, 12 months, 24 months) in correlation with biomarkers (blood, Cerebrospinal Fluid (CSF), faeces samples) and neuroradiological changes on Magnetic Resonance Imaging (MRI).

Results: The study population is predominantly comprised of females. Almost a half of study participants have a history of previous mental problems, most often episodes of exhaustion syndrome and depression. Depressive symptoms are also common at baseline testing.

The neurocognitive testing with two digital test batteries demonstrates that the domains most affected are "attention and tempo" and, to lesser extent, "executive function". The domains: "Memory" and "verbal function" tend to be less affected in contrast to the participants' reported symptoms such as forgetfulness and speech problems. A subgroup of study participants has positive biomarkers of neuroinflammation in CSF, in form of elevated levels of neurogranin and Neurofilament Light (NFL) without evidence of ongoing infection.

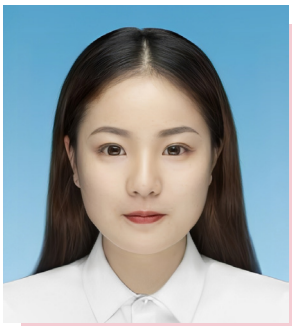
Limitations: Only the baseline characteristics of the study participants is reported here. The strength of the study lies in the follow-up of the study participants over a long period of time in correlation with a range of different biomarkers including CSF analysis to see how the disease has affected their physical, psychological, and cognitive function, their ability to be active, return to work, and their health-related quality of life.

Conclusion: Many individuals with cognitive symptoms after COVID-19 appear to have previous mental fragility. Neurocognitive testing appears to show a specific pattern of impairments with most impact on the domain: “Attention and tempo”. Positive biomarkers for neuroinflammation in CSF samples of some study participants warrant further investigation and careful follow-up.

Keywords: COVID-19, Neurocognitive Testing, Quality of Life, Neuropsychological Testing, CSF Analysis.

Biography

Dr. Zbigniew Dzialanski graduated as an MD from Warsaw Medical University in 1993, holds a double specialty in internal medicine and family medicine, the latter obtained in both Poland and Sweden. For the past 20 years, Dr. Zbigniew has been practicing as a general practitioner in Sweden, with a special interest in neurodegenerative diseases, in particular dementias. In 2021, joined the research group at Örebro University as a PhD student under the supervision of Professor Yvonne Freund-Levi. Dr. Zbigniew is responsible for the practical aspects of the PASC24 study, which follows patients with neurocognitive and psychiatric symptoms after a COVID-19 infection.



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A novel device for preventing Ventilator-Associated Pneumonia (VAP) in intubated patients

Background: Ventilator-Associated Pneumonia (VAP) occurs within 48 hours of mechanical ventilation and up to 48 hours after extubation, often caused by bacterial pathogens such as *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Klebsiella pneumoniae* etc in the secretion above the balloon around of the tube. Traditional prevention methods, such as antibiotics and regular suctioning, have limitations in removing bacteria from sputum during intubation. This device aims to use 222 nm UV-C light to more effectively kill pathogens in the secretion above the balloon, in order to reduce the risk of VAP.

Materials and Methods: The device uses a combination of 222 nm UV-C light and fiber optics to deliver light to the sputum area around the endotracheal tube and secretions above the balloon. The 222 nm UV-C light kills pathogens without harming human tissues. The fiberoptics are arranged in a helical pattern around the tube to ensure even light distribution, while a reflective membrane lay under the fiberoptics prevents UV light from entering the tube and forming harmful ozone. Additionally, a negative pressure suction system continuously removes ozone and secretions during treatment.

Results: The device effectively disinfects the sputum, ensuring a high level of pathogen elimination. The 222 nm UV-C light method overcomes the challenge of sputum viscosity, ensuring consistent treatment. The design also minimizes the risk of ozone production, a common issue with UV sterilization.

Discussion: This innovation provides a non-chemical method that targets bacteria in the sputum without introducing the risk of antibiotic resistance. It ensures patient safety by minimizing harmful ozone production.

Conclusion: The novel intratracheal tube with UV-C light sterilization device offers a promising solution to prevent VAP in intubated patients, providing a valuable complement to existing prevention methods.

Biography

Dr. Zhexi Lv earned medical degree in Pulmonary and Critical Care Medicine (National Key Discipline) from Tianjin University and conducted cutting-edge research at Tianjin University Chest Hospital under Prof. Xiaoyun Zhao. Specializing in medical-engineering integration, Dr. Zhexi Lv developed UV-C sterilization systems achieving 99% pathogen inactivation efficacy (2 patents pending), with findings published in 6 peer-reviewed papers. Interdisciplinary work of Dr. Zhexi Lv bridges translational medicine and biomedical innovation, focusing on clinical applications of pathogen control technologies.

BOOK OF ABSTRACTS

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POSTER PRESENTATIONS

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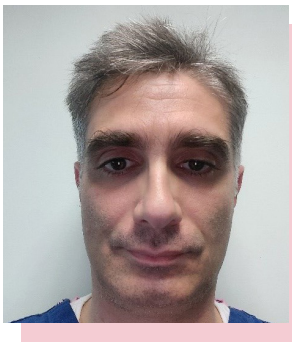
Clinical trials of the fully automated nucleic acid testing system (LabGenius) for VRE infectious disease

LabGenius is a newly developed in Biomedux Co (Republic of Korea) for Fully Automated Nucleic Acid Testing System (FANATS). It can be operated as, so-called, Sample-to-results, a point of care testing. Using this FANATS, we have performed the clinical trials to assess clinical sensitivity and specificity at Kosin University Gospel Hospital (IRB No. KUGH 2024-03-002). Total 400 samples of were tests and composed of 200 VRE Van A positives and 200 negatives. The clinical sensitivity and specificity were 99.5% identicaly.

Biography

Ms. AR Park studied Nano Science at the Inje University, Korea and graduated as MS in 2011, then joined and investigated at the R&D Center of Biomedlab Co. and LabGenomics Co. In 2017, Ms. AR Park has been joined at Biomedux Co. and mainly focused on the development of the NATS at the Biomedux R&D Center.



Dr. Aissar Abou Trabeh*, Adel Al-Alwan, M. Mujaheth, Eirini Synodinou

Wessex Kidney Centre, Queen Alexandra Hospital, Portsmouth-UK

Cytomegalovirus infection in the early phase post renal transplantation: A single centre experience

Method: We retrospectively observed all patients that were transplanted in our center between 1.4.18 and 31.3.21. We analyzed data on patients who have developed CMV viremia in the first year post transplantation and followed them for three years.

We focused on clinical characteristics that were transplant and patient related, lab parameters and CMV related variables, co-infection, rejection, and hospitalization rate. We analyzed the impact of IS amendments in order to review our practice and update our local guidelines.

Results:

The total number of renal transplant recipients were 205.

The number of patients identified with CMV viremia were 53, 25.8%. Average age at diagnosis was 56.5±14.5 years, M 53% and F 47%.

The majority, 52.8% of the recipients, developed CMV viremia following their first transplant and 20.8% following the second transplant. HLA MM of 2,3 and 4 were related with higher infection rate.

In relation to CMV IgG status, the higher infection rate, 59.6%, was seen in the group D+R+, while 21.2% in the D-/R+ group and 19.2% in the D+R- group.

CMV prophylaxis was given in only 18.9% of patients.

The rejection rate was calculated as 18.1% and this reflected all types of rejection, including BL-ACR. In this cohort, 17% of the recipients received antirejection treatment.

Co-infections were seen in 56.6% of recipients and hospitalization was required in 39.6% of them. Most common co-infections observed were UTIs, respiratory, EBV and BKV. Less frequently, GI related infections, HSV and two of the patients developed severe Covid infection and died.

Duration from transplantation to infection diagnosis was 119.6 days and duration from diagnosis to CMV resolution was 126.2 days. In the cohort of patients with lower CMV viral load that were monitored and not treated, resolution delayed by 30 days in comparison to the treatment group. Almost 40% of recipients required treatment.

IS was modified, as reduction by 50% of the MMF dose at diagnosis, in all patients who have received treatment, and in 57.5% of the recipients that were monitored and not under treatment for their CMV viremia. Median TAC trough level at diagnosis was 8.1.

There was no compromise in eGFR related to IS reduction and overall related to the CMV infection.

Indications for CMV testing were routine screening, acute graft dysfunction, GI, Respiratory & generalised symptoms, and less frequently neutropenia.

Conclusion: This single-center study provides valuable insights into incidence and characteristics of CMV infection in renal transplant recipients. The observed infection rate 25.8% in the first-year post transplantation underscores the significant burden of CMV in this population. Several risk factors were identified, including MM and CMV serostatus, with D+/R+ patients showing the highest infection rate. The study highlights the importance of CMV prophylaxis, which was underutilized in this cohort. The high rates of co-infections 56.6% and hospitalizations 39.6% emphasize the broader impact of CMV on patient outcomes. Importantly, IS reduction in response to CMV infection did not appear to compromise graft function. These findings underscore the need for vigilant monitoring, timely intervention, and tailored management strategies to mitigate the impact of CMV infection in renal transplant recipients. Future prospective studies and guideline updates should consider these results to optimize CMV prevention and management protocols in renal transplantation.

Biography

Aissar graduated from medical school–Damascus University, Syria 2005. Finished IM training in 2010 and renal training in 2012 in Damascus University Hospitals. Currently, specialty registrar in renal medicine at Wessex Kidney Centre–Portsmouth UK.

Carmen-Maria Cherciu[1], Maria Elena Mihai[1], Mariana Catalina Pascu[1], Sorin Dinu[2], Grigore-Mihaita Stan[3], Alina Elena Ivanciuc[1]*, Iulia Bistriceanu[1], Mihaela Lazar[1]

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Monitoring the characteristics of A/H1N1 influenza viruses circulating in post-2009 pandemic flu seasons in Romania

Background: In April 2009, Centers for Disease Control and Prevention (United States) identified a swine- origin influenza virus (H1N1) in human infection cases from Mexico. The new virus was genetically different from the seasonal one and spread rapidly into the human population around the world.

The first A/H1N1pdm09 flu cases were detected in Romania in June 2009. The post-2009 pandemic influenza seasons were characterized by the co-circulation of A(H1N1)pdm09 with either A/H3N2 or influenza B virus, except for the season of 2011–2012 when A/H3N2 prevailed and for the season of 2020-2021 when influenza monitoring was biased by the COVID-19 sanitary crisis.

Objective: The aim of this study was to provide a comprehensive picture of the antigenic and genetic characteristics of A/H1N1 viruses circulating in thirteen post-2009 pandemic flu seasons in Romania.

Methods and Materials: Nasopharyngeal exudates, tracheobronchial aspirates, and necrotic samples (lung fragments) were systematically collected according to national influenza surveillance methodology and to the European Centre for Disease Prevention and Control case definitions for influenza-like illness and severe acute respiratory infections. In house and commercial real-time RT-PCR assays were used for the detection of influenza A hemagglutinin and matrix genes. Antigenic characterization was performed on Madin-Darby canine kidney (MDCK and MDCK-SIAT1) cellular substrates and evaluated the recognition efficacy of the circulating influenza viruses by the current influenza vaccine-induced antibodies (specific ferret antisera) on guinea pig erythrocytes or turkey red blood cells, using hemagglutination inhibition test. Sanger and next- generation sequencing data (MiSeq Illumina and Oxford Nanopore) were obtained and used for molecular analysis with MEGA–X, MAFFT, IQ-TREE 2, and ITOL.

Results. The majority of influenza A/H1N1pdm09 viruses identified during the 2010-2017 seasons were antigenically similar to the A/California/7/2009 vaccine strain. For two consecutive seasons (2017-2019) the viruses in circulation were A/Michigan/45/2015-like. A/Brisbane/02/2018-like and A/Michigan/45/2015-like were detected during 2019-2020 season.

The 2021-2022 season was marked by a low-level circulation of A/Victoria/2570/2019-like (only one strain identified). In 2022-2023, A/Sydney/5/2021-like isolates were detected. The 2023-2024 season was characterized by the circulation of AH1/Sydney/5/2021-like and A/Victoria/4897/2022-like. At the beginning of the 2024-2025 season A/Victoria/4897/2022-like isolates were detected. Phylogenetic analysis revealed the resemblance of influenza A/H1N1 strains circulating in Romania with A/California/09 (2010-2011), A/St Petersburg/27/2011 group 6 (2012-2013), representative A/South Africa/3626/2013 subgroup 6B (2013-2016), representative A/Michigan/45/2015 subgroup 6B.1 (2016-2019), representative A/Norway/3433/2018 subgroup 6B.1A.5a (2019-2020), representative A/Norway/25089/2022 subgroup 6B.1A.5a and A/Sydney/5/2021 subgroup 6B.1A.5a.2a (5a.2a) (2022- 2023),, representative A/Sydney/5/2021 subgroup 6B.1A.5a.2a (5a.2a) (2023-2025).The sequences were made available in GISAID - Global Initiative on Sharing All Influenza Data.

Conclusions: Influenza viruses constantly evolve through antigenic changes. The A/H1pdm09 replaced seasonal A(H1N1) viruses and continues to circulate worldwide as a seasonal influenza virus together with subtype A(H3N2) and type B viruses. Continuous monitoring of influenza virus antigenic and genetic characteristics is important for establishing the vaccine composition which is yearly reviewed and to tackle future outbreaks.

Funding acknowledgement statement: This study was supported by the Romanian Ministry of National Defence, Ministry of Health, and Ministry of Research, Innovation and Digitalisation (PN 23 44 03 01) and by the “Vaccine Effectiveness, Burden and Impact Studies (VEBIS)” - project of the European Centre for Disease Prevention and Control (ECDC).

We are acknowledging: collaboration with Worldwide Influenza Centre, WHOCC for Reference and Research on Influenza, the Francis Crick Institute for influenza reference strains and specific ferret antisera offered.

Biography

Alina-Elena Ivanciuc, biologistt, graduated from the Faculty of Biology, at University of Bucharest, Romania, in 2007. In 2007 she joined the Viral Respiratory Infections Laboratory team, Cantacuzino Institute. Her main responsibility is molecular detection of viral respiratory viruses. She also participates in activities related to virus isolation on cell culture substrate and antigenic characterization of influenza viruses. She is involved in different national and international research projects (eg. VEBIS).

Alexia Gordon M.D.

Strategic Survivability Branch, Survivability and Effects Analysis Division, US Army Nuclear & Countering Weapons of Mass Destruction Agency, Ft. Belvoir, VA, USA

Revolutionary incidents: Exploiting naturally occurring outbreaks of disease for military gain

Military leaders and planners acknowledge the risks to military operations posed by deliberate attacks with biological weapons. However, the potential for adversaries to exploit naturally occurring disease outbreaks remains underappreciated. This paper examines two historical instances where natural diseases were leveraged for strategic advantage: The smallpox epidemics during the American Revolution and seasonal yellow fever during the Haitian Revolution. By analyzing letters, journal entries, and military orders, it highlights how the British used the Colonials' fear of smallpox to deter George Washington from attacking Boston and to force poorly timed assaults by Benedict Arnold and Richard Montgomery on Quebec. It also explores Washington's counterstrategy of troop inoculation. Similarly, it discusses how Haitian rebels exploited yellow fever's seasonal patterns to decimate Napoleon’s forces by keeping them in country until infection reduced their numbers and their combat effectiveness. These cases underscore the critical need for military planners and decision-makers to consider the operational impacts of natural disease outbreaks and identify opportunities to use them for strategic advantage in large-scale combat.

Biography

Dr. Alexia Gordon joined the US Army Nuclear and CWMD Agency, where she serves as the Human Survivability Lead, in 2022. Dr. Alexia is a licensed, Board-certified Family Physician with more than twenty years of experience practicing clinical medicine at the United States Military Entrance Processing Command, Veterans’ Administration Community-Based Outpatient clinics, and Moncrief Army Community Hospital. Earned an M.D. from Drexel University College of Medicine, an M.A. in National Security and Strategic Studies from the United States Naval War College, an M.A. in History from Southern New Hampshire University, and a B.A. in psychology from Vassar College.

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Mitigate cross-contamination hazards by sorting samples within a closed cartridge

Background: The isolation of pathogens and immune cells from hazardous samples is essential for immunological and infectious disease research. However, traditional droplet-based cell sorters pose risks of aerosol formation, exposure to infectious materials, and cross-contamination. The MACSQuant® Tyto® Cell Sorter, a benchtop microfluidic instrument, mitigates these risks through its single-use, closed-cartridge system.

In this study, we show that the MACSQuant Tyto Cell Sorter effectively contains particles as small as 1 µm and enables high-purity sorting of E coli without cross-contamination between samples.

Methods: To assess aerosol containment, a solution of 1, 2, and 10-µm Polysciences Fluoresbrite® YG Microspheres was transferred to a cartridge at 300 mbar. After sorting, the negative-chamber air filter was excised and examined using fluorescence microscopy.

Disposable Cyclex-D impactors were used to collect 1-µm microspheres during sorting, with an ultrasonic atomizer as a positive control and PBS as a negative control. The Cyclex-D was positioned above the negative-sort chamber filter while 5 mL of sample was processed. After collection, the Cyclex-D coverslip was removed and placed adhesive-side down on a microscope slide to assess particle transfer.

To test cell sorter cross-contamination, GFP-expressing E. coli (36% GFP+ in a 1×10^6/mL suspension) was mixed with wild-type E. coli and sorted. Following GFP+ bacteria sorting, a new media-containing MACSQuant Tyto Cartridge was processed for two hours. A bioburden test was then performed, followed by 14 days of culture to detect any contamination.

Results: The microspheres were easily distinguished from other particles at 10x due to their uniform shape, size, and bright fluorescence. Fluorescence microscopy confirmed no detectable microspheres in bead-containing cartridges or negative controls, while positive controls showed abundant microspheres.

E. coli sorting achieved 97% purity, and the bioburden test showed no bacterial cross-contamination (<1 CFU/mL).

Conclusions: These findings confirm that the MACSQuant Tyto Cell Sorter's closed-cartridge system effectively contains particles ≥1 µm, encompassing various prokaryotic and eukaryotic cells. Furthermore, it enables high-purity bacterial sorting with no cross-contamination, reinforcing its suitability for handling infectious and biohazardous samples safely.

Biography

Dr. Jin obtained his M.S. in Medical Nutrition from the University of Hohenheim, Germany, in 2013, and completed his Ph.D. at the Institute of Nutritional Science, Friedrich Schiller University Jena, in 2017. After a 2.5-year postdoctoral fellowship at the University Clinic Düsseldorf, Dr. Jin transitioned to industry in 2020, taking on the role of Global Product Manager for the MACSQuant Tyto Cell Sorter, focusing on advancing cell sorting technologies. His expertise includes medical nutrition, liver metabolism, and cell sorting technologies, bridging academic research with industry applications.

Debra Hawkins BSN, RN, CCRN
University of Oklahoma, United States

From awareness to action: Enhancing sepsis screening in rural hospitals through quality improvement

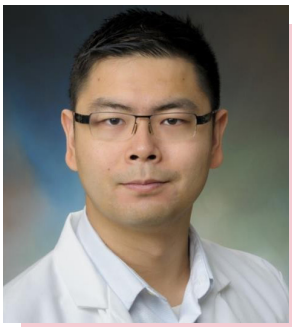
Sepsis remains a critical challenge in rural healthcare settings in the United States, where limited resources and inconsistent adherence to evidence-based protocols contribute to poor patient outcomes. This quality improvement project evaluated the impact of structured sepsis education and accuracy audits on nursing documentation for sepsis recognition and protocol adherence in two rural critical access hospitals. A three-month pre-education documentation accuracy audit established baseline data, revealing an accuracy rate of 52.57% at Hospital A and 49.70% at Hospital B. A one-month educational intervention focused on sepsis pathophysiology, early recognition, and adherence to evidence-based practice guidelines. Post-education audits demonstrated an improvement in documentation accuracy to 88.33% at Hospital A and 81.56% at Hospital B, with notable enhancements in the accuracy and frequency of sepsis screening within nursing assessments. These findings underscore the importance of combining targeted education with ongoing monitoring to reinforce best practices and improve patient outcomes in resource-limited settings.

Keywords: Sepsis Education, Rural Critical Access Hospitals, Compliance Audits, Evidence-Based Practice, Nursing Assessments.

Biography

Debra Hawkins, BSN, RN, CCRN is a dedicated emergency room nurse and doctoral candidate at the University of Oklahoma Health Sciences Center, where she is pursuing a Doctor of Nursing Practice (DNP) in Clinical Nurse Specialist (CNS) with an expected graduation in May 2025. With over 12 years of experience in emergency and acute care, Debra Hawkins is committed to improving patient outcomes in rural and underserved healthcare settings through education, research, and quality improvement initiatives.

Debra's doctoral research focuses on enhancing sepsis care in rural hospitals, emphasizing protocol adherence and targeted educational interventions to improve early recognition and management. As a Certified Critical Care Nurse (CCRN), Debra Hawkins brings specialized expertise in acute and critical care, ensuring evidence-based, high-quality patient management. In addition to her doctoral studies, Debra is also pursuing Pediatric CNS certification at the University of Missouri, further expanding her clinical expertise in pediatric acute and critical care. Beyond her clinical and academic work, Debra is a dedicated leader and mentor, serving as a Girl Scouts of America leader, where she fosters leadership and service among young girls. Upon completing her doctorate, she plans to pursue a career in rural emergency medicine, with a focus on advancing critical care education, improving sepsis outcomes, and strengthening healthcare access in remote communities.



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Invasive bloodstream infection caused by *Magnusiomyces capitatus*: Case report with clinical review

We present the case of a 62-year-old incarcerated African American male with a history of Coronary Artery Disease (CAD) post-stent placement, Chronic Obstructive Pulmonary Disease (COPD), and benign prostatic hyperplasia (BPH), recently diagnosed with Acute Myeloid Leukemia (AML). The patient underwent induction chemotherapy with 7+3 (daunorubicin and cytarabine), followed by a period of prolonged pancytopenia.

Despite compliance with prophylactic anti-microbial regiment with Levofloxacin, Trimethoprim-sulfamethoxazole, Valacyclovir, and Posaconazole, this immunocompromised patient developed neutropenic fever 9 days after completion of induction chemotherapy. Neutropenic fever persisted despite escalation of antibiotics therapy with broad spectrum coverage. Blood cultures collected on day 1 of neutropenic fever were positive for *Magnusiomyces capitatus*, a rare opportunistic fungal pathogen with high mortality in immunocompromised patients, particularly those with myelosuppression.

Literature suggests common sites of *Magnusiomyces capitatus* dissemination include the lungs, central lines, and gastrointestinal tract. In this case, the patient demonstrated persistent fungemia, confirmed by positive Fungitell assay. The patient was transitioned to Amphotericin B and Voriconazole. Transthoracic echocardiogram showed no vegetations, and CT of the abdomen and pelvis revealed fecal loading without evidence of bowel thickening or rectal abscesses.

The Karius test identified Staphylococcus species (likely contamination) but no additional actionable pathogens. Despite antifungal therapy and supportive care, the patient continued to have high fevers up to 39.5°C. Repeat bone marrow biopsy showing persistent 80% blasts, and a second cycle of chemotherapy was carried out without successfully inducing remission. The patient elected transition to hospice comfort care.

This case highlights the challenges of managing disseminated *Magnusiomyces capitatus* in patients undergoing induction chemotherapy for AML. Early detection, aggressive antifungal therapy, source control, and treatment of comorbidities are critical for improving outcomes. Furthermore, this case underscores the importance of multidisciplinary collaboration in managing infectious complications in immunocompromised hosts.

Biography

Dr. Li studied Biology and Economics at the University of Pennsylvania, Philadelphia, PA, USA, and graduated with honors as BA degree in 2011. Then attended medical school at the University of Texas Southwestern Medical Center, Dallas, TX, USA, and graduated with MD degree in 2015. Dr. Li completed three years of residency training in Internal Medicine at the University of Texas Medical Branch, Galveston, TX, USA. Joined the UT Medical Branch Hospitals after residency as a hospitalist and Assistant Professor in Internal Medicine and was promoted to the Medical Director of TDCJ Hospitalist Service in 2023. Has been working with students and residents in research.

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Rare focal infections by nontyphoidal salmonella: A case series of unusual presentations

Salmonella enterica serovar Typhimurium is a globally prevalent pathogen that is the most common bacterial cause of foodborne-related illness in the United States. This bacterium is part of the colon normal flora of many animals, including humans and other mammals, birds (especially domesticated poultry), reptiles, and amphibians. This microbe is usually limited to the large intestine; rarely will nontyphoidal Salmonella disseminate. When it does, it tends to cause focal infections. In contrast, Salmonella enterica serovars Typhi and Paratyphi are human-only pathogens that cause disseminated and potentially fatal typhoid fever. Our case report highlights three rare cases of focal abscess formation caused by nontyphoidal Salmonella in patients without specific risk factors or recent documented intestinal infection.

Case 1 involves a 71-year-old male who developed a lumbar epidural abscess following a lumbar 3-4, 4-5 laminectomy. Case 2 follows the care of a 41-year-old male with a previous diagnosis of Salmonella pneumonia and sepsis presenting with hepatic and psoas abscesses following an assault. Case 3 details a 66-year-old male with amyotrophic lateral sclerosis and a mechanical aortic valve who was directly admitted with sepsis caused by Salmonella with a concurrent myocardial infarction. These cases underscore the unusual infectious potential of Salmonella enterica serovar Typhimurium. Rapid identification and intervention are critical in these cases to prevent further dissemination and severe outcomes such as endocarditis. The optimal treatment of Salmonella Typhimurium abscesses remains case dependent. Many of these focal infections occur in immunodeficient patients and may result due to a continued infection. However, as indicated in our cases, immunocompetent individuals may still experience Salmonella abscesses, even in the absence of recent intestinal infection. Due to the high mortality rate and risk of severe infection associated with many of these presentations, continued documentation of clinical characteristics and treatment is imperative.

Biography

Dr. Honsa graduated with her B.Sc in Microbiology in 2005, and Honours in 2006, from QUT in Australia. She joined the laboratory of Dr. Maresso at Baylor College of Medicine in Houston. She received her PhD in 2012, studying anthrax. She completed a postdoctoral fellowship at St. Jude Children's Hospital in Memphis, in the Department of Infectious Disease, developing novel antibiotics and researching antibiotic resistance. She has been teaching medical students since 2019, currently an Associate Professor of Microbiology at Creighton University Phoenix. She works with students to publish case reports of unusual infectious diseases seen in Phoenix.

Eun Jung Choi
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Reversal of metabolic reprogramming as a therapeutic strategy in early sepsis

Sepsis is a critical condition characterized by dysregulated inflammation. In the early phase, innate immune cells undergo a metabolic shift from mitochondrial oxidative phosphorylation to glycolysis, fueling excessive cytokine production. To explore this phenomenon, we analyzed a publicly available RNA-sequencing dataset and found that CD14 monocytes from early sepsis patients exhibited elevated glycolytic gene expression and immune activation signatures.

To test the therapeutic relevance of reversing this metabolic state, we applied a small-molecule activator of the Pyruvate Dehydrogenase (PDH) complex to macrophages under inflammatory stimulation. This intervention enhanced mitochondrial function, restored TCA cycle activity, and suppressed lactate production and glucose uptake. Importantly, it reduced pro-inflammatory cytokine secretion without affecting upstream priming signals.

Targeted metabolomic analysis revealed that the treatment decreased the accumulation of metabolites, such as citrate and succinate, typically linked to inflammation-driven metabolic blockade. In a murine endotoxemia model, this metabolic intervention improved survival, reduced systemic cytokine levels, preserved liver function, and limited neutrophil infiltration in lung tissue.

Our findings highlight the role of metabolic reprogramming in the immunopathology of early sepsis and propose mitochondrial metabolic restoration as a therapeutic strategy. Targeting cellular bioenergetics in activated immune cells may attenuate early-phase inflammation and prevent subsequent organ damage in sepsis.

Biography

Dr. Eun Jung Choi received M.D. from Yeungnam University and Ph.D. in Biomedical Science from Kyungpook National University, where she studied immune metabolism in sepsis. Dr. Eun Jung Choi completed postdoctoral training and served as a research professor at Kyungpook National University School of Medicine. Currently, an Assistant Professor in the Department of Immunology at Daegu Catholic University School of Medicine. Dr. Eun's research focuses on immunometabolic regulation and mitochondrial function in inflammatory diseases. And, has authored multiple peer-reviewed articles and holds patents related to metabolic intervention in sepsis.

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The impact of air pollution on the incidence of respiratory infectious diseases in children in Kosova

Background: Air pollution is a growing public health issue in Kosovo, particularly in urban areas such as Pristina, where particulate matter (PM2.5 and PM10) levels often exceed safe limits. Exposure to elevated levels of air pollution has been linked to an increase in respiratory infections, which are among the leading causes of morbidity and mortality in children worldwide. In Kosovo, the pediatric population is especially vulnerable to the detrimental effects of air pollution, with respiratory diseases contributing significantly to hospital admissions and outpatient visits. This study aims to evaluate the relationship between air pollution and the incidence of respiratory infectious diseases in children, with a particular focus on the role of air pollutants such as PM2.5 and PM10.

Methods: This study utilized retrospective epidemiological data from the National Institute of Public Health of Kosovo (NIPHK), covering the period from 2020 to 2024. The data included the annual incidence of respiratory infections in children under the age of 18, classified by type (viral, bacterial, or mixed). Additionally, air pollution data, specifically concentrations of PM2.5 and PM10, were obtained from the Kosovo Environmental Protection Agency (KEPA) for the same period. Statistical analyses, including correlation and regression modeling, were performed to examine the association between air pollution levels and the rates of respiratory infections. Confounding factors such as seasonal variation, socioeconomic status, and pre-existing health conditions were controlled for in the analysis.

Results: The analysis revealed a significant positive correlation between elevated concentrations of PM2.5 and PM10 and an increased incidence of respiratory infections among children. Higher levels of particulate matter were associated with a notable increase in hospital admissions for acute respiratory infections, particularly in the winter months when pollution levels were highest. Furthermore, the incidence of viral infections, such as influenza and respiratory syncytial virus (RSV), showed a stronger association with air pollution compared to bacterial infections. The data indicated that children living in areas with high levels of air pollution had a 25% higher likelihood of being diagnosed with respiratory infections compared to those in cleaner air regions.

Conclusion: This study provides compelling evidence that air pollution is a significant environmental risk factor for respiratory infections in children in Kosovo. The findings highlight the need for stronger air quality regulations and interventions aimed at reducing particulate matter emissions, particularly in urban centers. Public health strategies should focus on reducing exposure to air pollutants, enhancing respiratory health monitoring, and increasing

awareness among parents and caregivers about the risks associated with air pollution. Future research should explore the long-term effects of chronic exposure to air pollution on pediatric respiratory health and investigate potential preventive measures.

Keywords: Air pollution, Respiratory infections, Pediatric health, PM2.5, PM10, Environmental risk factors,

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Establishment of a comprehensive assay platform for supporting the discovery of agents against acute and latent infections of herpes simplex viruses

Herpes Simplex Virus 1 and 2 (HSV-1 and HSV-2) are globally prevalent human pathogens associated with a wide range of diseases, from mild conditions such as herpes labialis to serious infections such as encephalitis. Like other herpesviruses, HSV can establish lifelong latent infection in neurons of the peripheral nervous system, which can reactivate under certain circumstances. In addition, latent HSV infection is potentially associated with certain types of cancers. Despite ongoing research, the mechanisms underlying HSV latency remain incompletely understood.

Current HSV therapies are effective against active infections, but have no impact on the latent viral reservoir in neurons. Furthermore, no effective vaccines for HSV-1 or HSV-2 have been developed. Consequently, the HSV-related diseases remain incurable and challenging to prevent. Addressing the prevention and treatment of HSV infections, particularly latent infections, remains a critical unmet medical need.

To expedite the discovery of prophylactic and therapeutic agents targeting HSV reactivation, as well as to further deepen the understanding of HSV latency, we have developed a comprehensive platform encompassing both in vitro and in vivo HSV assays.

Biography

Mr. Lin is professional in antiviral drug development with over 15 years of experience in the field, then earned an Master's degree from the Wuhan Institute of Virology, Chinese Academy of Sciences, in 2010. Following his graduation, Mr. Lin joined WuXi AppTec, where has been instrumental in advancing research and development efforts. Currently, leads a team of more than 60 researchers, spearheading projects that encompass a broad spectrum of virology and microbiology. Under Mr. Lin’s guidance, the team has conducted efficacy studies for over 20 different viruses and more than 130 distinct bacterial and fungal, catering to the diverse needs of various clients.

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Isolated internal jugular vein thrombosis as the initial indicator of disseminated tuberculosis

Tuberculosis is a highly prevalent communicable disease with the most common presentation being of pulmonary origin. It is mostly found in the South Asian and Sub-Saharan African regions. One possible extrapulmonary manifestation is that involving the central nervous system, which poses a diagnostic challenge as it shares common traits with other infectious entities. Of the rare potential complications of tuberculosis is predisposition to venous thrombosis. Only a few cases have been reported in literature with the sites being in the lower limbs and in the brain.

A previously healthy 24-year-old woman presents with asymptomatic neck swelling. Ultrasound of the neck showed unprovoked internal jugular vein thrombosis. Anticoagulation was initiated. A month later, she developed a first-time seizure episode while in her home country and empiric levetiracetam was started. CT imaging of the neck further revealed enlarged necrotic paratracheal lymph nodes. Findings were concerning for high grade lymphoma. Lymph node biopsy was deferred due to travel plans. Later on, patient presented with increasing shortness of breath and occasional headaches. Head CT was performed which showed a large hypodensity involving the white matter of left cerebral hemisphere, associated with brain oedema with underlying lesions causing mass effect with midline shift. An MRI of the head done for further characterization was notable for several ring-enhanced lesions. The differentials included tuberculomas, neurocysticercosis, toxoplasmosis, septic emboli and lymphoma. Mediastinoscopy lymph node biopsy was carried out following the infectious disease team recommendation. Tissue sample showed necrotizing granulomatous lymphadenitis. The diagnosis of disseminated tuberculosis was made and antitubercular medication was initiated.

The case highlights the diagnostic challenge posed by overlapping symptoms and radiologically indistinct findings seen in both infectious and lymphoproliferative conditions. This emphasizes the importance of tissue sampling for definitive diagnosis and taking into consideration the epidemiological determinants of tuberculosis to help navigate such cases. Moreover, it also affirms the importance of viewing tuberculosis as a potential risk factor for venous thrombosis.

Biography

Hamda studied medicine at Weill Cornell Medicine in Qatar and graduated with an MD in 2024. Following the graduation, Hamda then joined the Internal Medicine residency program at Hamad Medical Corporation.

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Identification of airborne fungus in residential environments that contribute to allergic bronchopulmonary asthma: Case report

Allergic Bronchopulmonary Mycosis (ABPM) is a pulmonary hypersensitivity disease to various fungi. The most common causative *Aspergillus fumigatus*, however, there are other saprophyte fungi that have been identified that cause ABPM such as *Candida albicans, Bipolaris spp, Schysophillum commune, Alternaria, Cladosporum and Exophialia pisciphila*. These fungi trigger types I and III hypersensitivity reactions, leading to manifestations such as eosinophilia, high IgE levels, and specific IgE and IgG antibodies against fungi. Also presents with recurrent transient radiographic infiltrates and bronchiectasis, there is a potential lung function decline, lung fibrosis, and irreversible damage if not diagnosed and treated early (1). Treatment typically involves systemic corticosteroids and antifungal drugs. Recurrences are common, and prolonged treatment can lead to adverse effects and drug resistance.

Given the importance of the presence of airborne microorganisms intra domiciliary and the frequency of patients diagnosed with asthma attending the INER, we aimed to search for fungi isolated in situ in the homes of patients with suspected allergic bronchopulmonary asthma. This study involved one patient with suspected ABPM without documented allergic sensitivity. Allergic sensitivity testing through cutaneous (skin prick), intradermal methods, and precipitin profiling was performed in the patient to identify immune responses to specific allergens.

The approach for identification of fungal allergens was made as follows: 1) Air sampling using opened Petri dishes with malt extract agar to capture and culture fungi from indoor air, 2) standard mycological methods for identified fungi, 3) Western Blot 1D to serum's patient and 4) DNA extraction, PCR and sequencing for identification of each genus and species. The colonies grown in the cultures were analyzed by optical microscopy and the genus and species of the isolates was determined by the DNA amplification of the Internal Transcribed Spacer (ITS) region of nuclear ribosomal DNA (ITS). From the positive precipitin reactions the antigen was recovered, the diagnosis of allergic bronchopulmonary mycosis caused by *Rhizopus stolonifer* and *Penicillium crustosum* was confirmed in the patient through clinical examination, positive precipitins, confirming immunoreactivity towards the patient's serum by Western Blot 1D and by comparing the sequence of the amplified ITS in the NCBI Database.

Our patient received oral glucocorticoid for 12 weeks with good clinical response and a 25% reduction in total IgE levels.

In conclusion, saprophytic fungi found indoors can play a significant role in the development and severity of allergic bronchopulmonary asthma, particularly through mechanisms involving sensitization and immunomodulation.

Biography

Dr. Torres Guerrero PhD graduated in 1991 at Centro de Investigación y de Estudios Avanzados IPN, México. After a 3-year postdoctoral fellowship at UCSF working with the research group of Dr. Jeffrey Edman, joined the Medicine Faculty at the Universidad Nacional Autonoma de México working with pathogenic fungi such as *Sporothrix schenckii*, *Candida albicans* and *Naganishia diffluens*.

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Human IgG responses to anopheles gambiae immunogenic salivary proteins in urban and rural populations of Burkina Faso: Biomarkers of exposure to malaria vector bites

Malaria control programs would be greatly facilitated by developing new tools for rapidly assessing malaria transmission intensity. In malaria-endemic areas like Burkina Faso, human populations are frequently exposed to immunomodulatory salivary components injected during mosquito blood feeding. Numerous studies have examined parasite immunity. However, there are few data available on vector immunity as a means of assessing malaria transmission in sub-Saharan Africa. The present study aims to compare the IgG response specific to salivary gland extract (SGE) of An. gambiae in populations living in urban areas and those living in rural areas in Burkina Faso.

A cross-sectional descriptive study was carried out in two sites, Ouagadougou and Sapouy, where blood samples (n=676) from children (0–15 years) and adults were collected. After An. gambiae salivary proteins isolation (entomological data), antibody (IgG) response to those salivary glands extracts were evaluated by ELISA, representing a proxy of An. exposure. The difference in the antibody concentrations between groups was tested using the parametric tests (Student test and ANOVA) and the nonparametric Mann-Whitney U (Wilcoxon rank-sum) test. All differences were considered significant with a $p < 0.05$.

The study population consisted of 63.0% males and 37.0% females (average age = 31.2 ± 17.8 years). The IgG antibodies against An. gambiae salivary protein were present in all participants of the study. Urban participants demonstrated greater exposure to An. gambiae bites compared to rural ones ($p < 0.0001$). The mean IgG level was higher in secondary school children compared

to primary school children ($p < 0.0001$). Organic cotton farmers were highly exposed to An. gambiae bites compared to conventional cotton farmers ($p = 0.0027$).

The search for IgG specific to mosquito salivary gland extracts as immunological biomarkers in populations in Burkina Faso allowed us to show that the level of exposure to mosquito bites is strongly influenced by the living environment and the use of insecticides in agriculture.

Keywords: Malaria, IgG antibodies, Salivary proteins, An. gambiae bites, Burkina Faso

Biography

Dr. Hien Y. Esther studied Immunology at the AIX Marseille University, France and graduated as MS in 2011. She then joined the research group of Dr. Bénédicte DARGENT at the CRN2M, CNRS AIX Marseille University. She received her PhD degree in 2014 at the same institution. After two years postdoctoral fellowship supervised by Dr Mireille MONTCOUQUIOL at the Neurocentre Magendie Bordeaux, France; she obtained the position of an Associate Professor at the Université Joseph KI-ZERBO.

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Effectiveness of surveillance tools in determining drivers of dengue case incidence and vector density in Gujranwala, Pakistan

Background: Dengue fever remains a significant public health concern in Pakistan, with twelve large outbreaks over the past three decades, culminating in an astonishing total of 286, 262 morbidities and 1,108 mortalities. Haphazard urbanization, climate change, and insufficient vector control have contributed to the spread of the disease. This study focuses on the temporal and spatial dynamics of Dengue incidence in Gujranwala, Punjab, from 2020 to 2023, to understand year-over-year trends in disease spread and vector density.

Methods: This secondary data analysis utilizes dengue case records and vector surveillance data collected between 2020 and 2023 in Gujranwala, Pakistan. Time-trend analysis was conducted to compare case incidence and vector density across years, exploring changes in patterns due to environmental and societal factors. A logistic regression model was also developed to assess the contribution of variables such as geographic location, fever, associated symptoms, and blood markers (WBC count and platelet count) to dengue diagnosis, aiming to identify potential areas for surveillance improvements.

Results: The sequential yearly comparison showed a marked decline in confirmed dengue cases from 2020 to 2023, despite an increase in suspected cases and improved vector surveillance. The regression analysis revealed significant predictors of dengue cases, including geographic region, fever, and thrombocytopenia, whilst the ROC curve suggested a strong diagnostic accuracy with an AUC of 0.80. These findings indicate that although the number of confirmed cases decreased, enhanced surveillance efforts have uncovered more potential hotspots, improving overall dengue management.

Conclusion: The analysis highlights the importance of long-term monitoring of vector density and case incidence to identify patterns in dengue transmission. Improvements in vector surveillance, combined with the logistic regression findings, suggest areas for enhancing early detection and targeted interventions, particularly in high-risk towns of Gujranwala.

Biography

Dr. Hira Ghuman studied Medicine at the University of Manchester, United Kingdom and graduated with MB ChB (Honours) in 2020. Dr. Hira has been working clinically as a junior doctor in the United Kingdom since graduating. Throughout the years in medical school and post-graduation, has presented various clinical research at a handful of national and international conferences, as well as having published research articles and case reports. In June 2022, Dr. Hira completed a PG Certificate in Medical Education, also from the University of Manchester and embarked on an MPH from Imperial College London in 2022 and completed her MPH with Merit in 2024. Dr. Hira's final research project, under the supervision of Dr. Rawson, focused on effectiveness of surveillance tools in determining drivers of Dengue Case Incidence and vector density in Gujranwala, Pakistan.

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Septic thrombophlebitis and embolic complications in an 18-year-old: A rare case of Reverse Lemierre's Syndrome

This report describes a rare instance of an 18-year-old male presenting with a history of right knee strain who developed fever, pain, and difficulty walking. The patient was first evaluated for suspected sepsis complicated by polyarthralgia. He later developed worsening respiratory symptoms and was referred to our center. Imaging studies revealed significant findings, including an MRI of the right lower limb showing edema and collection in the vastus lateralis and an ultrasound confirming deep venous thrombosis in the right distal saphenofemoral and popliteal veins. Culture results from the right thigh abscess grew *Staphylococcus aureus*. A chest X-ray revealed bilateral peripheral opacities, which were subsequently confirmed as septic emboli on a computed tomography pulmonary angiogram. These findings were indicative of a rare presentation of Reverse Lemierre's syndrome secondary to pyomyositis with septic thrombophlebitis and pulmonary septic embolism. This case highlights the importance of recognizing reverse Lemierre's syndrome as a potential diagnosis in young patients presenting with sepsis, pyomyositis, and respiratory symptoms, particularly in the context of musculoskeletal infections.

Biography

Dr. Hrishikesh Suryawanshi is a final-year postgraduate resident at Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, secured a national rank of 72 in a highly competitive examination. Dr. Suryawanshi completed MBBS in 2021 with distinction and was awarded a gold medal. Also served as the General Secretary of the Student Council and received the TATA Scholarship for Educational Excellence. Dr. Hrishikesh's academic achievements and leadership roles reflects commitment to advancing medical knowledge and patient care.

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Clinical trials of the fully automated nucleic acid testing system (Labgenius) for CT/NG STI diseases

LabGenius is a newly developed in Biomedux Co (Korea) for Fully Automated Nucleic Acid Testing System (FANATS). It can be operated as so-called, sample-to-results, a point of care testing. Using this FANATS, we have performed for clinical trials for CT/NG STI infection disease at Chung-Ang University Hospital (IRB No. 2409-009-614). Total 450 samples of women's vaginal swabs were tests. The test samples composed of 150 CT positives, 150 NG positives and 150 negatives and collected by GC Laboratory (YongIn-City, Korea, IRB No. GCL-2024-1057-03). The clinical sensitivity and specificity of NG were 100% and 99.7% respectively. The clinical sensitivity and specificity of CT were 98.7% and 100% respectively.

Biography

Ms. HJ Yang studied Life Science at the Geonggi University, Korea and graduated as BS in 2019, then joined the research group of Dr. Ae Ja Park at the R&D Center of Biomedux Co. Ms Yang has mainly focused on the development of the FANATS at the Biomedux R&D Center.

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Performance of gold and selenium nanoparticles in lateral flow assays for HIV p24 detection

Human Immunodeficiency Virus (HIV) remains a significant global health challenge, necessitating the development of effective diagnostic tools for early detection and timely intervention. Among the various biomarkers for HIV detection, the p24 antigen serves as a pivotal marker, especially during the acute phase of infection, where viral replication and contagiousness are high, but seroconversion has not yet occurred. The ability to detect p24 antigen in the early stages of infection offers a crucial opportunity for prompt diagnosis, enabling early treatment strategies. Lateral Flow Assay (LFA) is a widely adopted diagnostic technique due to its simplicity, rapidity, and cost-effectiveness, particularly suitable for point-of-care settings. LFA systems, when tailored for p24 detection, facilitate fast and reliable HIV diagnosis without the need for specialized laboratory infrastructure.

Incorporating nanoparticles into LFA systems has significantly enhanced their sensitivity and detection capabilities, particularly for low-concentration biomarkers such as p24. Gold (Au) and Selenium (Se) nanoparticles are among the most commonly employed materials in LFA applications, owing to their distinct optical properties, ease of functionalization, and stability. Gold Nanoparticles (AuNPs), are widely used due to strong optical properties that provide high-detectable signals, while selenium nanoparticles (SeNPs) provide unique optical behavior and promising alternatives in various environmental conditions.

This study investigates the application of different-sized gold and selenium nanoparticles in the LFA-based detection of p24 HIV antigen. By exploring nanoparticle size optimization, the study aims to improve assay sensitivity and specificity. The findings of this work underscore the significant impact of nanoparticle size on the overall performance of the LFA system, demonstrating the potential of both AuNPs and SeNPs as highly efficient labels for p24 detection. The results have important implications for the development of more sensitive, reliable, and accessible LFA-based diagnostic tools for HIV, paving the way for advanced point-of-care diagnostic solutions.

Biography

Ms. İlayda Erakın Kaya graduated from Izmir Institute of Technology, Department of Molecular Biology and Genetics in 2020. Then, in 2020, she joined the R&D department in Türklab Medical Device company laboratories in the field of developing lateral flow-based extracorporeal diagnostic tests and started working as an R&D specialist and continues to work actively. In 2022, Ms. İlayda joined Prof. Dr. Ayşe Nalbantsoy's team at Ege University, Institute of Natural and Applied Sciences in the Department of Biotechnology and started her master's degree.

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Acute pancreatitis induced by ascaris lumbricoides in the context of acute viral hepatitis A – literature review and clinical insights

Background: Ascaris lumbricoides is the most common helminthic infection worldwide. Its migration into the biliary or pancreatic ducts can lead to serious complications, such as acute pancreatitis. Coinfection with hepatitis A virus (HAV) may exacerbate inflammation and increase the risk of pancreatic involvement, particularly in children.

Objective: To review the literature regarding acute pancreatitis triggered by Ascaris lumbricoides in HAV-infected patients and to illustrate this rare clinical association through a complex pediatric case.

Method: A systematic search was performed in PubMed, Web of Science, and Google Scholar using the keywords: “pancreatitis”, “ascaris”, “hepatitis A”, “co-infection”, “acute liver disease”. Inclusion criteria: confirmed acute pancreatitis, positive HAV IgM serology and documented Ascaris presence. Additionally, a detailed clinical case is presented.

Results: Four literature cases met inclusion criteria. We report the case of a 7-year-old boy admitted with severe HAV infection (from a rural and within-family outbreak of acute viral hepatitis, with two more brothers infected with Ascaris and hepatitis), who developed acute necrotic-hemorrhagic pancreatitis following vomiting of a 7 live Ascaris. Imaging (ultrasound and CT) confirmed pancreatic necrosis and peritoneal fluid collections. Surgical drainage and debridement were performed. A residual pancreatic fistula was endoscopically treated in Bambino Gesu Hospital in Rome, Italy. The patient recovered after antiparasitic therapy (introduced after improvement of liver function), targeted antibiotics and intensive supportive care.

Conclusion: This rare triad (Ascaris infestation, HAV infection and acute pancreatitis) requires high clinical suspicion, especially in endemic areas. Early imaging, prompt antiparasitic treatment, and multidisciplinary management can significantly improve prognosis and reduce complications.

Biography

Dr. Indries graduated from the Faculty of Medicine in Oradea in 1999. She obtained the title of infectious diseases specialist at the Institute of Infectious Diseases Matei Bals from Bucharest in 2009 and primary physician in infectious diseases at the University of Medicine Cluj Napoca in 2016. She has been at the University of Oradea since 2003, having been involved in infectious diseases for over 20 years, leading the Infectious Diseases I section of the Oradea Emergency Clinical Hospital since 2019.

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Use of blood culture time-to-positivity to significantly reduce laboratory workload

Sepsis has high morbidity and mortality, and continues to be a focus of innovation and improvement internationally. Blood cultures are the single most important microbiological diagnostic tool in the septic patient. Recent guidance produced by NHS England has highlighted the requirement for two sets, four bottles, to be taken if sepsis is suspected. This is in order to increase the sensitivity of isolating the causative agent and guide clinical decision making. This increase in samples sent to the microbiology laboratories as a result of this guidance is substantial and requires careful costing and implementation to accommodate the subsequent increase in work.

To accommodate the increase in workload, it is important to assess workflow and look for ways to decrease waste and make the lab processes lean. One way to prevent unnecessary work for the laboratory, identified through a retrospective audit, is to use set criteria to help identification of blood culture contaminants and stop further unnecessary workup.

It was found that using time to positivity could reproducibly differentiate significant gram-positive cocci isolates from contaminant isolates. Using these findings, laboratory workup on positive blood culture bottles was adjusted and streamlines. The time to positivity for positive blood culture bottles with gram-positive cocci only (comprising 51% of total positive samples) was noted. Only those samples that were positive in less than 18 hours received direct Antibiotic Sensitivity Testing (AST) (49% of GPC positive blood cultures). This change resulted in an overall reduction in unnecessary antibiotic susceptibility testing, without impacting patient care. AST was reduced by 26.25% (n=2580) across all positive blood cultures per annum and was estimated to have provided a daily capacity of 70 minutes staff time. This change in practice has reduced cost, reduced workload and had a positive environmental impact.

With increasing pressures on the NHS, it is increasingly important that the workflows in place in the microbiology laboratory are streamlined. Innovations such as this allow for efficient sample processing whilst maintaining quality, to create testing capacity. Shared learning of these innovations across laboratories will greatly advance the service nationally.

Biography

Jasmine Buck is currently a trainee Consultant Clinical Scientist in Microbiology, working at Frimley Park Hospital, UK. Jasmine received a PhD degree from University of East Anglia in 2015 from work using 3D intestinal cultures to explore the role of autophagy in the pathology of Crohn's disease, then went on to train as a microbiology clinical scientist within the UK National Health Service. After qualifying and working as clinical scientist and laboratory quality officer, Jasmine Buck entered the consultant training programme, which is soon to finish, and became a fellow of the Royal College of Pathologists.

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Illness severity in patients with Severe Fever with Thrombocytopenia Syndrome (SFTS) assessed by Multiple Organ Dysfunction Score (MODS): A guide for physicians in monitoring and treatment decisions

Background: Severe fever with Thrombocytopenia Syndrome (SFTS) is a viral tick-borne disease with high mortality rates, particularly in East Asia. Despite advances in understanding its pathophysiology, effective treatment strategies remain limited. The Multiple Organ Dysfunction Score (MODS) is a widely recognized tool for assessing organ dysfunction and predicting outcomes. This study aims to evaluate the relationship between MODS and clinical outcomes in SFTS patients, providing guidance for monitoring and treatment decisions.

Methods: We conducted an observational cohort study involving 97 SFTS patients admitted to a single teaching hospital between 2013 and 2023. MODS was calculated based on dysfunction in six organ systems (respiratory, cardiovascular, hepatic, renal, coagulation, neurological). Patients were categorized into four groups based on their MODS at admission and on day 7: MODS 0-1, 2-3, 4-5, and ≥6. Viral load, Interleukin (IL)-6 levels, and other clinical variables were analyzed, and outcomes were assessed through logistic regression, Kaplan-Meier survival curves, and Receiver Operating Characteristic (ROC) curve analyses.

Results: Among total of 97 patients with SFTS, the mean age of the patients was 62.4 years, with a nearly equal distribution of males (53.6%). The changes in MODS values and distributions of SFTS patients from the beginning to one week are as follows: 100% of patients in the initial MODS 0-1 category remained in the 0-1 category after one week, indicating no significant progression of organ dysfunction within this group. A 73.8% of patients initially classified with MODS 2-3 remained in the same category after one week, while 26.2% improved, moving down to the 0-1 category. In the initial MODS 4-5 category, 50% of patients remained staying within the 4-5 range, 42.9% of patients showed improvement, moving down to the 2-3 category, while a small proportion (7.1%) significantly improved, dropping to the 0-1 category. Patients in the highest severity category (MODS ≥6) exhibited varying outcomes. 33.3% remained in the ≥6 category, 37.5% improved to the 4-5 category, and 25% moved to the 2-3 range. A small percentage (4.2%) showed significant recovery, moving down to the 0-1 category. In the ROC curve analysis, the optimal MODS cut-off value for predicting fatality was ≥3.5 (AUC=0.836;

sensitivity, 75.0%; specificity of 83.1%). The 7-day mortality rate for patients with MODS ≥6 was 37.5%, compared to 0% for those with MODS 0-1 ($p<0.001$). Patients with MODS scores of 4-5 also showed a high 7-day mortality (25.0%, $p=0.006$). Higher MODS scores were significantly associated with elevated mortality rates. Viral loads and IL-6 levels were significantly higher in patients with MODS ≥6 compared to those with lower scores ($p<0.001$).

Conclusion: MODS is a valuable prognostic tool for assessing disease severity in SFTS patients. Patients with higher MODS scores exhibit increased viral load, elevated IL-6 levels, and greater risk of mortality. The findings support the use of MODS for stratifying patients by severity, guiding clinical decisions regarding intensive care and therapeutic interventions. Monitoring changes in MODS could improve outcomes by identifying patients requiring aggressive treatment early in the course of the disease.

Biography

Dr. Jeong Rae Yoo studied Medicine at the Jeju National University School of Medicine, Republic of Korea, and graduated with a Master of Science (MS) degree in 2012. Jeong received Doctor's license from the Ministry of Health and Welfare, Republic of Korea, in 2004 and became certified in internal medicine in 2013. In 2013, completed a fellowship in the Division of Infectious Disease at Samsung Medical Center, Seoul, Republic of Korea and earned a PhD in 2023 from the same institution. Currently, Dr. Yoo holds the position of Associate Professor at Jeju National University College of Medicine, Jeju, Republic of Korea. Has authored over 70 research articles published in SCI(E) journals.

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A retrospective review of children and young people with pertussis positive swabs in Southern Health and Social Care Trust (SHSCT) from January 2024 to August 2024

Background: Pertussis (whooping cough) is a highly infectious disease caused by *Bordetella pertussis*. Malignant pertussis affects young infants, characterized by respiratory distress, perpetual tachycardia and hyperleukocytosis up to 30 G/l, leading to multiple organ failure and death in 75% of cases 2. Pertussis is a vaccine preventable disease and part of the UK Immunisation schedule. It is available for infants, children and pregnant mothers 3. In 2024, there was a sharp increase in cases across all regions in the UK particularly in under 3 months, although this was below the 2019 peak 4. The aim of our study is to analyse patient demographics including immunisation status, clinical presentation, course and outcome of children and young people with positive pertussis swabs within the Southern Health and Social Care Trust (SHSCT) area.

Methods: Positive pertussis swabs from January-August 2024 were obtained and data on presentations and outcomes recorded and analysed. Phone interviews with seven mothers whose infants presented under 3 months of age

Results:

- 37 positive swabs represent 27 patients (some had repeat), 3 excluded as outside trust, N=24
- 13 males, 11 females
- 13 under 1 year
- 7 under 3 months (none of the mothers had received pertussis vaccine)
- 6 between 4-12
- Children had received all primary immunisations
- 16 patients required hospital admission between 1-9 days, median 1-2 days
- Symptoms included spasmodic cough, colour change, feeding difficulties
- 1 had seizures but was not as a direct result of pertussis as she has epilepsy
- 11 required blood tests. No one had white cell counts over 30.
- 3 patients were readmitted all under 3 months due to ongoing spasmodic cough and maternal anxiety
- No one required admission to PICU
- We contacted seven mothers whose infants were age under 3 months on admission. All

babies continued to cough for 8-12 weeks but currently well
- 3 mothers did not recall being offered the antenatal vaccine, 1 was offered it too late in pregnancy, 1 forgot to attend appointment, 1 was wrongly told that she did not require and 1 was unsure.
- All 7 mothers agreed they would take it in future pregnancies

Conclusions:
- We found an almost equal sex distribution
- Over half the patients were under 1 year and a third under 3 months at presentation
- We saw no malignant pertussis
- All who presented under 3 months were born to mothers did not receive antenatal pertussis vaccine

Biography

Dr. Jonathan McIntosh graduated Queen's University Belfast in 2022. Having worked with Great Ormond Street as a student has a keen interest in children's health. Currently works in Northern Ireland as a resident paediatric doctor in the Southern Health and Social Care Trust Dr McIntosh has a particular interest in Paediatric infectious diseases and a future career in this field.

Dr. Emma Johnston a foundation year 2 doctor, who graduated from Queen's University Belfast in 2023, and is currently training in Northern Ireland Southern Health and Social Care Trust with a keen interest in pursuing a career in paediatrics. Emma has a particular interest in childhood respiratory illness as she enjoys handling the acuity of these presentations coupled with the complexities of long term management.

Kalilu S. Donzo[1,2*], Ralph Jetoh[5], Peter Kojo Quashie[1], Troy Moon[4], Kwadwo Asamoah Kusi[2,3], Brian Willett[6], Margaret Hosie[6]

[1]West African Centre for Cell Biology of Infectious Pathogens, Accra, Ghana

[2]Department of Biochemistry, Cell, and Molecular Biology, University of Ghana, Accra, Ghana

[3]Noguchi Memorial Institute of Medical Research, Accra, Ghana

[4]Tulane University School of Public Health and Tropical Medicine, New Orleans, Louisiana

[5]National Public Health Institute of Liberia, Monrovia, Liberia

[6]MRC-University of Glasgow Centre for Virus Research, Glasgow, Scotland

Seroprevalence of measles-specific IgG and neutralizing antibodies in clinically-confirmed cases from the ongoing measles outbreak in Liberia

Background: Measles Virus (MeV) causes a highly contagious disease (MeV) associated with significant morbidity and mortality. Despite the availability of an effective two-dose vaccine regimen, measles continues to be a substantial public health problem globally. This study assessed the seroprevalence of MeV antibodies in clinically confirmed patients and evaluated the neutralization breadth of MeV-specific IgG in an ongoing measles outbreak in Liberia.

Methods: The study used samples collected both retrospectively and prospectively from 199 clinically confirmed MeV cases, based on WHO criteria. Samples were collected from 2021 to 2023. The samples were tested for measles-specific IgM and IgG antibodies using an enzyme-linked immunosorbent. We generated vesicular stomatitis virus pseudotypes of circulating MeV genotypes in Africa, namely Edmonston, B3, D4, and D8 MeV genotypes, incorporating the hemagglutinin and fusion glycoproteins. Strong neutralization was defined by a dilution of neutralizing titre that was set at a concentration resulting in a 90% reduction in infectivity. The clinically confirmed MeV cases were characterized as vaccinated and non-vaccinated individuals, and associations between IgG status, age, vaccination record, neutralizing titers, and IgG levels were determined, with statistical significance set at $p<0.05$.

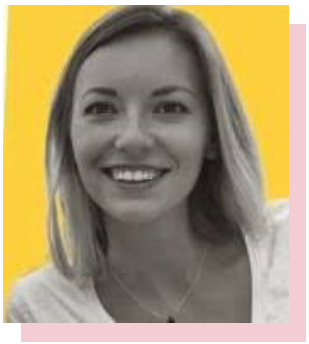
Results: We tested 199 samples, revealing that 69.9% (95% CI 63.5-76.3) of individuals had MeV IgG antibodies. Seropositivity was higher in vaccinated individuals (52.5%) than in non-vaccinated individuals (8.6%). We found no association between IgG titre and age. We found that 82.4% of all participants had strong neutralizing titers against B3, while 80.2% of those tested had strong neutralization titers against Edmonston, 70.6% against D4, and 80.1% against D8. We observed significant differences in neutralizing titers between protected and non-protected individuals for all four genotypes ($p<0.0001$ in all cases).

Conclusion: We found that during an active measles outbreak in Liberia, only 69.9% of clinically confirmed cases were IgG seropositive. Genotypes of the current outbreak have not been determined; however, our participants showed strong neutralization (>80%) of all MeV

genotypes tested, except for D4 (70%). Previous vaccination status was low in our population. Furthermore, participants over the age of 10 years had higher average seropositivity than those less than 10 years of age. Overall, the results indicate effective immunity as well as a potential immunity gap, as seropositivity was below the threshold for herd immunity, potentially increasing outbreak risk. It further supports the continued use and expansion of vaccination programs, as vaccinated individuals had higher immunity compared to non-vaccinated individuals.

Biography

Kalilu is a biomedical scientist and instructor at the University of Liberia, passionate about the diagnosis and immunology of infectious diseases. Kalilu was a member of the 2017/2018 cohort of the prestigious University of Michigan African Presidential Scholar Program and a 2019 Chevening scholar at the University of Plymouth, England. Kalilu is a PhD fellow at the West African Centre for Cell Biology of Infectious Pathogens, University of Ghana. Also completed a continuing professional development certification in Good Clinical Practice modules. Mainly PhD research focuses on the molecular and immunological characterization of the measles virus in the ongoing measles virus outbreak in Liberia. Additionally, Kalilu is currently employed as a research scientist at the National Public Health Institute in Liberia.



Kamila Sfugier Tollik
European Marine Biological Resource Centre, Paris, France

Marine-based strategies against climate-driven infectious threats

Ongoing climate change is reshaping ecosystems worldwide, creating new niches and conditions that accelerate the emergence and spread of infectious diseases. In the marine realm, higher ocean temperatures, altered currents, and shifting species distributions are increasingly linked to the proliferation and evolution of pathogens. Recognizing the interconnectedness of environmental and human health, the ISIDORe (Integrated Services for Infectious Disease Outbreak Research) project champions a comprehensive, one health-oriented strategy to bolster Europe's ability to predict, detect, and respond to epidemic-prone pathogens—including those shaped by climate factors.

The European Marine Biological Resource Centre (EMBRC) expands ISIDORe's reach by offering advanced facilities, bioinformatics expertise, and a wide range of marine organism collections to address climate-driven infectious disease challenges. By operating marine observatories and running sampling programs, EMBRC enables the early detection and continuous monitoring of new or evolving pathogens under shifting environmental conditions. Meanwhile, the centre's high-throughput screening platforms draw on the ocean's remarkable chemical diversity to discover novel antimicrobial, antiviral, and anti-inflammatory substances. These efforts, combined with research into how temperature fluctuations, ocean acidification, and pollution affect pathogen transmission, contribute to effective, evidence-based interventions in both ecosystem management and public health. Moreover, EMBRC's focus on marine-derived materials—such as polysaccharides and lipids—opens new avenues for vaccine adjuvant development, bolstering immunization strategies against pathogens that thrive in a warming world.

Within the ISIDORe consortium, EMBRC's marine-based initiatives expand traditional infectious disease research by integrating ecology, climate science, and public health perspectives. This collaborative effort helps develop innovative, fast-acting strategies that strengthen Europe's capacity to anticipate, track, and control climate-driven outbreaks.

Biography

Kamila Sfugier Tollik is a marine biologist and EU Projects Coordination Officer at the European Marine Biological Resource Centre (EMBRC). Have a decade of experience in international science-policy interfaces, with expertise in sustainable aquaculture, marine biodiversity monitoring, and regulatory risk assessment. Kamila is also a PhD candidate in Economics, researching circular food systems and marine sustainability.

Kimberly Borja*, Andrea Martha Bagain

Department of Pediatrics, National Children's Hospital, Philippines

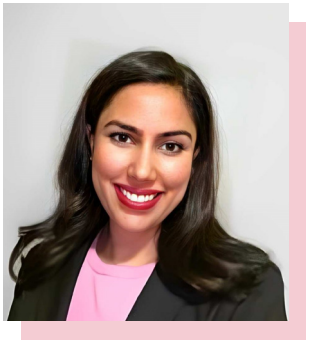
Association between obesity and dengue severity in a tertiary pediatric hospital in the Philippines

Dengue infection is currently one of the most important mosquito-borne viral diseases in the tropical parts of the world (WHO, 1999). When it comes to viral infections like dengue fever, nutritional status is a key factor to immune functions since it has an influence on genomics and metabolisms. In obese patients, the adipose tissue in overweight could stimulate more inflammatory mediators, which lead to increased capillary permeability and plasma leakage. Early identification of factors associated with severe dengue is significant to improve patient outcomes and decrease mortality. The objective of this study was to assess associations between obesity and dengue severity among children in a Tertiary Pediatric Hospital from January to December 2023. Subjects were all children who are less than 18 years with acute dengue infection confirmed by positive NS1 or IgM who were admitted at the National Children's Hospital from January to December 2023 were included in the study.

Most of the patients with severe dengue had normal BMI and were from the age group 11-18 years old residing in urban areas with equal sex distribution. This study did not find a significant association between obesity and severe dengue in contrast to the theory that obese children are expected to have a stronger immune response. At present, obesity is considered a low-grade inflammation with excess production of IL-1β, Il-6 and TNF-α^3 and chronic exposure to pro-inflammatory cytokines may desensitize immune cells to inflammatory responses during the actual infection. This study has several limitations inherent to the nature of a single-center retrospective cross-sectional study and this group may not adequately represent the entire population which may raise the possibility of selection bias. Larger prospective studies on multiple institutions with longer duration may be done to more accurately assess the association between obesity and dengue severity.

Biography

Kimberly has completed medical degree in St Luke's College of Medicine, Philippines and has finished Pediatric residency in the National Children's Hospital.



Komal Romance[1*] MD, Avish Nagpal[1,2], MD, MPH

[1]University of North Dakota School of Medicine, Fargo, North Dakota, USA

[2]Sanford Health, Fargo, North Dakota, USA

Brucellosis presenting as chronic back pain

A 43-year-old male was seen in the clinic for a slowly progressive low back pain over the last 3 months. This was associated with an unintentional weight loss of 11 lbs. During this period, he had an extensive workup of his back pain including an initial computed tomography of his thoracolumbar spine which revealed a disc bulge at L5-S1. Conservative management had been advised at that time but due to progressive symptoms over the next month, a magnetic resonance imaging (MRI) scan was pursued that revealed an abnormal signal enhancement in T6- T8 along with degenerative changes at L4-L5 and L5-S1. These were again thought to be secondary to degenerative disc disease as the patient had no other systemic symptoms.

Patient continued to have progressive symptoms which made it difficult for him to perform activities of daily living. Therefore, another follow up MRI was performed prior to clinic visit and it revealed changes consistent with discitis and osteomyelitis at T6-T8, L4-L5 and L5-S1 along with a small lumbar epidural abscess. Patient was then hospitalized for further evaluation. He underwent aspiration of epidural fluid for various cultures. Blood cultures were also performed along with other non-invasive tests like Q fever and Brucella serologies as well as QuantiFERON-TB Gold+ assay. Cultures of blood and abscess fluid subsequently grew Brucella abortus. Patient did recall consuming milk bought directly from a local farm.

This case illustrates a classic presentation of Brucella spondylitis resulting from consuming unpasteurized milk. It also highlights the challenges associated with diagnosis including the current rarity of the disease, lack of systemic symptoms, leukocytosis, elevated inflammatory markers and early imaging changes which are typically associated with more commonly seen acute cases of infectious spondylitis. Finally, it also highlights the importance of pasteurizing milk and other dairy products to prevent food borne illnesses.

The current social trend of consuming a more ‘natural’ diet and obtaining food ‘directly from the source’ can lead to re-emergence of previously common diseases that are not seen in contemporary medical practice due to improvements in food hygiene practices.

Biography

Dr. Komal Romance obtained her BSc in Biology from University of Northern British Columbia, BC, Canada and then obtained her medical doctorate from American University of Integrative Sciences, Barbados. She is currently a resident physician at a University of North Dakota Transitional year program in Fargo, North Dakota, USA.

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[3]Biotecnology Department, La Campana INIFAP, Chihuahua Mexico

[4]Poultry Department, Universidad Nacional Autonoma de Mexico, Mexico City

[5]Bacteriology Department, FES Cuautitlan Universidad Nacional Autonoma de de Mexico, Mexico City

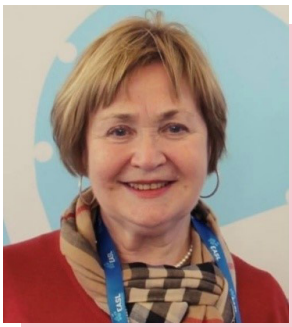
Antimicrobial resistance in pathogens isolated from raw milk and fresh goat cheese

The objective was to identify potentially pathogenic microorganisms, as well as their susceptibility to antimicrobials, from samples of milk and cheese produced on family farms in the northern, central and southern regions of Mexico. Two farm units from the state of Durango, two from Querétaro and two from Campeche were sampled. 2 samples of raw milk were taken and 2 samples of cheese made from the sampled milk tank. The samples were plated on Blood and MacConkey agar. The susceptibility profiles of the isolated strains to select antimicrobials were determined by the Kirby–Bauer method, using for Gram positives: Ampicillin (AM), Cefotaxime (CFX), Ciprofloxacin (CPF), Clindamycin (CLM), Erythromycin(E) , Penicillin (PE), Tetracycline (TE), Cephalothin (CF), Dicloxacillin (DC), Gentamicin (GE), Sulfamethoxazole Trimethoprim (STX) and Vancomycin (VA), while for Gram negatives the following were used: Ampicillin (AM), Carbenicillin (CB), Cephalothin (CF), Cefotaxime (CFX), Ciprofloxacin (CPF), Chloramphenicol (CL), Nitrofurantoin (NF), Amikacin (AK), Gentamicin (GE), Netilmicin (NET), Norfloxacin (NOF) and Sulfamethoxazole Trimethoprim (STX). Descriptive statistics were performed on the data, while the Mann–Whitney U test was used to compare the resistance profiles between microorganisms isolated in raw milk and fresh cheese. *Staphylococcus aureus* was isolated from raw milk in 5 of the 6 establishments sampled, in all 6 strains of Coagulase Negative *Staphylococcus* (CNS) were isolated, *Streptococcus dysgalactiae* and *S. agalalactiae* were isolated, in 2 *Listeria ivanovii* and *Listeria welsmeri* and *Bacillus cereus*. In the case of Gram-negative pathogens, *E. coli* was isolated in all samples, in three farms *Pseudomonas aeruginosa*, in two *Proteus vulgaris* and *Proteus mirabilis*, and in one *Klebsiella pneumoniae*. *Staphylococccus aureus* was isolated in all cheeses, as well as various species of *Streptococcus. E. coli* was isolated in all samples, *Proteus mirabilis* was isolated in 4 samples, *Klebsiella pneumoniae*, *Citrobacter freundii* and *Enterobacter aerogenes* were isolated in 3 samples. 50% of the Gram–positive microorganisms from raw milk presented resistance to antibiotics such as AM, CFX, CLM, PE, TE, CF and DC, all *Staphylococcus*, *Streptococcus* and CNS presented 100% resistance to PE. Of the Gram–negative bacteria isolated from raw milk, 71% of the microorganism's showed resistance to AM, CB, CF, CF, NF and GE; *P. aeruginosa* was resistant 100% to AM and 80% to AK. 83% of the Gram–positive pathogens isolated from cheeses were resistant to AM, CFX, PE, TE, CF and DC; *Streptococcus dysgalactiae* and *E.*

faecalis were resistant to AM, as well as 100% of *S. aureus, S. dysgalactie, S. agalactiae* and SCN were resistant to PE. Gram– negative microorganisms, 75% showed resistance to AM, CB, CPF and GE; 100% of the *E. coli* were resistant to AM and 80% of the *P. aeruginosa* were resistant to AM, NF and NOF. When comparing the general resistance averages for bacteria obtained from milk versus those obtained from cheese, no significant difference was found highlighting the impact of the lack of good practices, livestock and manufacturing in these farms.

Biography

MC. Laura Hernandez studied QFB at the FES Cuautitlan UNAM, Mexico and graduated as MC veterinary medicine in 2000. She then joined the research group of Mastitis in the Institute of livestock research, INIFAP.



Liudmyla Shostakovych Koretska
Department or Infectious Diseases. Dnipro Stare Medical University, Dnipro, Ukraine

The rising trend of gram-negative bacterial infections in the post-COVID Era and military conflict in Ukraine

Introduction: Since early 2022, Ukraine has faced unprecedented challenges due to the ongoing war following Russia's aggression. At the same time, the country, like the rest of the world, continues to confront the aftermath of the COVID-19 pandemic, which has exacerbated various health issues. Notably, there has been nearly a two-fold increase in bacterial and viral infections between 2022 and 2023. Of particular concern is the rising incidence of gram-negative bacterial infections, increasingly caused by Multidrug-Resistant (MDR) strains. The most vulnerable populations include individuals with a history of severe COVID-19 or post-COVID complications, which weaken immune defenses and heighten susceptibility to secondary infections.

Materials and Methods: This study was conducted in the infectious diseases department and the bacteriological laboratory of a regional hospital in Dnipro, Ukraine, following EUCAST standards. We collected a total of 103 biological samples (sputum, wound exudate, blood, and urine) from hospitalized patients to assess antimicrobial susceptibility. Additionally, a clinical case of a COVID-19 patient with severe bacterial complications was analyzed, focusing on microbiological findings and the selection of targeted antimicrobial therapy.

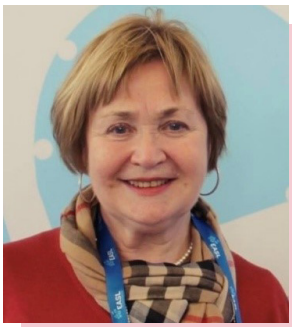
Results: Among the isolated bacterial pathogens from various biological samples (including blood, feces, urine, sputum, bronchial lavage, and wound exudate), over 30% were non-fermenting, multidrug-resistant organisms. The predominant pathogens included *Escherichia coli* (30%), *Salmonella enteritidis* (18%), *Acinetobacter* spp. (16%), *Klebsiella pneumoniae* (21%), and *Pseudomonas aeruginosa* (7%). Despite the availability of treatment options, most isolates demonstrated extensive antibiotic resistance, posing significant therapeutic challenges. This is exemplified by the following clinical case: A 32-year-old woman was hospitalized on day 8 of her COVID-19 pneumonia (confirmed by CT), presenting with a SpO_2 of 90% and moderate respiratory failure. Prior to admission, she had received ceftriaxone. In the hospital, her treatment included remdesivir, dexamethasone, anticoagulants, levofloxacin, and supplemental oxygen. On day 5, her condition worsened due to worsening hypoxia, necessitating admission to the ICU and escalation to meropenem. Subsequent sputum cultures identified MDR *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Given the resistance profile, her therapy was adjusted to a combination of ceftazidime/avibactam and aztreonam every 8 hours intravenously. The patient showed gradual improvement, requiring reduced oxygen support,

and was discharged after three weeks for continued care under a thoracic surgeon and family physician.

Conclusions: The surge in bacterial infections following COVID-19 has led to increased antibiotic use, contributing to the rise of antimicrobial resistance. The combination of ongoing military conflict and the persistent healthcare burdens of COVID-19 exacerbates these challenges. This situation necessitates strategic interventions in infection control, antimicrobial stewardship, and healthcare resource allocation.

Biography

Shostakovych Koretska Liudmyla is a Professor in the Department of Infectious Diseases at Dnipro State Medical University in Ukraine, earned a MD in 1968 from Dnepropetrovsk Medical Academy and completed a fellowship in Infectious Diseases at the Kharkiv Institute of Postgraduate Medical Education in 2011. Shostakovych's professional journey includes roles as a doctor at Municipal Hospital (1968–1974), Assistant Professor (1974–1989), and Chief of the Infectious Diseases Department (2004–2008). Since 2008, Shostakovych has been serving as a Professor in the same department and contributed significantly to medical literature, authoring several notable publications. In 2009, co-authored "Combinatorial content of CCL3L and CCL4L gene copy numbers influence HIV-AIDS susceptibility in Ukrainian children," published in AIDS. In 2015, contributed to "Epigenetic mechanisms, T-cell activation, and CCR5 genetics interact to regulate T-cell expression of CCR5, the major HIV-1 coreceptor," published in the Proceedings of the National Academy of Sciences (PNAS).



L. Shostakovych-Koretska*, O. Volikova, O. Sheveleva

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Associations between DRB1 alleles and HIV disease progression in people living with HIV/AIDS (PLWHA) receiving Antiretroviral Therapy (ART)

Background: HIV infection leads to progressive immune decline and increased vulnerability to opportunistic infections, primarily driven by viral replication and the depletion of $CD4^+$ T-cells. Host genetic factors, particularly variations within the HLA region, have been linked to immune recovery and disease progression. This study aims to investigate the associations between DRB1 alleles and HIV disease progression in patients undergoing Antiretroviral Therapy (ART), focusing on CD4 count dynamics, viral load trends, and susceptibility to opportunistic infections such as tuberculosis.

Materials and Methods: This study conducted clinical data and genetic analysis of 116 PLWHA patients aged 24-60 years (60 males and 56 females) who were receiving ART. Longitudinal data included CD4 counts and viral load measured at three distinct time points, along with DRB1 genotype information. Statistical tests were performed, including one-way ANOVA for continuous variables and chi-square tests for categorical data, to identify significant associations. Missing values were imputed using column means, and DRB1 loci groups with fewer than five patients were excluded from the analysis to ensure statistical robustness.

Results: The study identified significant associations ($P<0.05$) between specific DRB1 alleles and markers of HIV disease progression in patients undergoing Antiretroviral Therapy (ART). Notably, the DRB1*11 allele emerged as a key factor, showing a strong correlation with both CD4 count dynamics and viral load trends. Patients carrying the DRB1*11 allele exhibited significantly higher CD4 counts over time, indicating improved immune recovery, as well as lower viral loads, which suggest better viral suppression.

The DRB1*17 allele also demonstrated trends indicating a protective effect, although this was less pronounced. In terms of opportunistic infections, the DRB1*13 and DRB1*03 alleles were significantly associated with the presence of tuberculosis, highlighting their potential role in susceptibility to this co-infection. These findings support the hypothesis that specific DRB1 loci influence HIV disease progression and align with previous studies emphasizing the role of HLA gene variations in immune regulation and disease outcomes.

Conclusions: These findings underscore the potential of DRB1 alleles. These findings highlight the potential of DRB1 loci as genetic markers for disease progression and treatment outcomes

in HIV patients receiving Antiretroviral Therapy (ART). The DRB1*11 allele is associated with better immune recovery and viral suppression, while DRB1*13, *17, and *03 alleles relate to CD4 recovery and tuberculosis susceptibility, respectively. The link between DRB1*13 and tuberculosis underscores the relationship between host genetics and opportunistic infections. Overall, these results support the role of HLA variations in HIV pathogenesis and suggest that DRB1 alleles could serve as valuable biomarkers for personalized disease management.

Biography

Shostakovych Koretska Liudmyla is a Professor in the Department of Infectious Diseases at Dnipro State Medical University in Ukraine, earned a MD in 1968 from Dnepropetrovsk Medical Academy and completed a fellowship in Infectious Diseases at the Kharkiv Institute of Postgraduate Medical Education in 2011. Shostakovych's professional journey includes roles as a doctor at Municipal Hospital (1968–1974), Assistant Professor (1974–1989), and Chief of the Infectious Diseases Department (2004–2008). Since 2008, Shostakovych has been serving as a Professor in the same department and contributed significantly to medical literature, authoring several notable publications. In 2009, co-authored "Combinatorial content of CCL3L and CCL4L gene copy numbers influence HIV-AIDS susceptibility in Ukrainian children," published in AIDS. In 2015, contributed to "Epigenetic mechanisms, T-cell activation, and CCR5 genetics interact to regulate T-cell expression of CCR5, the major HIV-1 coreceptor," published in the Proceedings of the National Academy of Sciences (PNAS).

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Septic thrombophlebitis and embolic complications in an 18-year-old: A rare case of Reverse Lemierre's Syndrome

This report describes a rare instance of an 18-year-old male presenting with a history of right knee strain who developed fever, pain, and difficulty walking. The patient was first evaluated for suspected sepsis complicated by polyarthralgia. He later developed worsening respiratory symptoms and was referred to our center. Imaging studies revealed significant findings, including an MRI of the right lower limb showing edema and collection in the vastus lateralis and an ultrasound confirming deep venous thrombosis in the right distal saphenofemoral and popliteal veins. Culture results from the right thigh abscess grew Staphylococcus aureus. A chest X-ray revealed bilateral peripheral opacities, which were subsequently confirmed as septic emboli on a computed tomography pulmonary angiogram. These findings were indicative of a rare presentation of Reverse Lemierre's syndrome secondary to pyomyositis with septic thrombophlebitis and pulmonary septic embolism. This case highlights the importance of recognizing reverse Lemierre's syndrome as a potential diagnosis in young patients presenting with sepsis, pyomyositis, and respiratory symptoms, particularly in the context of musculoskeletal infections.

Biography

Dr Manisha Bais Thakur studied Medicine from Pt. JNM Medical college Raipur, INDIA in 1991 and completed her MD (Internal Medicine) from same institute in 1994. She did her residency in Medicine from Dr RML Hospital, New Delhi . She was Senior Research Associate Medicine In AIIMS Delhi for 3 years . Dr Thakur joined VMMC & Safdarjung Hospital, New Delhi and promoted to full Professor Prof. Thakur is Medicine Unit Head and also Gastro Clinic in-charge . She has guided 15 MD students and published around 40 papers in Indian and International Journals.

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The state of oropouche fever: A review of clinical presentations and viral epidemiology

Background: Oropouche fever is an emerging disease with dengue-like symptoms including high fevers, intense headaches, muscular and articular pain, myalgia, photophobia, and, in some cases, meningitis and encephalitis. This disease is transmitted to humans primarily by the bites of midge and mosquito vectors. Recent reports of vertical transmission have largely resulted in fetal death, miscarriage, and microcephaly. Understanding of complications due to infection is still limited. In the past few years, the disease has been rapidly expanding throughout Latin America causing growing concern to public health systems.

Methods: We conducted a systematic literature review of published papers in English containing the keyword 'oropouche.' We searched Google Scholar, Cochrane, Pubmed databases, in addition to reports from released from the World Health Organization and the Pan-American Health Organization. All articles were screened by two reviewers with disagreements settled by a third arbitrator.

It's a systematic review where, it was analyzed relevant articles in English, from PAHO, Google scholar, Cochrane and PubMed databases. Two authors screened potential material to include in the study, and one other author looked into the conflicts, resulting in 83 articles fully analysed, and in those 46 were selected to extract data relevant to the review.

Results: 46 articles met inlusion criteria for the systematic review. Data were extracted on variables relating to the clinical presentation and epidemiologic factors predisposing clinical outcomes, including symptoms, transmission route, hospitalization rate, and mortality. We synthesized the published literature to present what is known about the emerging diseases clinical presentation to date.

Discussion: Oropouche fever is a growing threat to public health. Understanding the clinical characteristics of the disease is increasingly important for healthcare workers globally. Increased surveillance in endemic countries and regions bordering endemic countries is crucial for rapid diagnosis and treatment, as is increased awareness globally for travellers to endemic regions.

Biography:

Maria Carolina Neri Martins, Medical student from Brazil MS5/6.

Meerab Fatima
Frimley Park hospital, United Kingdom

A rare case of spontaneous splenic rupture in a young patient with infectious mononucleosis

We present a case of 34 y old male who initially presented to emergency department with multiple episodes of vomiting and diarrhoea accompanied by lower urinary tract symptoms. There was no history of binge alcohol intake, eating takeaway food or travel. On review of his observations heart rate was 128, temperature was 37.8 and blood pressure was 110/73. Upon systemic review chest was clear, abdominal examination revealed left lower quadrant and suprapubic tenderness. His rest of examination were unremarkable. On review of his blood tests, lactate was 2.8 (0.6-2.5) mmol/L, CRP 39 (0-5) mg/L, WCC of 14.2 (4-11) 10*9/L Hb 83 (130-180) g/L, lymphocyte 8.2 (1-4) 10*9/L, bilirubin 26 (0-20) umol/L, ALT 211(0-55) U/L and ALP 468 (30-130) U/L, amylase 38(28-100) U/L, Glucose 6.4 (4-11) mmol/L, eGFR>90 (90-120) mL/min, creatinine 109 (64-104) umol/L, urea 5.5 (2.5-7.8) mmol/L and normal electrolytes. His Chest x-ray was clear.

Initially seen by out of hours GP and referred to medicine. He was seen by emergency team and handed over to medicine team after administration of Intravenous fluids. Upon review of medical team impression was sepsis likely source urinary tract infection and he was given IV broad spectrum antibiotics, IV fluids and blood cultures has been sent off. His CT abdomen pelvis was requested to look for hepatobiliary source of infection due to deranged LFTs which showed splenomegaly with a large sub capsular splenic hematoma and likely free blood within abdomen suggestive of splenic rupture. He was referred to surgical team for ongoing management and they had kindly accepted the referral. As part of work up for splenomegaly and deranged liver function tests EBV screen was done which later on turned out to be positive for IgM and EBV viral load. His CT triple phase abdomen pelvis was done to check suitability for IR embolization after 3 hours of initial CT which revealed unchanged volume of blood since previous CT with no evidence of active bleeding. He was kept under observation.

Day 1: He was transfused with 2 units of bloods, haemoglobin monitored and started on soft diet.

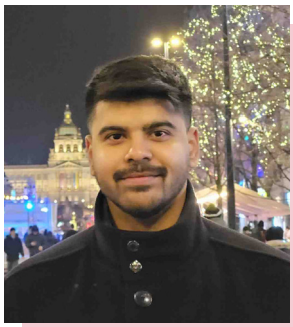
Day 2: Haemoglobin continued to drop despite 2 units of transfusion and decided to re do CT abdomen and pelvis.

Day 3: His CT angiogram renal and abdominal was done due to ongoing drop in haemoglobin which revealed active splenic haemorrhage with interval increase in size of haematoma.

Day 4: He underwent IR splenic artery.

Following IR embolization he was kept under observation for few days and then discharged Following a brief period of recovery from hospital.

Conclusion: Splenic rupture is a rare complication of infectious mononucleosis. Although it occurs only in 0.1%-0.5% of cases, splenic rupture remains the most common fatal complication of the disease. Mononucleosis related spontaneous rupture of the spleen without any other characteristic symptoms of the disease is extremely unusual and threatens with fatal outcome due to its rare an. Learning in this case was left lower quadrant pain should have prompted abdominal imaging as it wouldn't have been explained by D & V and presentation.



Md. Ghalib Enayathullah[1*], Ema Svetlicic[1], Carsten Jers[1], Ivan Mijakovic[1,2]

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[2]Systems and Synthetic Biology Division, Department of Biology and Biological Engineering, Chalmers University of Technology, Gothenburg, Sweden

Proteome dynamics of bacterial pathogens during Infection - New drug targets

Staphylococcus aureus ranks as the second most critical gram-positive bacteria on the WHO's priority list, spreading through nosocomial & commensal transmissions. Its antibiotic resistance evolving at an unprecedented pace, presents itself as a constant global danger. This ability gave rise to its highly resistance variant, MRSA – *Methicillin Resistant Staphylococcus aureus*. Kinases in this organism are an interesting yet comparatively small global research niche and amongst them are the Two-Component Regulatory Systems (TCS)-a group of 16 Histidine Kinases (HK) which are a ventured domain of kinases since they help the pathogen to adapt to temperature flux, nutrient deprivation, biofilm formation, virulence, antibiotic toxicity and much more.

Understanding protein kinases, however, is of equal importance to build an overall picture of this pathogen's spontaneous response leading to its persistence or resistance or to evolution of a variant. In this study, we use the MRSA-USA300 strain and deduce that several phosphoproteins also get targeted by Serine/Threonine (STK)/Tyrosine Kinases (BYK)–Stk1, RsbW, HprK & Cap5A1B under phagolysosomal-like stress conditions. In those conditions, we followed the bacterial growth kinetics which helped us deduce a transient exposure window, to find the deregulated STK/BY kinome targets using state of the art phosphoproteomics. Using that knowledge, we performed kinase assays to investigate the interactors of the above proteins. We also evaluated knockouts of the kinome targets to assess the organism's survival in varying stress and macrophage survival assays. In the future we aim to evaluate the phospho-ablative/mimetic mutants of the above kinase substrates and narrow them down to a potential therapeutic target.

Biography

Ghalib graduated with an Integrated master's degree in biotechnology (2019) from SASTRA University, India, worked on several projects in CSIR-CCMB, a national laboratory in India during which he published 6 articles in SARS-CoV-2 antiviral research. In 2022, Ghalib joined as a PhD student in Technical University of Denmark in Prof. Ivan Mijakovic's Lab to continue pursuing and widen his understanding of infections as he gains proficiency by venturing into bacterial infection dynamics.

Nicholas Svitek[1*], Zoe Campbell[1], Sylvain Moineau[2]

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Harnessing bacteriophages as an alternative to antibiotics for mastitis prevention in goats in Kenya

In Kenya, goats represent the country's most abundant livestock resource, with an estimated population of approximately 28 million. Mastitis, an inflammation of the mammary gland, is a significant health issue for goats, negatively impacting their productivity and reproductive health, and contributing to increased greenhouse gas emissions. *Staphylococcus* species have been identified as the primary bacterial cause of mastitis in goats, and many isolates exhibit resistance to clinically relevant antibiotics. This presents a multifaceted challenge, particularly given the pressing need for sustainable solutions to address Antimicrobial Resistance (AMR) in ruminant farming. To tackle this issue, this project aims to develop bacteriophage-based therapies for the effective management of mastitis in goats and the reduction of antibiotic use, as well as AMR *Staphylococcus* strains in Kenyan goat farms. The approach involves isolating novel *Staphylococcus* strains from Kenyan goat milk samples and *Staphylococcus* phages from milk and water sources neighbouring goat farms, as well as utilizing existing phage stocks from the Félix d'Hérelle Reference Center for Bacterial Viruses in Canada. Beyond laboratory investigations, the project is also evaluating the socioeconomic impact of mastitis on goat farming, focusing on how phage therapy could provide a sustainable solution, particularly benefiting women goat farmers. The initiative seeks to improve goat health, reduce antibiotic use and the burden of AMR, and promote sustainable agriculture in Kenya. Given the lack of prior studies on phage therapy in Kenyan goats, the technology must be tested and proven as safe and effective. Initial findings have led to the isolation of several *Staphylococcus* strains from goat milk and some phages with lytic activity against these strains from water samples collected across Kenyan goat farms. Preliminary data indicate that *Staphylococcus chromogenes, S. caprae* and *S. xylosus* are the most isolated strains in goats with subclinical mastitis and that phages capable of infecting and killing *Staphylococcus* strains are successfully being isolated. Ongoing work includes characterizing these newly isolated *Staphylococcus* strains and phages, with the most promising candidates set to be tested as phage combinations in vitro and in vivo, using mastitis infection models in mice and goats. This project represents a comprehensive effort to address AMR challenges in mastitis management in Kenyan goat farms by developing phage-based treatments for practical field applications, ultimately contributing to more sustainable treatment options.

Biography

Dr. Svitek studied Microbiology and Immunology at the University of Montreal, Canada, and graduated with an MSc in 2004. Then joined Prof. von Messling's research group at the INRS-Centre Armand-Frappier Santé-Biotechnologie (University of Quebec/Institut Pasteur International Network), Canada. Dr. Svitek received his PhD degree in Virology and Immunology in 2010 at that institution. After a one-year postdoctoral fellowship in Virology at the Duke-NUS Emerging Infectious Diseases Programme in Singapore, joined Prof. Vish Nene's group in 2011 at the International Livestock Research Institute (ILRI), Kenya, as a postdoctoral fellow in Cellular Immunology and Reverse Vaccinology. In 2014, Dr. Svitek became a scientist and, in 2019, a senior scientist at that same institution. Has been published more than 30 research articles in SCI(E) journals and contributed to more than 35 papers presented at international scientific conferences.

Nicole Azizeh*, Mouhamad Khoder

Faculty of Health, Science, Social Care and Education, Kingston University London, Kingston Upon Thames KT1 2EE, United Kingdom

Efficient removal of antibiotics from water using a highly crosslinked metal-alginate system; A novel strategy to fight against antimicrobial resistance

ATBs are substances designed to kill or inhibit the growth of bacteria on or within the body. This makes ATBs essential substances to treat infectious diseases caused by bacteria. The discovery of Antibiotics (ATBs) marked one of the greatest medical achievements in history, saving countless lives and supporting agricultural productivity worldwide. However, ATB misuse and excessive overuse especially in the disposal of ATBs in different environments have driven the rapid emergence and spread of Antimicrobial Resistance (AMR) (fig.1). The World Health Organization (WHO) stated that AMR is a global public health crisis, and if no action is taken to tackle its spread, by 2050 it will result in the death of millions of lives and trillions of economic losses. With virtually no new ATBs developed in this new millennia, developing and identifying novel strategies to extend the lifespan of the existing ATBs has become a priority.

Several techniques have been implemented for the removal of residual ATBs from environmental media such as wastewater, however, existing approaches face different challenges, highlighting the need for an efficient, cost-effective, and scalable solution to fight against AMR.

This study designed a novel approach for the specific removal of ATB residues from water via a novel solid-state, eco-friendly crosslinking method of metal-ALG. ALG is crosslinked with several multivalent cations such as Fe^{+3} and Zn^{+2}. Different tests were conducted such as FT-IR, SEM-EDS, and ICP-MS to understand the characteristics of the metal-ALGs system. Metal-ALGs showed superiority over other ALG-based adsorbents in terms of ease of production and ATB removal capacities. Fe-ALG and Zn-ALG manifested very high removal capacities towards ciprofloxacin from water, with maximum removal capacities of 356.5 mg/g and 690 mg/g, respectively (fig. 2 A&B). Kinetics modeling showed that chemisorption was dominant, supporting the hypothesis of ATB removal by chemical complexation with metal nodes of metal-ALG particles. Three metal-alginate regeneration cycles were successfully performed without any loss of removal capacities. The microbiological assay showed a significant reduction of antibacterial activities after the ATBs removal from water.

This innovative metal-ALG system offers a promising solution to fight against the emergence and spreading of AMR in aquatic environments.

Figures:

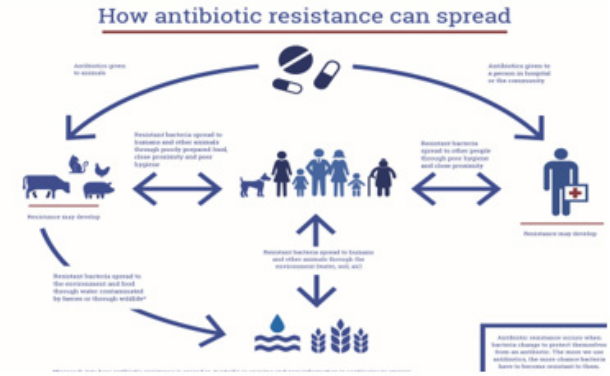

Figure 1: The development and spread of antibiotics resistance.

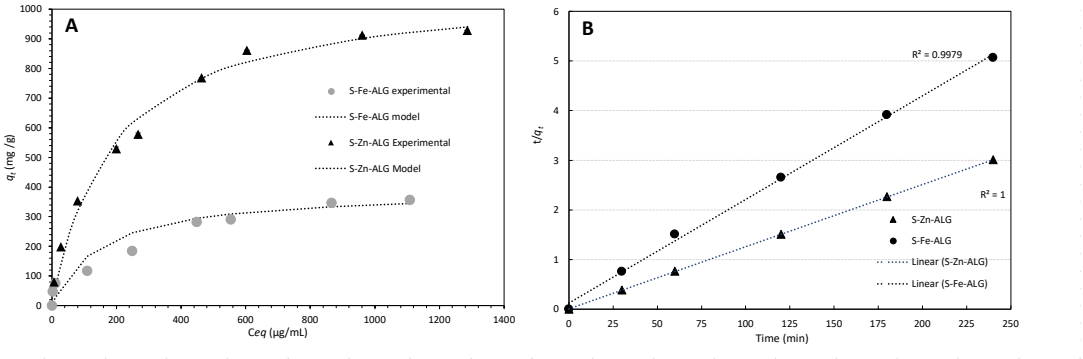

Figure 2: (A) Removal isotherms of S-Fe-ALG and S-Zn-ALG towards CIP, (B) Pseudo-second-order kinetic plots for CIP (100 µg/mL) removal by complexation.

Biography

Nicole Azizeh, a pharmacist with a diverse background in different areas of the pharmaceutical industry. During both her Master's (pharmaceutical sciences and management studies) and Bachelor's degree in Pharmacy, gained extensive experience in pharmacy practice, clinical trials, quality systems, and pharmaceutical technologies. Currently, Nicole is pursuing a PhD at Kingston University London, focusing on developing innovative techniques to eliminate antibiotic residues from different environmental systems, aiming to address the global threat of antimicrobial resistance. Nicole's passion for research is reflected in academic achievements and the skills developed during her studies, especially in drug formulation and development.

Dr. Nikrish S Hegde MD

Department of Radiology, Amradnet India, Mumbai, Maharashtra, India

Invasive fungal sinusitis, correlation of the radiological and intraoperative findings

Acute invasive fungal sinusitis though uncommonly encountered, is a life threatening condition with a high mortality rate. It progresses rapidly from the time of diagnosis and may result in death in a short span of time if left untreated. Here we present the MRI/CT imaging findings of invasive mucormycosis and correlate them with exclusive intra op findings/pictures in a series of 30 histo-pathologically proven cases of invasive sino-nasal mucormycosis. Invasive fungal sinusitis spreads rapidly may involve the orbit, crania-facial bones and may spread intra cranially through varied routes and may result in dreadful complications. Hence it requires an instant diagnosis on imaging followed by a multi-departmental treatment approach. CT/MRI images are presented and correlated simultaneously with intra operative findings/ images, which include exclusive images from FESS (Functional Endoscopic Sinus Surgery), and invasive neurosurgical procedures involved in the treatment of invasive fungal sinusitis. The idea behind our exhibit is to actually correlate what the radiologists see on CT/MRI and what the surgeons see during the surgical procedures in patients with invasive mucormycosis. We would be depicting the actual intra-operative appearance of different imaging signs of invasive fungal sinusitis.

Biography

Dr. Nikrish S Hegde graduated with MBBS from the prestigious Kasturba Medical College, Manipal, India in 2013, then went on to complete post graduation–MD in Radiology from Father Muller Medical College, M'luru, India in 2016. Dr. Nikrish obtained the position of Associate Consultant in Radiology at the renowned P.D Hinduja Hospital, Mumbai, India. Now, currently working as a Consultant Radiologist with Amradnet India and have multiple publications and international presentations under him.

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Microbiological activity of bovhyaluronidaze azoximer against microbial biofilms

Background: Biofilm-related infections are most often characterized by low susceptibility to treatment due to the difficulty of antibiotics penetration into the biofilm. This fact repeatedly increases the level of Antimicrobial Resistance (AMR). In turn, the spread of AMR significantly reduces the effectiveness of available therapy regimens. Currently there are several notable strategies of microbial biofilm reduction, including enzymatic hydrolysis of the biofilm matrix. The latter has low toxicity and doesn't characterised by the risk of resistance development, facilitating the antibiotics cell penetration.

Aims: To evaluate the ability of bovhyaluronidaze azoximer to destroy biofilms formed by clinical strains of microorganisms.

Methods: The study included 50 clinical strains of *Staphylococcus aureus* (25 strains*), Staphylococcus epidermidis* (6*), Enterococcus faecalis* (8), *Escherichia coli* (9), *Candida albicans* (2), isolated from hospitalized and outpatient patients. Antimicrobial susceptibility testing was performed using broth microdilution method. Biofilm formation culturing with antibiotics, bovhyaluronidaze azoximer and their combinations was assessed in Mueller-Hinton broth and brain heart broth in 96-well plates. Biofilms are fixed with 2.5% glutaraldehyde solution, stained with 0.25% crystal violet solution, which is extracted by 33% acetic acid solution.

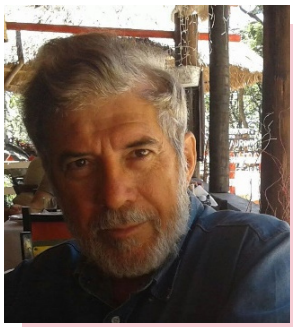
Results: All methicillin-resistant strains of *S. aureus* were able to form biofilms. The optical density values for them were (Me; LQ-UQ) 0,212; 0,079-0,336. A significant dose-dependent enzymatic destruction of the biofilm matrix of *S. aureus* as well as *C. albicans* was noted when applying a concentration of 1000 IU/ml of bovhyaluronidaze azoximer. The most prominent enzymatic destruction of the biofilm matrix of *E. coli* occurred in concentration of 1000 IU/ml, but also manifested in 250 IU/ml and 64I U/ml. For all *S. epidermidis* strains the biofilm matrix was destroyed when treated with bovhyaluronidaze azoximer at a concentration of 250 IU/ml or 1000 IU/ml. The *E. faecalis* biofilms were found to be safe to the enzyme exposure.

Conclusions: Bovhyaluronidaze azoximer can destroy the matrix of preformed biofilms of methicillin-resistant strains of *S. aureus* as well as *S. epidermidis, E. coli*, *C. albicans* in concentrations of 64-1000 IU/ml, while exerting a dose-depend effective. Bovhyaluronidaze azoximer combining with antibiotics will potentiate its antimicrobial effects by destroying the

microbial biofilm matrix formed by microorganisms with multidrug resistance and facilitating the penetration of antibiotics to cellular targets.

Biography

Kozlov Roman completed a course in Clinical Microbiology at the London University with a MSc degree in 1996, and in 1997- clinical residency at the Department of Clinical Pharmacology. Roman received his PhD (1999) and Grand PhD (2004) in Medical sciences. In 2015 Kozlov R. was appointed Chief Specialist of the Ministry of Health of Russian Federation in the field of clinical microbiology and antimicrobial resistance. Since 2016, has been the corresponding member of RAS in the antibiotic specialty, as well as the Head of the WHO Collaborating Canter for Capacity-building in the Field of Antimicrobial Resistance Surveillance and Research.



Mendonça, Ronaldo Zucatelli[1*], Fernandes, Ana Carolina[1]; Nascimento, Roberto Manoel[1]; Braida, Yasmin Vieira[1]; da Silva Junior, Pedro Ismael[2]

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[2]Special Laboratory for Applied Toxinology (LETA), Center of Toxins, Immune-response and cell signaling (CeTICS/CEPID), Butantan Institute

Antiviral activity of different molecules obtained from invertebrates against coronavirus

Introduction. The coronavirus has become known because of the COVID 9 pandemic. Coronaviruses cause epidemics not only in humans, but also in animals of commercial interest such as birds (Infectious bronchitis virus-IBV). The search for new antivirals has become an urgent need. This virus can be a good tool for studying the viral replication and antiviral action of substances against animals or human coronavirus. Many studies have been carried out with this aim. Among the multiple sources of research for new antivirals, bioprospecting for molecules obtained from arthropods is one of the options.

Objective. In this study, the objective was to identify compounds with antiviral effect against avian Coronavirus in propolis from Scaptotrigona aff postica, hemolymph from Lonomia obliqua and mygalin, a substance extracted from spiders.

Methods: The propolis was obtained from a colony of Scaptotrigona aff postica, from Brazil. Lonomia obliqua hemolymph was obtained from wild caterpillars. The isolation and purification of antiviral substances from propolis and caterpillar hemolymph was performed by a Reverse-Phase HPLC DAD-ESI-MS/MS. Purified mygalin was obtained from the tarantula A. gomesiana. The antiviral assay was performed by reducing infectious foci in VERO cells. Cells were treated 1 hour before infection or 1 hour after infection, with 2, 5 and 10% of propolis or hemolymph and its purified or synthetic components.The cells were also infected with a mixture of viruses and the test substances kept in contact for 1 hour before adding to the cultures. For purified mygalin or its synthetic analogue was used in test 26, 52, 104 and 160 µM. Treated and untreated cells were infected with different amounts of coronavirus (100 to 1000 DCTI/50).

Results: Propolis and crude hemolymph reduced avian coronavirus by an average of 256x when used at a concentration of 5% v/v and an average reduction of 8x when 160µM of mygalin was used. Synthetic mygalin (26 uM), reduced viral replication by 16 times and the purified propolis reduced the virus replication an average of 32 times. The antiviral responses of the 3 substances were dose dependent, being 2 times more intense when added 1 hour before cell infection with the virus.

Biography

Dr. Mendonça did his master's and doctorate at the University of São Paulo in Microbiology and has 3 postdoctoral degrees in Biotechnology, 1 at UNAM-Mexico and 2 at IBET, Lisbon. Dr. Mendonça has worked at the Butantan Institute since 1980 developing vaccines and bioprospecting studies of antiviral, antibacterial, antitumor and anti-inflammatory drugs in natural sources. Dr Mendonça has published about 100 research articles in SCI (E) journals, the majority in the area of virology, cell death, development of process.

Saoirse Coyne

University of Birmingham/Manchester University Foundation Trust, England, United Kingdom

An exploratory qualitative (Semi-Structured Interview) study exploring acceptability of self-sampling (Testing) for blood borne viruses in the South-Asian community in the West-Midlands in the UK

Background: Blood Borne Viruses (BBVs), principally HIV and Hepatitis B&C are a major public health challenge. In the UK, ethnic minority populations face a disproportionate burden of infection. BBVs are now largely treatable once detected, but there are significant missed opportunities to screen for them. The 'Saving Lives Charity' has developed an online postal testing self-sampling system for BBVs. This sampling style has been found to be effective in the predominantly white heterosexual and homosexual populations. The development of targeted testing for BBVs and its acceptability in the south-Asian population in the West-Midlands needs to be understood. This study aimed to explore this community's perception on BBVs and self-sampling, to aid in influencing potential health promotion responses.

Methods: This was an exploratory qualitative research study utilising semi-structured interviews for primary data collection. Ten participants who identified as ethnically South-Asian residing in the West Midlands were recruited through convenience sampling. Interviews were transcribed verbatim, and analysis was conducted via the 'The Framework Method' using NVivo12 and Microsoft Excel to develop the themes. This study followed the 'Consolidated Criteria for Reporting Qualitative Research' (COREQ) guidelines.

Results: Two of the participants interviewed were women. Four major themes were identified. 'Community understanding and education on BBVs', 'barriers influencing health-seeking', 'facilitators influencing health-seeking' and 'changing the narrative of BBVs'. A key barrier is the perceived lack of knowledge on BBVs conferring a lack of susceptibility to BBVs. Due to widespread self-testing during COVID-19 there has been a shift in the locus of control towards self-sampling. So, if sufficient awareness is raised about its importance, acceptability will be facilitated and influenced. A potential avenue for this is through utilising a testing champion, a member of the South-Asian community who can raise awareness and support about BBV testing.

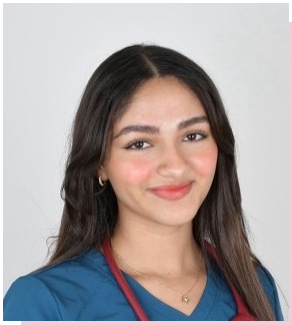
Conclusions: This study identified key barriers and facilitators which were supported in previous published literature, including existing stigmas and limited knowledge. The 'challenge of overfamiliarity' with health care professionals requires further exploration. There was clear

identification by participants of the need for education on BBVs and a testing champion to influence the acceptability of self-sampling.

Keywords: Blood Borne Virus, South Asian, Acceptability, Self-Sampling, Qualitative, Risk, Awareness, Knowledge.

Biography

Dr. Saoirse Coyne studied for her Bachelor of Medicine and Surgery degree at the University of Birmingham, England (2017-2023), and completed an integrated Bachelor of Medical Sciences degree in Global Health with first class honors in the year 2021-2022. Dr Coyne is now a Foundation Year 2 doctor, working at North Manchester General Hospital (Manchester University Foundation Trust). And has plans to go to Australia to work in an Emergency Department there for a year, then plans to return to the United Kingdom to pursue a career in Emergency Medicine, through commencing the 'Acute Care Common Stem' training pathway.



Sara Mohammed Ahmed Rady[1*], Sara Sabra[1], Mahmoud Abdelmoati[1], Maryam Alameddine[1], Suchita Dsilva[1,2], Jeevan Shetty[1,3]

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Diagnostic performance of salivary PCR for the detection of congenital cytomegalovirus: A systematic review and meta-analysis

Background: Congenital cytomegalovirus (cCMV) is a leading cause of neonatal morbidity, including sensorineural hearing loss. Early detection is critical; however, the current gold standard, urinary PCR, faces feasibility challenges in neonates. Salivary PCR offers a more practical alternative, but its diagnostic accuracy remains debated. This systematic review and meta-analysis evaluated the diagnostic performance of salivary PCR compared to urinary PCR in detecting cCMV.

Methods: A systematic review and meta-analysis were conducted according to PRISMA guidelines, including observational studies that compared salivary PCR to urinary PCR in neonates (≤28 days). Eligible studies reported sensitivity (SN), specificity (SP), positive predictive value (PPV), and negative predictive value (NPV). Data extraction and quality assessment were performed using Covidence and QUADAS-2. Missing values were calculated using the Binomial Proportion and Wilson Score Interval. Meta-analysis was performed using R with a random-effects model (DerSimonian and Laird method).

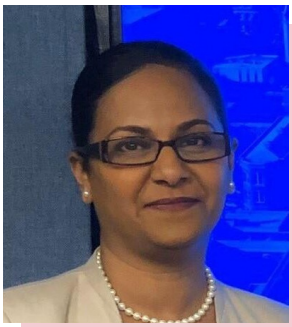
Results: Fifteen studies involving 29,617 neonates were included. Most were prospective cohort studies published between 2021 and 2025. Salivary PCR demonstrated high diagnostic accuracy with a sensitivity of 0.99 (95% CI: 0.97–1.00) and specificity of 1.00 (95% CI: 1.00–1.00). NPV was 1.00 (95% CI: 1.00–1.00), and PPV was 0.91 (95% CI: 0.86–0.97), though moderate heterogeneity was observed (I^2 = 51.49%).

Subgroup analysis across three populations- general neonates, high-risk neonates, and infants of seropositive mothers- confirmed high performance. In the general neonatal group (n = 27,798), the test showed the highest diagnostic odds ratio (DOR: 8635.79), specificity (0.999), and PLR (833.01), with SN of 0.965. High-risk neonates (n = 1,536) had slightly higher SN (0.981) and AUC (0.926), with high SP (0.996) and acceptable DOR (897.15). Among seropositive mothers (n = 283), AUC reached 0.942 and NPV was 0.997, though DOR (437.03) and PLR (37.10) were lower. Across all groups, NPV remained consistently >0.994, while PPV ranged from 0.848 to 0.981.

Conclusions: Salivary PCR is a highly reliable screening tool for cCMV, demonstrating excellent sensitivity, specificity, and NPV across diverse neonatal populations. While PPV varied slightly, particularly in high-risk and seropositive groups, diagnostic performance remained strong. These findings support salivary PCR as a practical and effective alternative to urinary PCR, with confirmatory testing advised in select cases.

Biography

Sara Mohammed Ahmed Rady is a third-year medical student at RCSI Bahrain, ranked 3rd on the President's Honors List for two consecutive years. Passionate about infectious diseases, she has led two systematic reviews in the field, one of which is already published. These experiences have deepened her interest in advancing diagnostic accuracy and patient care. With a strong academic foundation and growing research expertise, Sara is committed to contributing meaningfully to global health. She looks forward to a future where she can address infectious disease challenges through both clinical work and academic research.



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Use of antifungal agents in non-neutropenic critically ill patients to decrease invasive fungal infections versus placebo: A systematic review and meta-analysis

Background: Invasive candidiasis is considered the third most common bloodstream infection in critical care units, and can lead to increased morbidity and mortality. Invasive fungal infections can be deadly if not recognized early in the course of the disease. Reaching a diagnosis can be challenging, making optimal treatment difficult. The controversy has always been whether to treat empirically once there is a high index of suspicion or choose to use a pre-emptive strategy once diagnosis is made, especially among critically ill patients.

Methods: PubMed, Scopus, and Cochrane databases were searched for randomized controlled trials that compared the prophylactic /pre-emptive use of antifungal agents in non-neutropenic critically ill patients versus placebo. Reported outcomes were: (1) reduction of the incidence of invasive fungal infections, (2) mortality (3) adverse events. A random-effects model was used to pool risk ratios across studies.

Results: We included six (6) randomized controlled trials (RCTs). Invasive fungal infections occurred in 23 of 610 patients in the antifungal group and 68 of 590 in the placebo group (RR = 0.35; 95% CI: 0.22–0.55). Adverse events were reported in 202 of 378 patients receiving antifungals and 188 of 362 receiving placebo (RR = 1.03; 95% CI: 0.95–1.13). There were 145 out of 625 deaths in the intervention group vs 132 out of 608 in the placebo group, with (RR = 1.05; 95% CI: 0.86–1.29).

Conclusion: These findings suggest that pre-emptive /prophylactic antifungal treatment in critically ill patients decreased invasive fungal infections but did not affect mortality or adverse events.

Biography

Dr Siham Mahgoub completed her training at Beth Israel Medical Center and New York Medical College, New York. She is the Medical Director of the Center for Infectious Disease Management and Research. She was the principal investigator for the Novavax Vaccine trial, the COVID-19 Variant Immunologic Landscape Trial (COVAIL Trial), Howard University principal investigator for the convalescent plasma to treat COVID 19. She was also the co-Investigator for the Howard University Genetic Study. Dr Mahgoub is currently an Associate Professor in the Howard University College of Medicine and the acting chief for the Infectious Diseases Division in the department of Medicine.

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A rare case of COVID-19 complicated with severe pneumonia and acute arterial thrombosis of a lower limb

The COVID-19 pandemic demonstrated the risks for thrombotic complications associated with acute respiratory failure. Severe forms are associated with a hypercoagulable state due to excessive inflammation, hyperfibrinogenemia, hypoxia, altered angiotensin-converting enzyme 2, and endothelial injury creating conditions for thrombus formation. It has also been suggested that COVID-19 infection likely induces a process of immune system hyperactivation known as immunothrombosis, in which activated neutrophils and monocytes interact with platelets and the coagulation cascade, leading to thrombus formation. Studies suggest that the risk of arterial thrombosis increases with high severity of lung involvement. Systematic reviews and studies have shown that lower extremity arterial thrombosis in COVID-19 is associated with high mortality, amputation, and ineffective interventions.

We present a case of a 58-year-old man admitted to the Intensive Care Unit (ICU) of the Military Medical Academy-Sofia with the picture of severe respiratory failure based on massive bilateral pneumonia caused by SARS-CoV-2. The patient was febrile, with tachydyspnea and O_2 saturation of 78% on ambient air, elevated values of C-Reactive Protein (CRP), lactate dehydrogenase (LDH), and fibrinogen, with normal d-dimer values. No concomitant diseases. Onset of symptoms- cough and fever, general weakness, dated from 1 week before hospitalization, when he also had a positive RT-PCR for SARS-CoV-2. The initial therapy included levofloxacin, piperacylline/tazobactam, fluconazole, corticosteroids, gastroprotector, and low molecular weight heparin at a dose of 2x 5,700 anti-Xa IU. Oxygen delivery was through a high oxygen concentration mask, with a tank balloon at a rate of up to 15 L/min. On the fifth day of admission, the patient complained of severe pain in the right leg, which was colder and paler. D-dimer showed elevated values. Doppler examination revealed thrombosis of a. femoralis superficialis and thrombendarterectomy was performed. Therapy with heparin in continuous infusion and pentoxifylline was started. Two days later, there were no pulsations of plantar arteries and a purplish discoloration of the skin of the right foot. Emergency subtalar amputation was undertaken and Iloprost was added to the therapy. On the 20th day of admission, the patient was in improved general condition, with respiratory failure controlled, no need for oxygen therapy, and improved paraclinical parameters. He was discharged from the ICU and transferred to the Vascular Surgery Clinic for further treatment.

The case demonstrates that severe respiratory failure in COVID-19 predisposes to a

prothrombotic state and endothelial injury, increasing the risk of arterial and venous thrombosis, and that prophylaxis with low molecular weight heparins does not completely eliminate the risk of thrombotic complications. Arterial thrombotic events increase the risk of death by 3-fold in patients with COVID-19 and demonstrate the critical need to develop effective preventive measures. Clinical judgment to initiate prophylactic anticoagulation should be made regardless of D-dimer level, as not all cases with arterial thrombosis have high D-dimers.

Biography

Silviya Stoyanova studied at the Medical University of Sofia, Bulgaria, and graduated with a Master of Medicine in 1998, followed by specialization in Infectious diseases at the Military Medical Academy, Sofia, Bulgaria, and received specialty in 2009. In 2011, Silviya acquired a Postgraduate Qualification of Clinical and Consultative Psychology at Sofia University, Bulgaria, and in 2023, graduated with a Master of Healthcare Management at New Bulgarian University, Sofia, Bulgaria. Since 2015, works at Clinic of Intensive Care, an Intensive Care Unit at the Military Medical Academy, Sofia, Bulgaria. Silviya scientific interests are related to the diagnosis and treatment of critically ill patients with infectious diseases.

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Atypical presentation of ocular toxocariasis: A case report

Toxocariasis is a parasitosis caused by the accidental ingestion of eggs from a nematode of the Ascarid family (most commonly *Toxocara canis*). Ocular localization results from the migration of the larva into the eyeball, which is generally benign but can, in some cases, lead to dramatic complications.

Our case illustrates an atypical presentation of ocular toxocariasis, characterized by bilateral involvement and the absence of a visual focus on the fundus.

A 25-year-old patient, with no specific pathological history, from a rural environment in Morocco and a history of contact with animals, was admitted for an etiological workup of ocular involvement consisting of bilateral intermediate and posterior uveitis. The condition manifested as decreased visual acuity and ocular redness. Ophthalmological examination revealed visual acuity of 1/10 in the right eye and 2/10 in the left, bilateral 2-cross hyalitis on the fundus, vascular engorgement in the right eye, and maculopathy in the left eye, with no detectable focus. Retinal angiography showed papillary and post-papillary atrophy and vascular engorgement bilaterally, with a few non-perfused vessels on the right and maculopathy on the left. The etiological workup included a blood count, which revealed no abnormalities, notably no hypereosinophilia. The infectious workup showed positive toxocariasis serology by ELISA, confirmed by Western blot. The diagnosis of ocular toxocariasis was established, and a thoracic X-ray and abdominal ultrasound were performed to search for other visceral involvement, revealing no abnormalities.

The patient was treated with oral corticosteroids (1 mg/kg/day) combined with albendazole (800 mg/day for 14 days), with a clinically favorable evolution.

Ocular toxocariasis is a rare infection. Unilateral involvement is the most frequently described, while bilateral involvement is exceptional. Diagnosis is clinically suspected and confirmed biologically by serology in serum, aqueous humor, or vitreous. Treatment is primarily based on corticosteroids combined with antiparasitic agents.

Biography

Dr. Soukaina Mounsif, resident physician in the Department of Internal Medicine at Ibn Rochd University Hospital Center of Casablanca, Morocco. Dr. Soukaina earned the Doctorate of General Medicine in September 2020 and began specialization in Internal Medicine in March 2021.

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Molnupiravir and COVID19 myopericarditis: An indirect therapeutic role?

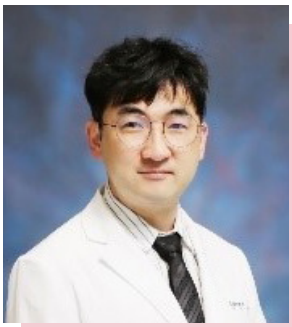
COVID-19 disease is associated with the emerging RNA virus, called SARS-CoV-2, which belongs to the Coronaviridae family, ubiquitous respiratory viruses among humans and mammals. A positive diagnosis is obtained through Reverse Transcription Polymerase Chain Reaction (RT-PCR) from a respiratory sample. While early data suggested a purely respiratory infection, more recent publications highlight the considerable pleomorphism of the disease, leading to multi-organ involvement, with cardiac involvement being the most prominent. Our clinical case illustrates a myopericarditis secondary to SARS-CoV-2 that evolved well under molnupiravir.

We report the clinical case of a 31-year-old young athlete, with no significant medical history, unvaccinated against SARS-CoV-2, with no toxic habits or medication use, admitted for an etiological workup of myopericarditis diagnosed by cardiac MRI. The condition presented clinically with acute chest pain mimicking acute coronary syndrome and dyspnea, preceded two days earlier by a flu-like syndrome. Given the pandemic context, a RT-PCR test for SARS-CoV-2 from a nasal swab returned positive. Additionally, other viral serologies were negative. Considering a potential autoimmune origin, we performed screening for Antinuclear Antibodies (ANA), which was negative. Antineutrophil Cytoplasmic Antibodies (ANCA) were also negative, with no signs suggestive of behçet's disease. We initiated antiviral treatment with Molnupiravir, 800 mg/day for 5 days, with good progress as assessed by normal echocardiography (no dilated cardiomyopathy) and cardiac MRI.

Data on the use of Molnupiravir in SARS-CoV-2-related myopericarditis remain limited. According to guidelines, this antiviral may be used in patients at risk for severe COVID-19 to reduce the viral load and, consequently, indirectly limit inflammation. However, in our clinical case, the role of molnupiravir in the favorable outcome of cardiac involvement remains hypothetical, considering that viral myopericarditis often spontaneously resolves. Nevertheless, further studies should be considered to confirm the direct beneficial effect on myopericarditis.

Biography

Dr. Soukaina Mounsif, resident physician in the Department of Internal Medicine at Ibn Rochd University Hospital Center of Casablanca, Morocco. Dr. Soukaina earned the Doctorate of General Medicine in September 2020 and began specialization in Internal Medicine in March 2021.



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Exploring non-carbapenem options for ESBL-producing enterobacteriaceae bacteremia in emergency room: Focusing on piperacillin-tazobactam

Background: In emergency room settings, the management of bacteremia caused by Extended-Spectrum Beta-Lactamase (ESBL) producing Enterobacteriaceae (ESBL-E) is critical. Traditionally, carbapenems are the recommended treatment, but their use raises concerns about resistance. This study evaluates the effectiveness of non-carbapenem options, specifically piperacillin/tazobactam, for treating ESBL-E bacteremia in patients with lower acute severity.

Methods: We conducted a retrospective case-control study, including a cohort of patients with documented ESBL-E bacteremia from January 2021 to December 2021 in a single teaching hospital in Republic of Korea. Total 527 adults (aged 18 years or older) with Enterobacteriaceae bacteremia were enrolled into the study. Patients were excluded if they were infected with the same species (or ESBL-E) 3 months prior to the current positive result or if two or more species were identified within a specimen, including blood. Based on the exclusion criteria, 118 patients with ESBL-E bacteremia were included. Patients were divided into two groups based on the choice of antimicrobial therapy: Non-carbapenem or carbapenem in emergency room. Antimicrobial susceptibility and phenotypic ESBL-E identification were tested using the Vitek 2 system (BioMérieux). The primary outcome was defined as same species isolation with the initial isolates from blood culture at two to five days after starting definitive antimicrobial drug maintenance, or relapesed fever, or deterioration of the clinical course which lead to change in antimicrobials five days after maintaining definitive antimicrobials, and the secondary outcome was 30-day mortality.

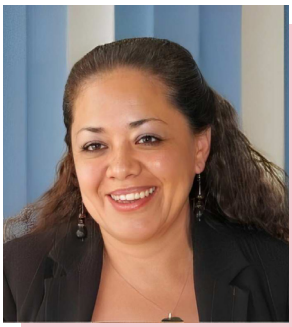
Results: Of 118 patients with ESBL-E bacteremia, 54 received Non-Carbapenem Drugs (NCG) and 64 received Carbapenems (CG). Among all patients, 54 (45.8%) were men, with a mean age of 71.1 years (±11.6). The overall 30-day inpatient mortality was 16.1%. There was no significant difference in the primary outcome of treatment failure between the NCG and CG (16.7% vs. 18.8%, p=0.65). The secondary outcome of 30-day mortality occurred in eight and 11 patients in the NCG and the CG (14.8% vs. 17.2%, p=0.63). Additionally, based on the results of Cox regression analysis, there was no significant difference in the primary outcome of treatment failure between the NCG an CG (Harad Ratio [HR]=1.32; 95% Confidence Interval

[CI]: 0.55–3.17, p=0.54), and there was no the secondary outcome of 30-day mortality in the NCG and the CG (HR=1.75; 95% CI: 0.51–6.05, p=0.38). In multivariate regression analysis, there were significant differences in treatment failure in the prior antimicrobial therapy within 30 days and extra-urinary tract infection. However, there was no significantly difference in the other variables including choice of non-carbapenem antimicrobial drugs.

Conclusion: In emergency room, non-carbapenem antimicrobials such as piperacillin/tazobactam are viable for patients with less severe ESBL-E bacteremia, potentially reducing reliance on carbapenems and preserving their efficacy for more critical cases in Republic of Korea.

Biography

Dr. Sung Wook Song studied Medicine at the Jeju National University School of Medicine, Republic of Korea, and graduated with a Master of Science degree in 2012. Received his Doctor's license from the Ministry of Health and Welfare, Republic of Korea, in 2004 and became certified in emergency medicine in 2009. In 2012, Dr. Sung completed a fellowship in the Department of Emergency Medicine at Seoul National Univeristy Hospital, Seoul, Republic of Korea. Currently, Dr. Song holds the position of Associate Professor at Jeju National University College of Medicine, Jeju, Republic of Korea. And, has been authored over 40 research articles published.



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Effect of an immunomodulator RS100 in vaccinated, unvaccinated and challenged with *Mycoplasma hyopneumoniae*

Enzootic pneumonia is a disesease caused by *M. hyopneumoniae* (Mh). The immunomodulator RS-100 we used in this study is of vegetable origin. Clinical, serologic and leuko parameters in piglets treated with the RS100 and challenged with Mh. For 15 days no clinical signs were observed caused by the RS100 not the vaccination. In first w after challenge, high temp were seen in all groups. Groups A and B showed fever on days 15 to 21 PI cough started on day 15 PI and until day 21, cough and dispnea were observed. Groups C and D showed fever only on days 18 to 21. The leukocyte count on group A remained normal, but groups B, C and D that received the RS 100 and the vaccine, a leukocyte count increased, to return to normal after the challenge. The best was D with RS 100 and a commercial vaccine. In the titration of antibodies groups A and B showed a weak antibody response and groups C and D a good antibody response up to week 5 and after the challenge, the readings decreased. In the antibody response also the group with a commercial vaccine and RS 100 was de best. Our results caused an increase in leucocytes. PAPIIT IN203522 and CI2412.

Biography

Susana Mendoza is a professor at UNAM, Research on Respiratory Diseases of the Pig and a National researcher recognized (SNII) by the National Council of Science and Technology of Mexico (CONAHCYT-Mex.). Mendoza is a member of different scientific and professional organizations, peer-reviewed articles, divulgation articles, congress presentations, book chapters and patents.

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A rare presentation of spontaneous necrotizing fasciitis of the thoracic wall: A case report

Necrotizing fasciitis is a rare, life-threatening infection of the deep soft tissues that results in progressive destruction of the muscle fascia and overlying subcutaneous fat, causing tissue necrosis and systemic toxicity.

This case report describes a 30-year-old obese female with no significant past medical history with a four-day history of hidradenitis suppurativa, presented with a progressively worsening abscess beneath her right breast. Initial workup revealed diabetes mellites. Despite initial management with broad-spectrum intravenous antibiotics, her condition deteriorated, necessitating urgent surgical debridement. Intraoperative findings confirmed extensive necrotizing fasciitis with polymicrobial infection, including *Escherichia coli*, *Enterococcus faecalis*, and Group B *Streptococcus*. The patient developed acute kidney injury and acute tubular necrosis due to severe sepsis and required multidisciplinary management involving surgeons, infectious disease specialists, nephrologists, and wound care management. The patient's condition improved through aggressive surgical intervention, comprehensive antibiotic therapy, and supportive care. She was discharged on oral antibiotics with outpatient diabetic and wound care follow-up.

The presentation of spontaneous necrotizing fasciitis of the thoracic wall in a young, obese female with a new diagnosis of diabetes mellitus exemplifies a rare clinical occurrence.

This case reinforces early clinical suspicion, prompt surgical intervention, and coordinated multidisciplinary care in managing necrotizing fasciitis, particularly in patients with no underlying risk factors. The discussion highlights diagnostic challenges, treatment strategies, and relevant literature supporting best practices for this life-threatening condition.

Biography

Dr. Swapna Sirigireddy studied M.B.B.S at Sri Siddhartha Medical College, India. Currently, working as a Regional HIM Director at Dallas Regional Medical Center USA. Dr. Swapna is doing her Research Fellowship at Joan Edwards School of Medicine Marshall University USA and has submitted 3 manuscripts to Journal of Investigative Medicine High Impact Case Reports.

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Rickettsiosis presenting as viral-like illness: A case report highlighting diagnostic challenges in a resource-limited setting

Rickettsioses encompass a group of diseases caused by Rickettsia, which are responsible for endemic typhus, murine typhus, scrub typhus, and spotted fever. Due to the similarity in clinical presentations, rickettsioses are often misdiagnosed as other causes of acute fever. Here we present a case of rickettsiosis in which the diagnosis was initially overlooked during the early days of the fever.

A 29-year-old male was admitted with a 5-day history of fever, myalgia, and headache. He did not report respiratory, gastrointestinal, or urinary tract symptoms. Two days earlier, he had returned from a visit to Singapore. The patient worked as a merchant and kept pet dogs at home. Physical examination revealed only a high fever with other findings were unremarkable. Laboratory results showed leukopenia, thrombocytopenia, mildly elevated creatinine, and moderately elevated liver enzymes, C-reactive protein, and procalcitonin. Malaria and salmonella typhi IgM tests were negative. Chest CT revealed a minimal fibroinfiltrate in the bilateral lower lobes of the lungs. Abdominal CT showed enlargement of the liver and spleen. The patient was diagnosed with acute fever of unclear origin, presumed to be due to bacterial or viral infection. He was treated with ceftriaxone and a low dose of corticosteroids, but the fever persisted. Blood culture showed no growth on follow-up examination.

On the 10th day of fever, multiple PCR tests were performed on blood samples, covering Leptospira, CMV, EBV, and Rickettsia. The results confirmed a positive result for rickettsia typhi. The patient was diagnosed with endemic typhus and treated with oral doxycycline. Within 36 hours of starting doxycycline, the fever subsided, followed by improvements in inflammatory markers. The patient was discharged, and doxycycline was continued for a total duration of 7 days.

An observational study conducted in Indonesia among patients admitted with acute febrile illness found that rickettsioses was the third most common cause of fever, following dengue virus and salmonella species. The symptoms resemble those of viral infections, which may lead to delayed diagnosis in the initial stages.

Patient in this case was diagnosed with endemic typhus, a flea-borne rickettsiosis caused by R. typhi. The classic triad includes fever, headache, and skin rash. However, the patient did not develop a rash, which

occurs in less than 50% of cases. Diagnosis was confirmed using a PCR-based molecular method. The issue arises from the fact that rickettsioses are not commonly diagnosed in our country, and PCR tests for this condition are only available at national reference laboratories.

The challenges in diagnosing rickettsioses lie in the delayed or missed diagnosis and the limited availability of diagnostic tools in healthcare facilities, both of which contribute to delayed initiation of appropriate antibiotic therapy.

Biography

Dr. Velma Herwanto is the Head of the Department of Internal Medicine at the Faculty of Medicine, Universitas Tarumanagara, Jakarta, Indonesia. She is in the final year of her fellowship in Tropical Medicine and Infectious Diseases at the Department of Internal Medicine, Faculty of Medicine, Universitas Indonesia/Dr. Cipto Mangunkusumo General Hospital, Jakarta, Indonesia. Dr. Velma completed PhD through research on immune response in sepsis patients at the University of Sydney, Australia. Currently, Dr. Velma is actively serving as the head of the antibiotic stewardship team at private practice, Siloam Hospitals Kebon Jeruk, Jakarta.

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Enhancing antibiotic therapy for SSTIS: The diagnostic role of punch biopsy

Introduction: Skin and Soft Tissue Infections (SSTIs) include a range of conditions affecting the skin layers and underlying connective tissue, including erysipelas, cellulitis, impetigo, and ecthyma. These infections are among the most common reasons for outpatient visits and hospital admissions, with a higher prevalence in warmer, low-income, and resource-poor regions. While diagnosis is primarily clinical, accurate identification of the causative pathogen is essential for targeted therapy and effective antimicrobial stewardship. Traditional diagnostic methods, such as blood and lesion cultures, often have limited sensitivity, underscoring the need for more reliable approaches. Skin biopsies, particularly punch biopsies, offer a minimally invasive, bedside-accessible option that enhances diagnostic accuracy, revealing pathogens in 20-30% of cases. These biopsies can be categorized as incisional (e.g., scraping, curettage, or punch biopsy) or excisional (e.g., shaving or scoop), with punch biopsies standing out for their simplicity and lack of requirement for advanced surgical skills. Given the potential for rapid progression and complications-such as treatment failure, bacterial resistance, or disease advancement - early and precise diagnosis is critical. It enables appropriate stratification of clinical and surgical treatments, reduces hospital stays, and improves patient outcomes, particularly in life-threatening cases.

Methods: A retrospective study evaluating patients admitted to Pontifical Catholic University of Campinas (PUC-Campinas) Hospital with a diagnosis of skin and soft tissue infection between 2023 and 2024. All patients over the age of 18 diagnosed with an acute (less than 14 days of symptoms) skin and soft tissue infection by an infectious disease physician were included.

Results: "A total of 83 skin biopsies were performed at PUC Campinas Hospital over 17 months, between January 2023 and May 2024. Of these, 24 (29%) were positive for the presence of bacteria, while 59 (71%) were negative. Among the positive cultures, 11 different bacterial species were identified, distributed across 6 genera. The most prevalent genus was Staphylococcus, with 6 species, predominantly S. aureus (11 cases). Additionally, 5 of the 24 positive biopsies (21%) identified Gram-negative bacteria, while 7 isolates (29%) were resistant to oxacillin. Notably, in 6 of the 24 positive cultures (25%), the initial empirical antimicrobial regimen required adjustment based on culture results, which was associated with a reduced length of hospital stay.

Conclusion: This study reinforces the role of punch biopsy as an effective tool for improving

SSTI diagnosis, particularly in cases where clinical assessment alone is insufficient. While the majority of Skin and Soft Tissue Infections (SSTIs) are caused by community-associated gram-positive bacteria, such as *S. aureus* and *S. pyogenes*, infections by resistant bacteria and gram-negative organisms can also occur. These cases often lead to errors in empirical therapy, highlighting the need for more accurate microbiological diagnosis. By integrating punch biopsy into routine SSTI diagnostics, clinicians can enhance pathogen identification, optimize antimicrobial therapy, and reduce resistance. Collaboration between infectious disease specialists, dermatologists, and microbiologists is key to refining SSTI management and improving patient outcomes.

Biography

Victoria de Lima Burnier is a medical student at PUC Campinas, set to graduate in July 2025, followed by completion of observational internships at McGill University Health Centre–Montreal and Sahlgrenska University Hospital–Gothenburg, also participated in scientific research. Main interests are Internal Medicine, Dermatology, and Infectious Diseases, particularly skin infections. Has been published scientific articles in international journals and aims to pursue a residency program. With strong research experience and clinical exposure, Victoria is dedicated to advancing knowledge in infectious skin diseases and improving patient care through evidence-based medicine.

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Cytokine storm control in severe fever with thrombocytopenia syndrome: Tocilizumab's potential role in reducing IL-6 and mortality

Background: Severe fever with Thrombocytopenia Syndrome (SFTS) is a zoonotic infectious disease prevalent in East Asia, with a mortality rate of 5–30%. Despite trials with Therapeutic Plasma Exchange (TPE) and antiviral treatments, no established treatment strategy exists for severe cases. Recent evidence suggests cytokine storms, particularly elevated levels of Interleukin (IL)-6, contribute to severe disease progression in SFTS. Tocilizumab, an anti-IL-6 receptor monoclonal antibody, may help manage cytokine storms in SFTS patients, similar to its use in severe COVID-19. This study aimed to investigate the therapeutic potential of tocilizumab in patients with severe SFTS, focusing on IL-6 dynamics and clinical outcomes, and comparing its efficacy to TPE and conservative treatment.

Methods: A prospective, longitudinal study was conducted involving 97 adult patients diagnosed with SFTS at a single hospital in Korea between 2013 and 2023. Tocilizumab was administered to patients with IL-6 levels ≥30 ng/mL from 2022 onwards. Patient outcomes in the Tocilizumab (TCZ) group were compared to those in the TPE and conservative treatment groups. Data on demographics, viral load, IL-6 levels, and Multiple Organ Dysfunction Scores (MODS) were collected. Kaplan-Meier curves and log-rank tests were used for survival analysis.

Results: Of the 40 patients, 30 underwent TPE and 10 received tocilizumab. In the TCZ group, the median initial SFTS viral load was higher compared to the TPE group (578,664 copies RNA/mL vs. 58,747 copies RNA/mL, p=0.08). The 14-day mortality rate was 10.0% in the TCZ group versus 16.7% in the TPE group (p=0.608), and the 28-day mortality rate was 10.0% versus 20.0%, respectively (p=0.480). While both treatments significantly reduced IL-6 levels and SFTS viral loads over time, IL-6 levels were significantly higher in the TPE and TCZ groups compared to the conservative treatment group at the 0–5 days interval (p=0.005). Kaplan-Meier survival analysis showed no significant difference in 14-day mortality between the TCZ and TPE groups (log-rank p=0.505), though a trend towards lower mortality was observed in the TCZ group.

Conclusion: Tocilizumab significantly reduced IL-6 levels and showed potential in improving survival in patients with SFTS, although the results were not statistically significant. Both

TPE and TCZ effectively managed viral load and IL-6 dynamics, highlighting their potential in controlling SFTS progression. Larger clinical trials are needed to establish the efficacy and safety of tocilizumab as a standard treatment for SFTS.

Biography

Dr. Wooseong Jeong studied Medicine at the Jeju National University School of Medicine, Republic of Korea, and graduated with a Master of Science (MS) degree in 2012. Received Doctor's license from the Ministry of Health and Welfare, Republic of Korea, in 2008 and became certified in internal medicine in 2013. In 2018, Dr. Wooseong completed a fellowship in the Division of Rheumatic Disease at Jeju National University hospital, Jeju, Republic of Korea and holds the position of Associate Professor at Jeju National University College of Medicine, Jeju, Republic of Korea.

BOOK OF ABSTRACTS

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