

4th International Conference on

MICROBIOLOGY AND IMMUNOLOGY

November 11-12, 2024

London, UK



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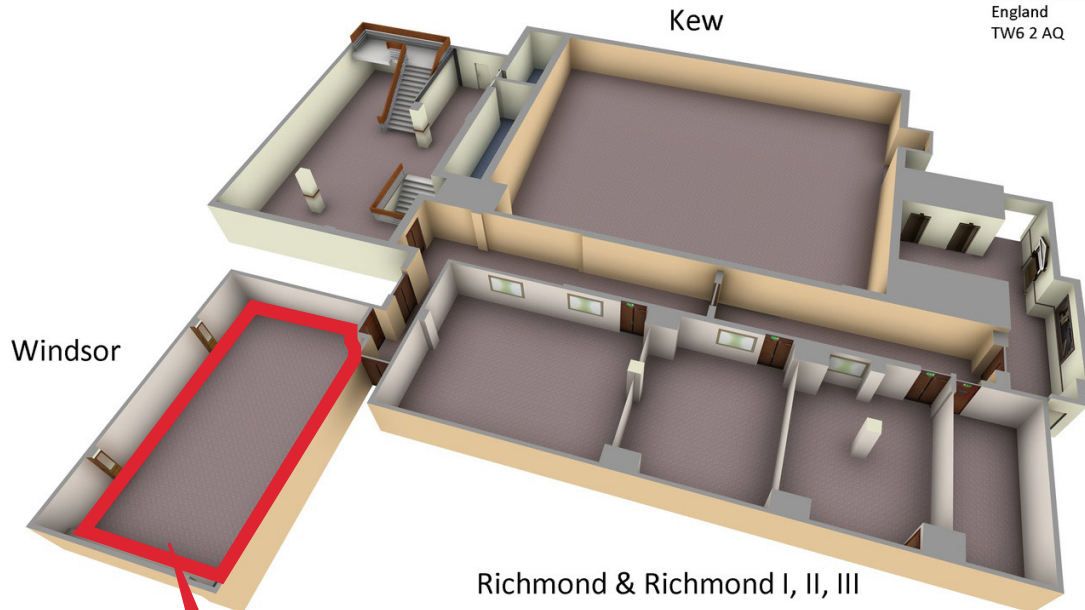
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Coalesce Research Group
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Floor Map

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Conference Hall



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Scientific Program

4th International Conference on **Microbiology and Immunology**

Day 1 - November 11, 2024

Meeting Hall: Windsor Suite

08:00 - 08:45 Registrations

08:45 - 09:00 Opening Ceremony and Introduction

Keynote Presentations

09:00 - 09:40 Lessons from COVID-19 Pandemic and Recommendation for Next Pandemic

Yaeko Mitsumori, Osaka University, Japan

09:40 - 10:20 "Continuous, *in-situ*-Targeted, Ultra-High Concentration of Antibiotics" (CITA) - A Novel Antibiotic Delivery Approach for the Treatment of Localized Infections

Moris Topaz, Tel Aviv Sourasky Medical Center, Israel

Networking & Refreshments @ York Lobby (10:20-10:45)

Oral Presentations

Session Chair **Lokesh Joshi, University of Galway and Aquila Bioscience, Ireland**

Session Chair **Veronica A Varney, St Helier Hospital, UK**

Sessions:

SARS-CoV | Bacteriology and Infectious Diseases | Viral Infections and Recent Advancements | Vaccines and Therapeutics | Infection, Immunity and Inflammation | Disinfection and Sterilization | Antimicrobial/ Antibiotic/ Antibacterial Resistance | Infection, Immunity and Inflammation | Surgical Site Infections | Influenza and Diagnostic Approaches | Infectious Diseases and Immune System | Nosocomial Infections and Control

10:45-11:10 Epidemiology, Characteristics and Outcome of Children Hospitalized with COVID-19 in Oman: A Multicenter Cohort Study

Farhana Al Othmani, Royal Hospital, Oman

11:10-11:35 Examining the Neutrophil Formyl Peptide Receptors and Their Role in Adult Respiratory Distress Syndrome (ARDS)

Veronica A Varney, St Helier Hospital, UK

11:35-12:00 Intracellular Bacteria Cause Chronic Disease by Altering the Innate Immune Response

Meg Mangin, Chronic Illness Recovery, USA

12:00 - 12:25 Safety and Immunogenicity of Live-attenuated YF17D-based Zika Virus Vaccine Candidate Produced in a Scalable High-yield Bioprocess

Ozeir Kazemi, Rega Institute KU Leuven, Belgium

12:25 - 12:50 Type IV Hypersensitivity Reaction

Khaled Marwa, University Hospital Southampton, UK

Group Photo: 12:50-13:00

Lunch @ Market Garden Restaurant (13:00-14:00)

14:00 - 14:25 A Nature-Inspired, Safe and Effective Decontamination Technology for Non-Toxic Removal of Pathogens from Surfaces and Skin

Lokesh Joshi, University of Galway and Aquila Bioscience, Ireland

4th International Conference on **Microbiology and Immunology**

14:25 - 14:50	Evaluation of Salt Tolerance Genes Expressed in Transgenes <i>Nicotiana tabacum</i> Mona Ali Albloushi, Ministry of Municipality, Qatar
14:50 - 15:15	Co-production of Bacillomycin D, Bacilysin and Macrolactins that are Antagonistic to <i>Malassezia</i> spp. by <i>Bacillus amyloliquefaciens</i> sp. from Marine Origin Yasmin Mirza, London School of Science and Technology, UK
15:15 - 15:40	From Basic Research to Drug Development - The Story of Glatiramer Acetate in the Treatment of Multiple Sclerosis and its Application for Additional Immune Mediated Disease Rina Aharoni, The Weizmann Institute of Science, Israel
15:40 - 16:05	A Guide to Stopping a Viral Infection. The Main Important Reservoir of Viruses Hidden in Carriers after Overcoming Infections is Intestinal Tract Vladimir Zajac, Cancer Research Institute, Slovakia
Networking & Refreshments @ York Lobby (16:05 - 16:30)	
16:30 - 16:55	Insights into Measles Virus: Serological Surveillance and Molecular Characterization Javed Muhammad, The University of Haripur, Pakistan
16:55 - 17:20	Moderately Low Effectiveness of the Influenza Quadrivalent Vaccine: Potential Mismatch Between Circulating Strains and Vaccine Strains Thamer AlOhal, King Abdulaziz Medical City, KSA
17:20 - 17:45	Exploration of Clinical, Immunological and Biological Marker Correlations to Predict Disease Severity in Non-Tuberculous Mycobacterial-Pulmonary Disease Patients (NTM-PD) Meyad Ali Alkarni, King Saud University, KSA
Poster Presentations (17:45 onwards)	
PP-01	The Infection Control Program in Catalonia, Spain. VINCAt Program: Successes and Challenges of Prevention Eric Limon, Catalan Institute of Oncology and VINCAt Program, Spain
PP-02	Antibiotics Circuit in French-Speaking Africa: Inventory, Challenges and Prospects Sana Boukary, Pharmacie Amirbouba, Burkina Faso
Day 1 Concludes followed by Certificate Felicitation	

4th International Conference on **Microbiology and Immunology**

Day 2 - November 12, 2024

Meeting Hall: Windsor Suite

Keynote Presentation

10:00 - 10:40 A Prompt Victory of Infection Control Against Rare Fungal Pathogens in a Large NHS Trust
Bushra Chaudhry, University Hospitals Dorset NHS Foundation Trust, UK

Oral Presentations

Session Chair **Mahmoud Huleihel, Ben-Gurion University of the Negev, Israel**

Sessions: Microbial Immunology and Infection Control | Antimicrobial/ Antibiotic/ Antibacterials Stewardship | Virology | Neglected and Tropical Infectious Diseases | Antimicrobial/ Antibiotic/ Antibacterial Resistance | Microbiology | Microbial Biotechnology | Infection, Immunity and Inflammation | Bacterial, Parasitic and Fungal Infections | Infection Control in Critical Care

10:40 - 11:05 Effects of HTLV-1 Tax Oncoprotein on BRCA1 Expression and Function
Mahmoud Huleihel, Ben-Gurion University of the Negev, Israel

Networking & Refreshments @ York Lobby (11:05-11:30)

11:30 - 11:55 An Unfamiliar Fungal Pathogen, *Magnusiomyces capitatus*
Muhammad Ayhan Amir, University Hospitals Dorset NHS Foundation Trust, UK

11:55 - 12:20 Antibacterial Activity of Nanocomposites on Methicillin-Resistant *Staphylococcus aureus* (MRSA)
Suraj Thomas Alexander, Clarolif FZC, UK

12:20 - 12:45 Use of Superpulsed Laser Therapy in the Treatment of Surgical Wound Infection of Cardiac Surgery
Palmerindo Antônio Tavares de Mendonça Néto, Instituto Regenerar- Dor e Medicina Regenerativa, Brazil

12:45-13:10 Fabrication of Symbiotic Multicellular Assemblies by Using a Novel "Gel Layer-by-Gel Layer" Technique
Reem Al-Haidose, Ministry of Municipality, Qatar

Lunch @ Market Garden Restaurant (13.10 - 14:00)

14:00 - 14:25 Management of *Staphylococcus aureus* Bacteraemia; A Comparison between Two NHS Trusts
Hadia Zaheer Lone, University Hospitals Dorset NHS Foundation Trust, UK

14:25 - 14:50 Two Coins of Berberine Against *Clostridium perfringens*: Collateral Sensitivity and Cross/Co-resistance
Wenhui Wang, Huazhong Agricultural University, China

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14:50 - 15:15	Visceral Leishmaniasis in Lebanon, A Report of Four Cases: Case Series and Review Oussaima El-dbouni, Aman Hospital, Qatar
15:15 - 15:40	COVID-19 and Its Impact on Healthcare Workers: Understanding Stigma, Stress, and Quality of Life Khaled Marwa, University Hospital Southampton, UK
15:40 - 16:05	Lateral Sensitivity and Combination of Licochalcone A with Antibiotics Against <i>Clostridium perfringens</i> Wenhui Wang, Huazhong Agricultural University, China

Networking & Refreshments @ York Lobby (16:05 - 16:35)

Video Presentations

VP-01	Mitigating Multi-Drug-Resistant <i>Candida auris</i> Outbreak in ICU: A Comprehensive Intervention Approach Estephanie Padua, Sheikh Khalifa Specialty Hospital, UAE
VP-02	Ecology of <i>Scedosporium</i> Species in Human Impacted Environments and Their Distribution in Soils of Northern Lebanon Sara Mina, Beirut Arab University, Lebanon
VP-03	44415 A Novel Approach to Hand Hygiene Steps Zizi Wanis, Mediclinic Welcare Hospital, UAE

E-Poster Presentations

EP-01	Legionella Pneumonia Complicated with Nephritis and Cerebral Hemorrhage Miryam Piccirillo, Ospedale del mare, Italy
EP-02	Inhibition of the Growth of Pathogenic Bacteria through the Use of Extracts of Plant Origin Rocío Pérez y Terrón, Benemérita Autonomous University of Puebla, Mexico

Day 2 Concludes followed by Certificate Felicitation and Vote of Thanks

Virtual Program

4th International Conference on **Microbiology and Immunology**

Virtual Presentations

November 11, 2024 - British Summer Time (BST)

11:00-11:10 **Introduction**

Keynote Presentation

11:10 - 11:40 Advances in Microbiome Research Reveals Novel Predictive and Therapeutic Options for Childhood Eczema

Ting Fan LEUNG, The Chinese University of Hong Kong, Hong Kong

Presentations

11:40 - 12:05 The Detection of the Viral Nucleic Acid of Latent Viruses in Peripheral Blood Mononuclear Cells and Neutrophils of Healthy Subjects

Sahar Essa, Kuwait University, Kuwait

12:05 - 12:30 Efficacy, Safety, and Immunogenicity of mRNA-1345 for Respiratory Syncytial Virus Prevention in Adults: A Systematic Review

Manuji Bandara, University of Ruhuna, Sri Lanka

12:30 - 12:55 Commentary on the Impact of the COVID-19 Passports in Lithuania

Rimas Jankunas, Lithuanian University of Health Sciences, Lithuania

12:55 - 13:20 How Afghanistan is Tackling Infection Control: An In-Depth Evaluation of Practices and Strategies

Mohammad Naeem Lakanwall, Ministry of Public Health, Afghanistan

13:20 - 13:45 *In silico* Docking Studies on the Anticancer Effect of Curcumin as AKT Kinase Inhibitor

Selma HOUCHI, University of Ferhat Abbas Setif-1, Algeria

13:45 - 14:10 Knowledge Among Doctors, Residents and Medical Students in Lebanon of the Human Papillomavirus, its Vaccination and Cervical Cancer

Jacques Choucair, Saint Joseph University of Beirut and Hôtel-Dieu de France, Lebanon

14:10 - 14:35 *Aspergillus* Section *Fumigati* Isolated from Soil Samples in Lebanon: Molecular Identification and Azole Susceptibility Testing

Sara Khalife, Beirut Arab University, Lebanon

14:35 - 15:00 Genetic Analysis of Colistin Resistance, Associated Virulence Features and Antimicrobial Effect of *Saussurea lappa* in *Acinetobacter baumannii*

Umaira Ahsan, Green International University, Pakistan

15:00 - 15:25 The Prevalence of Urogenital and Intestinal Schistosomiasis Among School Age Children (6-13 years) in the Okavango Delta in Botswana

Tuduetso L Molefi, Botswana Ministry of Health, Botswana

15:25 - 15:50 Role of Antiviral Drugs and Monoclonal Antibodies in Treatment of COVID-19

Samia Elzwi, University of Benghazi, Libya

15:50 - 16:15 First Study on the Seroprevalence and Risk Factors of *Toxoplasma gondii* Infection in Slaughtered Chickens in Tripoli, Lebanon

Sara Khalife, Beirut Arab University, Lebanon

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16:15 - 16:40 Integrative Single-Cell and Bulk Sequencing Analysis Reveals Microglia/Macrophage-Driven Angiogenesis via IL-6 Cytokines in GBM BVZ Subclasses

Jian Shi, University of California, USA

End of Virtual Presentations

Day-1
Keynote Presentations

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LESSONS FROM COVID-19 PANDEMIC AND RECOMMENDATION FOR NEXT PANDEMIC

Yaeko Mitsumori

Osaka University, Japan

Abstract

The COVID-19 pandemic, which started in Wuhan, China, in late 2019, has had a devastating global impact, with approximately 700 million reported cases of infection and seven million fatalities (as of August 2024.)

The deadly virus has resulted in numerous fatalities and severe symptoms, and even today with ongoing cases of individuals experiencing subsequent complications. Several governments implemented a “stay at home order” and closed their borders. Consequently, many faced unemployment and financial instability social isolation, and mentally and/or physical issues.

The COVID-19 pandemic had significant effects on the global economy. In 2020, the global GDP dropped by 3.4%. Data collected through the World Bank survey established the following: (a) -One quarter of enterprises experienced a 50% decrease in revenue, with an average sales decline of 27%; (b) Approximately 65% of businesses adjusted their payroll, by implementing measures such as cutting working hours, reducing wages, and granting leave. Ultimately, approximately 11% of companies laid off their employees. COVID-19 has affected almost every business globally; however, the extent of this impact has varied significantly, even within specific countries and industries. S&P has identified industries that have been most affected, including airlines; automobiles; energy equipment and services; and hotels, restaurants, and leisure.

Conversely, the industries that COVID-19 has least impacted include Communications equipment; supplies; life; tools; services and pharmaceuticals.

This study will assemble recommendations for the next pandemic based on its analysis of the society and economy. Although WHO officially declared the conclusion of the COVID-19 pandemic in May 2023, there is a prevailing belief among many people that another pandemic will occur in the future. This study presents recommendations for the international society, governments (i.e., both central governments and local governments), and society at large on how to effectively manage and respond to the next pandemic.

Biography

Yaeko Mitsumori is currently a professor of the Center for the Study of Higher Education and Global Admissions (CHEGA) and the International College at Osaka University, Japan, where she teaches innovation-related subjects at Osaka University. She obtained her PhD (Eng.) from Tohoku University and MPA from Harvard Kennedy School. Before joining Osaka University, she was a faculty member in the MBA-IB program (International Business) at Tsukuba University, an all-English MBA program. Dr. Mitsumori is an adjunct professor at several other institutions, including Tokyo University of Foreign Studies, Tsukuba University’s Medical School, and Ritsumeikan University’s Graduate School of Technology Management. She is a member of the Japan Society for Production Management, IEEE, American Association for the Advancement of Science (AAAS), Portland International Center for Management of Engineering and Technology (PICMET), Japan Society for Research Policy and Innovation Management, Japan MOT Society, and the Japan Association for Management Systems.

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“CONTINUOUS, *IN-SITU*-TARGETED, ULTRA-HIGH CONCENTRATION OF ANTIBIOTICS” (CITA) - A NOVEL ANTIBIOTIC DELIVERY APPROACH FOR THE TREATMENT OF LOCALIZED INFECTIONS

Moris Topaz

Tel Aviv Sourasky Medical Center, Israel

Abstract

Background: Infectious diseases significantly cause human illness and mortality worldwide. Basic research and clinical investigation of infection biology are crucial for understanding the mechanisms by which pathogens invade and interact with the human body. This understanding forms the foundation for developing effective treatments, preventive measures, and strategies to combat prevalent and newly emerging infectious diseases and combat antimicrobial resistance (AMR). Present guidelines endorse the complete removal of cardiovascular-implantable electronic devices (CIED) (pacemakers/defibrillators), including extraction of intracardiac electrodes, not only for systemic infections but also for localized “pocket infections.”

Objectives: We evaluated the efficacy of delivering “Continuous, *In-situ*-Targeted, ultra-high concentration of Antibiotics” (CITA) into the infected device pocket and other localized infections obviating the need for device extraction and early closure of infected wounds.

Procedural highlights:

- Minimally invasive surgery (MIS); conservative debridement of wound edges and capsule; thorough wound cleaning.
- CITA application of selected antibiotics into the wound (for 10-21 days). - The wound is dressed with a sponge and sealed by vacuum.
- Measured serum antibiotic levels indicate the safety of systemic absorption and dosage adjustment, ultra-high concentrations in the pocket, immersing the CIED.

Conclusion: CITA is a safe and effective alternative for intravenous antibiotic administration in patients with high bacterial loads, and biofilm compartmentalized infections. CITA may serve as a novel strategy for management and combating AMR.

Biography

Moris Topaz, M.D., Ph.D., is an expert in the field of Plastic Surgery and is highly involved in researching matters relating to advanced medical technologies. He holds a B.Sc. in Chemistry, a Medical Degree from Ben Gurion University, a master’s degree Cum Laude in Plastic Surgery from the University of Tel-Aviv and a Ph.D. from Ben Gurion University. He specialized in Plastic Surgery at the Chaim Sheba Medical Center and practiced Plastic & Reconstructive Surgery in the United States. Dr. Topaz specializes in aesthetic plastic surgery, including cosmetic surgery of the eyelids, nose, face and breasts: and reconstructive surgery of the breasts, eyelids, and after resection of skin tumors. He currently researches and develops original technologies and a variety of innovative devices to enhance and improve wound-healing.

Day-1
Oral Presentations

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EPIDEMIOLOGY, CHARACTERISTICS AND OUTCOME OF CHILDREN HOSPITALIZED WITH COVID-19 IN OMAN: A MULTICENTER COHORT STUDY

Laila S Al Yazidi, Zaid Al Hinai, Badriya Al Waili, Hilal Al Hashami, Mohammed Al Reesi, Farhana Al Othmani, Balqees Al Noobi, Nuha Al Tahir, Nagi Elsidig, Lamya Al Barwani, Ibrahim Al Busaidi, Bushra Al Jabri, Abdullah Al Qayoudhi, Amal Al Maaniv and Nawal Al-Maskari

Royal Hospital, Oman

Abstract

Background: Children tend to have mild COVID-19 and less mortality compared to adults (Chan et al., 2020). There is limited literature on the epidemiology and effect of COVID-19 in children from Middle Eastern countries. COVID-19 was reported in Oman for the first time on the twenty fourth of February 2020.

Objective: To describe the epidemiology, clinical and laboratory features, and outcome of children hospitalized with coronavirus disease 2019 (COVID-19) in the Middle East.

Methods: A multicenter retrospective study of children hospitalized with COVID-19 in seven centers across Oman between February and July 2020.

Results: In total, fifty six children less than fourteen year old required hospitalization in Seven Omani centers over five months (February – July 2020). Thirty Seven (sixty eight percent) children were admitted with uncomplicated COVID-19, Thirteen (twenty three percent) with Pneumonia, Five (nine %) with multisystem inflammatory syndrome in children. Infants constituted forty one percent of cases (23/56), approximately half of whom (12/23, fifty two percent) followed by respiratory symptoms (33, fifty nine percent), and gastrointestinal symptoms (31, fifty five percent). (22, thirty nine percent) children had underlying medical conditions: sickle cell disease (7, thirteen percent), chronic respiratory disease (4, seven percent) and severe neurological impairment (4, seven percent) Leukocytosis, elevated inflammatory markers and anemia were independently associated with intensive care admission. There were no mortalities related to admission with COVID-19 in this cohort.

Conclusion: Most of the children hospitalized with COVID-19 had a mild course and a satisfactory outcome. Sickle cell disease is the most common comorbidity associated with pediatric admission of COVID-19 in Oman.

Biography

Farhana Al Othmani is a pediatric Intensivist, completed her fellowship training from University of Ontario, London, Canada in 2015. She is also a chairperson for employee health and wellness committee in the Royal Hospital, Oman. She is involved in teaching residents rotating in pediatric Intensive care unit. She is leading accreditation committee for child health department in the respective institution. Dr. Al Othmani is actively involved in both academic and administrative aspects in the hospital. As per the interest She is also running simulation program in her unit with active evaluation. Dr. Al Othmani is also involved in writing protocols and policies for the unit. She is interested in improving health care service by increasing awareness and enhancing quality of the services, which can be completed by auditing, maintain checklists and reviewing the care system by performing surveys.

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EXAMINING THE NEUTROPHIL FORMYL PEPTIDE RECEPTORS AND THEIR ROLE IN ADULT RESPIRATORY DISTRESS SYNDROME (ARDS)

Veronica A Varney, Gopal Chattopadhyay, Vishnu Bharadwaj Sai, Samina Monir, Abhishek Ray, Alex Nicholas, Brian Ford, Amolak Bansal and Syed Rehan Quadery

St Helier Hospital, UK

Abstract

Background: There is now ample evidence that ARDS is a picture of a self-perpetuating and sustained neutrophil attack, with large number of neutrophils seen in early bronchoalveolar lavage samples in patients developing the condition. Their numbers independently predict severity and mortality, with neutrophil depletion shown to reduced lung injury. The global Covid-19 pandemic has brought ARDS into sharp focus including the limited knowledge of effective drug treatments in severely affected patients.

Objective: We present data showing the ability of cotrimoxazole (CTX) and trimethoprim (TMP) to reduce neutrophil activation via blockade of their surface formyl peptide receptors (FPR's) and present data from Covid-19 induced ARDS showing reduced mortality.

Methods: 12 medical staff had their neutrophil and monocyte activation assessed before and after a 1 week standard course of oral CTX or TMP using FACS analysis. These drugs were also assessed in patients developing Covid-19 induced ARDS relative to standard therapy alone.

Results: Neutrophil stimulation was reduced by 70% for both CTX ($p=0.005$) and TMP ($p=0.0001$) at 7 days. Monocytes FPR stimulation was reduced by 60% for CTX ($p=0.0007$) and 75% for TMP ($p=0.0001$). 4 studies of Covid-19 infection with lung infiltrates showed the addition of CTX to reduce mortality by 18-27% and mechanical ventilation by 4-27%. For TMP, mortality was reduced by 19%. These patients had established lung injury at the time of admission with a significant oxygen requirement.

Conclusion: A 2017 review of neutrophils in ARDS concluded that: - "The holy grail of ARDS therapy will be to limit neutrophil recruitment, priming and activation while preserving host defense". These drugs clearly offer a way of calming an "out of control host response" that drives ARDS, and they are inexpensive antibiotics already licensed for respiratory infections with Immunological benefit that may finally change the course of this disease and thereby warrant clinical trials.

Biography

Varney A Varney and staff in the Respiratory and Clinical Immunology Departments have experience in assessing neutrophil function and its activation status. They showed benefit in Covid-19 acute lung injury (alpha & Delta Variant) and ARDS showing reduced mortality and reduced hospital length of stay. The department has a wide range of interests and publications.

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INTRACELLULAR BACTERIA CAUSE CHRONIC DISEASE BY ALTERING THE INNATE IMMUNE RESPONSE

Meg Mangin

Chronic Illness Recovery, USA

Abstract

Patients with chronic diseases have elevated 1,25-dihydroxyvitamin-D and low 25-hydroxyvitamin-D. The absence of hypercalcemia, hypercalciuria, elevated parathyroid hormone, and chronic kidney disease suggests extra-renal production of excess 1,25-dihydroxyvitamin-D.

In normal immune function, extra-renal 1 α -hydroxylase (CYP27B1) catalyzes 25-hydroxyvitamin-D to 1,25-dihydroxyvitamin-D in immune cells, leading to transcription of antimicrobial peptides *via* the vitamin D receptor (VDR). CYP27B1 transcription in macrophages is regulated by cytokines (e.g., Interferon- γ [INF- γ]). L-form bacteria invade immune cells and use strategies to avoid phagocytosis. Parasitization of macrophages by these pathogens may be the stimulus for persistent production of cytokines which induce CYP27B1 activity and excess 1,25-dihydroxyvitamin-D production.

Down-regulation of the VDR by intracellular bacteria interferes with 1,25-dihydroxyvitamin-D production regulatory processes and thus, prevents transcription of antimicrobial peptides to allow bacterial persistence. Bacterial interference with enzymatic traffic patterns allows production of excess 1,25-dihydroxyvitamin-D and prevents normal 1,25-dihydroxyvitamin-D functions which inhibit the expression of inflammatory cytokines.

Evidence for persistent intracellular bacterial infection and vitamin D metabolism dysfunction has been seen in natural experiments that suggest increased bacterial killing following reduction in elevated 1,25-dihydroxyvitamin-D.

In summary, non-resolving inflammation associated with many common chronic diseases may be caused by survival strategies of intracellular bacteria and is evidenced by elevated 1,25-dihydroxyvitamin-D and depleted 25-hydroxyvitamin-D as markers of an infectious disease process.

Biography

Meg Mangin, R.N. is the founder and Executive Director of Chronic Illness Recovery. She has served on the National Institutes of Health State of the Science panel and an NIH Data, Safety and Monitoring Board. Ms. Mangin has presented at numerous conferences, including Days of Molecular Medicine in Karolinska, Sweden, the International Conference on Autoimmunity in Porto, Portugal, the American Society of Hypertension Annual Meeting, Enabling Future Pharma, Perspectives in Rheumatic Diseases, Immunology Summit, ILADS and 8th Global Summit on Microbiology & Infectious Diseases. She is the co-author of a chapter in the medical textbook *Vitamin D: New Research* and the lead author of a ground-breaking review article on vitamin D, inflammation and infection published in the October 2014 issue of *Inflammation Research*.

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SAFETY AND IMMUNOGENICITY OF LIVE-ATTENUATED YF17D-BASED ZIKA VIRUS VACCINE CANDIDATE PRODUCED IN A SCALABLE HIGH-YIELD BIOPROCESS

Ozeir Kazemi¹, Sven Göbel², Kayvan Abbasi¹, Kai Dallmeier¹ and Yvonne Genzel²

¹Rega Institute KU Leuven, Belgium

²Max Planck Institute for Dynamics of Complex Technical Systems, Germany

Abstract

Background: A yellow fever-Zika chimeric virus vaccine (YF-ZIK) consisting of the yellow fever 17D (YF17D) backbone has demonstrated safety and efficacy in several stringent preclinical models of Zika infection and disease and shows potential protection against yellow fever as well (Kum et al., EMI, 2020). Initial production of YF-ZIK using Vero cells in monolayer cultures achieved maximum infectious virus titers of 10^4 - 10^5 PFU/mL. By evaluating various suspension cell lines for YF-ZIK production and subsequent process optimizations in stirred tank bioreactors, two promising cell substrates were identified: human HEK293 and avian AGE1.CR.pIX. These cell lines have resulted in a >100-fold increase in virus titers compared to YF-ZIK grown on the adherent Vero cells.

Objective: *In vitro* and *in vivo* characterization of live YF17D based Zika virus vaccine candidate.

Methods: Reverse-Transcription chain reaction and sequencing, Plaque assay, Virus growth kinetics, Vaccine safety testing in suckling BALB/c mice, Immunogenicity and efficacy of vaccine candidates, Serum Neutralizing Assay.

Results: Genetic stability was confirmed by the conservation of a homogenous small plaque phenotype, similar *in vitro* growth kinetics, and no evidence for cell adaptive mutations (Sanger sequencing) of the HEK293 and AGE1.CR.pIX-derived virus stocks compared to the original Vero-derived material. Vaccine safety was confirmed by absence of neurovirulence and no mortality after intracranial inoculation into suckling mice similar as observed before. Immunogenicity of the material remained unchanged as tested by vaccination of AG129 mice.

Conclusion: The intensified bioprocess did not impact the safety and potency of YF-ZIK providing immunity against Zika after single dose vaccination. Scalable high-yield production of YF-ZIK will be essential for a rapid and affordable response to future Zika outbreaks.

Biography

Ozeir Kazemi journey has been driven by determination, resilience, and a passion for research. With a BSc in Animal Science from Mazandaran University, he pursued an MSc in Molecular Biology at Vrije Universiteit Brussel (VUB), where he became captivated by immunology's potential to revolutionize global healthcare through immunotherapy and vaccines. Dr. Kazemi has enriched his skills through various industrial roles in pharmaceutical companies, mastering techniques such as flow cytometry, serology tests, ELISAs, and immunofluorescence. His academic growth, particularly during his recent MSc in Vaccinology from Université Claude Bernard Lyon 1, has reflected my commitment to this field, helping me develop strong communication and data management skills, fostering collaboration, and ensuring research accuracy. Dr. Kazemi's journey underscores his dedication to advancing the fields of vaccinology and immunology.

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TYPE IV HYPERSENSITIVITY REACTION

Khaled Marwa and Noah P Kondamudi

University Hospital Southampton, UK

Abstract

Type four hypersensitivity reaction is a cell-mediated reaction that can occur in response to contact with certain allergens resulting in what is called contact dermatitis or in response to some diagnostic procedures as in the tuberculin skin test. Certain allergens must be avoided to treat this condition. This activity reviews the evaluation and management of type four hypersensitivity reactions and highlights the role of the interprofessional team in improving care for patients with this condition.

Objectives:

- Describe the epidemiology of type four hypersensitivity reactions.
- Summarize the pathophysiology of type four hypersensitivity reactions.
- Explain the common physical exam findings associated with type four hypersensitivity reactions.
- Review the importance of collaboration and care coordination among the interprofessional team to enhance the care of patients with type four hypersensitivity reactions.

Biography

Khaled Marwa is a physician currently working at University Hospital Southampton in the UK. He previously worked at Al-Safa Medical Center in Saudi Arabia. Dr. Marwa holds an MBBS degree from the University of Science and Technology in Yemen. He has also published articles in reputed medical journals.

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A NATURE-INSPIRED, SAFE AND EFFECTIVE DECONTAMINATION TECHNOLOGY FOR NON-TOXIC REMOVAL OF PATHOGENS FROM SURFACES AND SKIN

Lokesh Joshi^{1,2}

¹University of Galway, Ireland

²Aquila Bioscience, Ireland

Abstract

Background: The global health and climate crises are converging and as a result infectious diseases are on the rise. For over a century, chemical disinfection has been the most common method of controlling pathogens. However, currently most disinfection and decontamination technologies are based on broad stroke chemicals that have harmful effects on human health and the environment. There is an urgent need to develop medical countermeasures that are safe, effective and environmentally friendly.

Aquila Bioscience has developed an innovative technology to decontaminate surfaces, including human skin and mucosal surfaces, from viral, bacterial and fungal pathogens and biological toxins in a safe and effective manner. Aquila's Pathogen Capture Technology (PCT) is based on nature's evolutionary mechanisms that produce molecules to trap and remove pathogens in a safe and sustainable manner.

Objective: To incorporate nature's inherent pathogen capturing mechanisms into a pathogen decontamination technology for safe and effective management of pathogens.

Methods: Aquila's Pathogen Capture Technology mimics natural cell membranes with multiple presentations of molecular binders and effectively captures the pathogen in a hook and loop manner resembling a nano-scale Velcro™. The molecules were carefully selected using cutting-edge microarray technology and bioinformatic research. Efficacy tests were then conducted to demonstrate the capture and removal of target pathogens from selected surfaces.

Results: Pathogen Capture Technology is demonstrated to capture and remove a range of pathogens including those relevant to the biological defence, healthcare and consumer care (bacteria, virus, fungi and toxins) as well as SARS-CoV-2 from contaminated surfaces.

Conclusion: During the process of evolution, nature has devised mechanisms to keep animals safe from infectious agents. Aquila Bioscience has developed a novel technology to capture and remove all pathogens in a safe and sustainable manner.

Biography

Lokesh Joshi is the Stokes Professor of Glycosciences at University of Galway, Ireland. He is the founder of Aquila Bioscience which is developing nature-inspired innovative anti-microbial technologies supported by European Defence Agency and European Innovation Council. He has published over 125 peer-reviewed articles and is actively engaged nationally and internationally on research and innovation.

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EVALUATION OF SALT TOLERANCE GENES EXPRESSED IN TRANSGENES *NICOTIANA TABACUM*

Mona Ali Abloushi¹, Gary Foster² and Andy Bailey²

¹Ministry of Municipality, Qatar

²University of Bristol, UK

Abstract

Salt stress is an abiotic stress that affects plant development in various ways, including fresh and dry weight, physiological characteristics, photosynthesis, chlorophyll content, Osmo protective solution buildup, and morphogenic stress levels. Salinity frequently inhibits plant development and agricultural yields. The impacts of salt stress can cause a significant decline in the condition of plant cells and adaptive mechanisms. All control plants showed great diversity in root development, physiological, and stem-root characteristics, and proline and chlorophyll levels. In this study, salt had a substantial effect on all variables evaluated.

Salt stress puts an osmotic and oxidative burden on plants, slowing photosynthetic and transpiration rates. Genetic modification is a promising technique for improving plant stress tolerance. Several isolated genes were employed to increase salt tolerance. *N. tabacum* was genetically modified with *MchKT1* from *Mesembryanthemum crystallinum* and *BADH* from spinach to increase salt tolerance. 4 distinct recombinant constructs were successfully constructed to fuse putative salt tolerance genes under the *35S* promoter with *nptII* to aid in selecting transgenic lines. In this investigation, the pCAMBIA2300 expression plasmid was used to insert the salt tolerance genes and construct the recombinant plasmids, *pCAM:-CaM35S-AhBADH-tNOS:NPTII*, *pCAM:CaM35S-MchKT1-tNOS:NPTII*, *pCAM:CaM35S-SpBADH-tNOS:NPTII*, and *pCAM:CaM35S-SsNHX1-tNOS:NPTII*.

Using RT-PCR, transgenic plants were found to express the *AhBADH*, *MchKT1*, and *SpBADH* transgenes in transgenic tobacco leaves.

The RT-PCR findings showed that these genes were expressed at comparable rates in *N. tabacum* lines growing at 25 and 35°C. The RT-PCR results in this study revealed that *AhBADH*, *MchKT1*, and *SpBADH* were produced regardless of whether the plants were treated with salt because the *35S* promoter regulates the genes. The *35S* promoter from the plant pathogen Cauliflower Mosaic Virus (CaMV) has historically been used to drive constitutive expression of transgenes, expanding our understanding of the function of various plant genes as well as our general knowledge of plant processes. The CaMV *35S* promoter is plant cells most thoroughly studied and experimentally validated regulatory component.

Transgenic plants carrying salt-tolerant transgenes behaved considerably differently under salt stress than untransformed tobacco. Notably, salt stress conditions had a considerable detrimental impact on untreated control plants' biomass, plant shoot properties, root development, and proline and chlorophyll levels. However, transgenic plants react differently to salt than wild-type plants. Furthermore, *AhBADH6* and *SpBADH5* outperformed the other lines regarding salt tolerance during the germination and seedling stages. As a result, these two lines may boost the development of salt-tolerant plants.

Biography

Mona Abloushi is a biotechnology expert with more than ten years of experience working alongside the research team of Biotechnology department at Agricultural Research Department in Qatar. She received her PhD degree in 2022 at the University of Bristol in United

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Kingdom. Mona specialized in Molecular technology and is responsible for transferring new knowledge to the researcher staff, including isolation of genetic material, cloning and transformation. Dr. Mona is working on more than 4 projects deal with plat pathology and molecular identification. She is Powerful force in the workplace and uses her positive attitude to encourage others to work hard and succeed.

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CO-PRODUCTION OF BACILLOMYCIN D, BACILYSIN AND MACROLACTINS THAT ARE ANTAGONISTIC TO *MALASSEZIA* SPP. BY *BACILLUS AMYLOLIQUEFACIENS* SP. FROM MARINE ORIGIN

Yasmin Mirza and Uttara Kulkarni

London School of Science and Technology, UK

Abstract

Background: Members of *Malassezia* species are associated with multiple skin disorders like seborrheic dermatitis, pityriasis versicolor, folliculitis and psoriasis in 2-3% of human population. They can also be opportunistic pathogens causing catheter-acquired sepsis, fungaemia and pulmonary infection in neonates and immunocompromised adults. The current antifungal drugs are known to cause side effects such as burning and redness, when applied to skin, toxicity, adverse drug interaction with other medications, drug resistance and high cost. Thus, the study and development of alternative antifungal agents against *Malassezia* spp. are imperative.

Objective: To evaluate alternative antifungal agents for the inhibition of *Malassezia* species.

Methods: Fermentative production of antifungal metabolites by *Bacillus amyloliquefaciens* MTCC 10456 was carried out. Bioassay-guided separation of the antifungal compounds was done by reversed-phase high-performance liquid chromatography (RP-HPLC). The biomolecules were identified using liquid chromatography/high-resolution electrospray ionization-mass spectrometry (LC/HRESI-MS/MS) analysis. Antifungal activity and synergism amongst the identified biomolecules were studied using bioassays against three *Malassezia* species.

Results: The purified fractions that demonstrated antifungal activity were identified as bacilysin, homologues of bacillomycin D and members of macrolactin family. Synergism among the identified compounds was observed which enhanced the antagonistic activity against *Malassezia* spp. Activity of individual biomolecules against *Malassezia* spp. is also reported. This may aid further development of these biomolecules for dermatological applications.

Conclusion: Co-production of antifungal lipopeptides, polyketides and dipeptides such as bacilysin by the *B. amyloliquefaciens* strain studied in this research, makes it a suitable candidate for fermentative production of antimicrobial products that can be an alternative to prevalent antifungal drugs.

Biography

Yasmin Mirza holds a Ph.D. in Microbiology from Kurukshetra University, Kurukshetra (awarded in 2003). She was listed in 'Directory of Women in Industrial Biotechnology,' (April 2016) by 'Industrial Biotechnology'. During her career as an industrial microbiologist, she has worked in anti-TB drug discovery, polio and DTP vaccines, industrial enzymes (cellulolytic family) and anti-microbials for health and wellness. As Principal Scientist at Praj Matrix- The R&D Centre, Pune, India, she researched extensively in areas such as microbiology, molecular biology, bioprocess technology, and high throughput technology to develop research based commercial products. Dr. Mirza has guided several PhD students for their doctorate research. She has been an adjunct faculty to Universities like Pune University, Symbiosis University and Kurukshetra University. To develop her business expertise, she completed her MBA at HULT International Business School, London. Presently she is a fellow at London School of Science and Technology, London and exploring teaching and research.

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FROM BASIC RESEARCH TO DRUG DEVELOPMENT - THE STORY OF GLATIRAMER ACETATE IN THE TREATMENT OF MULTIPLE SCLEROSIS AND ITS APPLICATION FOR ADDITIONAL IMMUNE MEDIATED DISEASE

Rina Aharoni

The Weizmann Institute of Science, Israel

Abstract

Multiple sclerosis (MS) is a complex disease involving autoimmune inflammation as well as axonal neuronal pathology. Novel treatment strategies aim to reduce the inflammation and induce immunomodulatory neuroprotective repair processes.

The synthetic copolymer glatiramer acetate (GA Copaxone) is one of the first approved drugs for the treatment of MS. Using the animal model of MS – experimental autoimmune encephalomyelitis (EAE). The immunomodulatory mechanism of action of GA was elucidated. It was found that GA generates immunomodulatory shift from inflammatory to anti-inflammatory pathways, such as induction of Th2-cells that cross the blood brain barrier (BBB) and secrete in situ anti-inflammatory cytokines, as well as elevation of T-regulatory cells (Tregs). Further studies revealed neuroprotective and repair consequences of GA treatment in the central nervous system (CNS). These include elevation of neurotrophic factors, remyelination and neurogenesis.

Based on its immunomodulatory mode of action, additional potential applications of GA were investigated, such as prevention of immune rejection improvement of stem cells engraftment and amelioration of inflammatory bowel diseases (IBD)

Biography

Rina Aharoni obtained her postdoc from Stanford University, CA, USA and her PhD in Life Sciences The Weizmann Institute of Science, Rehovot, Israel. She is currently working as Senior Staff Scientist, Department of Immunology, The Weizmann Institute of Science, Israel. Dr. Aharoni has contributed greatly to the field of immunology through her work published in reputed journals, her works enlightens a wide range of aspects in immunology covering immunopathology, multiple sclerosis, encephalomyelitis, immunomodulation, neuroprotection, Immune rejection, neurotrophic factor expression, neurogenesis and much more, she holds the position of editor and reviewer in many reputed international journals.

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A GUIDE TO STOPPING A VIRAL INFECTION. THE MAIN IMPORTANT RESERVOIR OF VIRUSES HIDDEN IN CARRIERS AFTER OVERCOMING INFECTIONS IS INTESTINAL TRACT

Vladimir Zajac

Cancer Research Institute, Slovakia

Abstract

Background: Viruses are parasites. that cannot exist on its own and is completely dependent on its carrier. This is the basic condition of its existence. The host of the parasite is a living cell.

Materials: Based on our long-term work with BLV in stables, we have come to the conclusion that the host of BLV is bacterial cells. This idea was subsequently tested in an HIV model. It has been confirmed that its host can be bacteria and yeast. In many cases, HIV leaves the hematopoietic system after this therapy, but carriers containing the virus can penetrate the intestinal tract, settle for months or years and multiply and mutate. However, if the virus in the carrier reaches the intestinal tract, the vaccines are not effective there.

Methods and Results: Subsequently, rectal swabs were taken from people who had overcome infection with the new coronavirus. The RT PCR test found that 83% of infected people, the virus is located right there and can penetrate from the intestinal tract in the carrier into the body and infect the infected person and others.

Conclusion: Based on these results, it was concluded that many, if not all, viruses can be carried and transmitted by bacteria, yeasts, or other unicellular organisms. The detection of BLV, HIV and the new coronavirus hidden in carriers opened the door. It is the first direct evidence of viral pathogens localized in our intestinal tract. The high infectivity found in wastewater worldwide points to the presence of the novel coronavirus in the intestinal tract after overcoming the infection. This is also evidenced by the creation of new and new variants of the new coronavirus. If we want to stop viral infections, we need to identify viral carriers, eliminate them together with the virus and thus stop viral infections.

Biography

Vladimir Zajac has completed his PhD. in 1982 at the Cancer Research Institute of Slovak Academy of Sciences in Bratislava (Slovakia), where he worked as the Head of Department of Cancer Genetics from 1996 to 2010. He joined the Medical Faculty of the Comenius University as Associate Professor of Genetics in 2007. He was the supervisor of eight PhD students. He has published 77 works, mostly in renowned journals, and is the author of chapters in four professional books. He is the editor of the book "Bacteria, Viruses and Parasites in the AIDS Process" (In Tech, 2011).

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INSIGHTS INTO MEASLES VIRUS: SEROLOGICAL SURVEILLANCE AND MOLECULAR CHARACTERIZATION

Zainab Khalid¹, Javed Muhammad¹, Hina Ali², Muhammad Suleman Rana³, Muhammad Usman³, Muhammad Masroor Alam³, Riaz Ullah⁴, Arif Ullah¹, Massab Umair³, Ashfaq Ahmad³, Muhammad Salman³, Aamer Ikram³, Amjad Khan^{1,5} and Ahmed Bari⁴

¹The University of Haripur, Pakistan

²Shanghai Jiao Tong University, China

³National Institute of Health, Pakistan

⁴King Saud University, KSA

⁵University of Kentucky, USA

Abstract

Background: Measles has been a significant public health concern in Pakistan, especially in the Khyber Pakhtunkhwa (KPK) province, where sporadic and silent epidemics continue to challenge existing control measures. This study aimed to estimate the prevalence and investigate the molecular epidemiology of the measles virus (MeV) in KPK and explore the vaccination status among the suspected individuals.

Methods: A cross-sectional study was conducted between February and October 2021. A total of 336 suspected measles cases from the study population were analyzed for IgM antibodies using Enzyme-Linked Immunosorbent Assay (ELISA). Throat swabs were randomly collected from a subset of positive cases for molecular analysis. Phylogenetic analysis of MeV isolates was performed using the neighbor-joining method. The vaccination status of individuals was also recorded.

Results: Among the suspected participants, 61.0% (205/336) were ELISA positive for IgM antibodies, with a higher prevalence in males (64.17%) compared to females (57.04%). The majority of cases (36.0%) were observed in infants and toddlers, consistent with previous reports. The majority of IgM-positive cases (71.7%) had not received any dose of measles vaccine, highlighting gaps in vaccine coverage and the need for improved immunization programs. Genetic analysis revealed that all MeV isolates belonged to the B3 genotype, with minor genetic variations from previously reported variants in the region.

Conclusion: This study provides valuable insights into the genetic epidemiology of the MeV in KPK, Pakistan. The high incidence of measles infection among unvaccinated individuals highlights the urgency of raising awareness about vaccine importance and strengthening routine immunization programs.

Biography

Javed Muhammad has recently joined as an Assistant Professor in the Department of Microbiology, The University of Haripur, Pakistan. He also served as a General Secretary, Pakistan Biological Safety Association. He is also serving as a Biosafety Expert with Health Department, Khyber Pakhtunkhwa since 5th April 2020 for designing and upgrading the laboratory testing facilities for coronavirus in public health sector hospitals of Khyber Pakhtunkhwa. Dr. Javed research interest is Infectious Diseases Epidemiology, Disease Diagnostic and Surveillance and Bio Risk Management. He has published more than 50 scientific publications in well reputed peer-reviewed journals.

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MODERATELY LOW EFFECTIVENESS OF THE INFLUENZA QUADRIVALENT VACCINE: POTENTIAL MISMATCH BETWEEN CIRCULATING STRAINS AND VACCINE STRAINS

Thamer AlOhali

King Abdulaziz Medical City, KSA

Abstract

Background: The annual seasonal influenza vaccination is the most effective means of preventing influenza-related illnesses and hospitalizations. However, influenza vaccines' effectiveness has been subject to variations due to the potential mismatch between circulating viral strains and vaccine components. This study examines the strain-specific effectiveness of the quadrivalent influenza vaccine during the 2019/2020 season, which was characterized by the co-circulation of four different influenza strains.

Objective: To evaluate the effectiveness of the quadrivalent influenza vaccine in protecting against laboratory-confirmed influenza during the 2019/2020 season, and to assess the potential mismatch between circulating and vaccine strains.

Methods: A prospective study was conducted at King Fahad Medical City in Riyadh, Saudi Arabia. A total of 778 patients with influenza-like illness (ILI) were recruited, with 39% having been vaccinated with the quadrivalent influenza vaccine. Nasopharyngeal swabs were tested using real-time reverse transcription polymerase chain reaction (RT-PCR) to confirm influenza infection. Vaccine effectiveness (VE) was calculated using the test-negative design.

Results: The overall VE for preventing influenza A and B was 28% and 22%, respectively. For the A(H3N2) subtype, VE was 37.4%, while for A(H1N1)pdm09, VE was 39.2%. VE for preventing influenza B Victoria lineage was 71.7%, although data for the Yamagata lineage were insufficient for analysis. Phylogenetic analysis suggested a potential genetic mismatch between the circulating strains and the vaccine strains.

Conclusion: The quadrivalent influenza vaccine demonstrated moderately low effectiveness during the 2019/2020 season, likely due to a mismatch between circulating strains and the vaccine strains. Continuous monitoring and strain-specific vaccine updates are necessary to improve vaccine performance.

Biography

Thamer AlOhali is a Family Medicine Consultant with a subspecialty in Public Health and Healthcare Quality Improvement, currently serving as a consultant at King Abdulaziz Medical City in Saudi Arabia. Dr. AlOhali completed his residency training at Prince Sultan Military Medical City in Riyadh in 2011. He obtained a Clinical Health Care Quality and Patient Safety Fellowship from University College London Hospitals in 2014 and a Clinical Fellowship in Primary Care and Public Health at Imperial College London in 2016. His extensive experience in family medicine and public health has established him as an expert in these fields.

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EXPLORATION OF CLINICAL, IMMUNOLOGICAL AND BIOLOGICAL MARKER CORRELATIONS TO PREDICT DISEASE SEVERITY IN NON-TUBERCULOUS MYCOBACTERIAL-PULMONARY DISEASE PATIENTS (NTM-PD)

Meyad Ali Alkarni

King Saud University, KSA

Abstract

Background: Recent studies highlight neutrophils' dual role in controlling non-tuberculous mycobacterial (NTM) infections and contributing to host diseases such as bronchiectasis, suggesting that their markers could predict disease severity and improve diagnostic accuracy in NTM-PD. The assessment of NTM-PD severity relies on patient-reported symptoms, mycobacterial cultures, and radiological findings, such as CT scans. This study explores neutrophil markers in serum or sputum, indicators of humoral immune response, and host transcriptomic signatures in blood, alongside clinical and radiological measures. By correlating these factors with radiological severity, we aim to refine diagnostic accuracy and provide a novel option for assessing severity of NTM-PD.

Method: 15 patients with confirmed NTM-PD caused by slow-growing mycobacteria were recruited in this study. The methodology included validated health-related quality-of-life questionnaires, radiological evaluations using CT scans scored for disease severity, and advanced transcriptomic analyses to identify potential biomarkers. The data collection was validated by physicians and aimed to correlate clinical and biological findings with radiological outcomes, thereby providing a more objective assessment for predicting disease severity.

Results: No correlation was found between age, gender, mycobacterium species, and disease severity. Additionally, a variable correlation was observed between clinical questionnaires assessing health status and CT scan severity, suggesting limited sensitivity of patient-reported outcomes. However, neutrophil-associated markers and specific gene expressions showed promising correlations with radiological assessments. Severity of NTM-PD, as indicated by bronchiectasis CT-scan scores, was significantly associated with concentrations of neutrophil-related products and specific immunoglobulins in the blood. Transcriptomic analysis identified distinct gene expression patterns associated with bronchiectasis severity and neutrophil-related markers.

Conclusion: This work underscores the benefits of correlating clinical and biological markers, as well as transcriptomic signatures, with radiological signs to assess NTM-PD severity. Future research involving larger cohorts and a broader range of NTM species is crucial to validate these findings and enhance patient management strategies.

Biography

Meyad Ali Alkarni is an Assistant Professor at King Saud University in Riyadh, Saudi Arabia. With a PhD in immunology and medical microbiology from UCL, her main research interest focuses on the role of neutrophils in NTM-pulmonary disease and prevention. Dr. Meyad holds a master's degree in medical microbiology and a BSc in clinical laboratory sciences from King Saud University (KSU), Saudi Arabia. She has been a lecturer at the College of Applied Medical Sciences at KSU since 2011. Dr. Meyad's expertise in immunology and infectious diseases research focuses on understanding the intricate mechanisms of immune responses and the pathogenesis of diseases. With a strong background in teaching and research, her work aims to contribute to the development of innovative treatments and preventive measures, improving health outcomes.

Day-1
Poster Presentations

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THE INFECTION CONTROL PROGRAM IN CATALONIA, SPAIN. VINCAT PROGRAM: SUCCESSES AND CHALLENGES OF PREVENTION

Enric Limon and Miquel Pujol

Catalan Institute of Oncology and VINCAt Program, Spain

Abstract

Background: Catalonia is a European region with a population of 7.5 million inhabitants. VINCAt is a program of the Catalan Health Service that establishes a unified surveillance system for nosocomial infections in hospitals in Catalonia. Its mission is to help reduce the rates of these infections through active and ongoing epidemiological surveillance. The program is based on the work carried out by the multidisciplinary teams of infection control of Catalan hospitals covering 72 acute-care-hospitals, 92 long-term-care facilities and 44 primary-care areas.

Objective: To describe the model of care and to define the major drivers of success implementation.

Methods: The DH reinforced multidisciplinary teams at the hospital level according to activity and complexity. Mandatory surveillance indicators included point prevalence of HAIs; vascular catheter-related bloodstream infections (VCR-BSI); surgical site infections (SSI); ventilator-associated pneumonia (ICUs); antibiotic consumption; patterns of antimicrobial resistance and alcohol-based hand rub consumption. Main interventions: Timely regular data feedback between hospitals and coordinating center; benchmark among participating hospitals, elaboration and dissemination of evidence-based bundles to prevent most frequent HAI and structured antimicrobial stewardship intervention to reduce last resort antibiotics.

Results: From 2007 to 2023, voluntary participation has reached 100% of public hospital beds and 85% of private hospital beds. Training programs and multimodal strategies to prevent HAIs were implemented. There have been remarkable achievements from decreasing VCR-BSI, SSI rates in specific surgical procedures and interventions based on limiting antibiotic duration. However, the rates of HAIs and antimicrobial resistance highly vary between hospitals.

Conclusion: The VINCAt program provide the data to hospitals for the implementation of targeted interventions. These quality-of-care programs must have institutional support and governance from the Department of Health.

Biography

Enric Limon (Barcelona, 1972) is a university graduate in nursing, a university graduate in social work and a graduate in social and cultural anthropology from the University of Barcelona (UB). He holds a master's degree in ethnographic research and a master's degree in tropical medicine and medical geography from the Universitat Autònoma de Barcelona (UAB). Ma trise universitaire ès sciences (MSc) by the Université du Mont-real (UdeM). Doctor in Medicine (PhD) from the University of Barcelona (UB). Currently, professor associated with the subject of microbiology at the Faculty of Medicine and Health Sciences (UB), director of the master's degree in control of infection by UB-il3 and director of the Coordinator Center of the Nosocomial Infections Surveillance Program in hospitals in Catalonia (VINCAt) of the Catalan Ministry of Health of the Government of Catalonia. His professional career has been linked, above all, to the Bellvitge campus (Hospital de Bellvitge, University of Barcelona, Institut Català d'Oncologia (ICO) where he has worked for more than 24 years. He is the author of more than 56 publications in national and international indexed scientific journals and a large number of non-indexed publications and various scientific outreach documents on the VINCAt website. It has a 401.2 Research Interest Score, a total of 774 citations, and a h-index 16. In 2015 he was awarded as principal investigator a European Union pre-commercial public purchase grant of euros3.7 million to develop the project Antisuperbugs: ict-36-2015: Precommercial Procurement within the H2020 call. This project was successfully completed and the EU granted it a second innovative public procurement project called RaDAR with a sum of 4,4.4 million to detect Point of care.

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ANTIBIOTICS CIRCUIT IN FRENCH-SPEAKING AFRICA: INVENTORY, CHALLENGES AND PROSPECTS

Sana Boukary

Pharmacie Amirbouba, Burkina Faso

Abstract

The emergence of antibiotic resistance is a major public health threat. In French speaking African countries, an uncontrolled drug supply with over-the-counter antibiotics is amplifying the resistance phenomenon. Two search engines, PubMed and Google Scholar, were consulted to describe the current state of knowledge. Distribution channels are decentralized with a central level, an intermediate level and a local level due to the Bamako initiative. Non-governmental bodies and some governments make donations of medicines to “countries in need” but these are sometimes more harmful than beneficial. However, the dysfunction of the formal pharmaceutical distribution system has allowed the informal drug market to flourish. Antimicrobial resistance is also a result of the sometimes-difficult access of patients to health care facilities, which also encourages them to turn to self-medication.

Biography

Sana Boukary is a faculty member at Pharmacie Amirbouba, Burkina Faso. His research has been featured in several renowned journals.

Day-2
Keynote Presentation

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A PROMPT VICTORY OF INFECTION CONTROL AGAINST RARE FUNGAL PATHOGENS IN A LARGE NHS TRUST

Bushra Chaudhry

University Hospitals Dorset NHS Foundation Trust, UK

Abstract

Background: Rare fungal pathogens are frequently isolated from environmental samples especially where building work is on-going. These rare fungi can cause invasive fungal infections in immunocompromised patients with hematological malignancies resulting in high morbidity and mortality.

Cases Description: Within a few days three rare fungi were identified in three immunocompromised patients with hematological malignancies. Two of the patients passed away soon after the rare fungi were identified (a *Mucor* and *Magnusiomyces clavatus*). The third case was identified as *Magnusiomyces capitatus*. The Trust Infection Control Doctor immediately called for an urgent meeting which consisted of the Trust's higher administration, Consultant Haematologists, Consultant Microbiologists, Senior Matrons, Infection, Prevention & Control Team (IPCT), Estates Manager and the Construction Manager. The meeting concluded in re-checking the effectiveness of positive pressure rooms, strict & effective implementation of IPC precautions, increased frequency of damp cleaning in haematology wards especially of heightened areas till building work continues, using more than one antifungal agent at the earliest when required, Haematologists & Microbiologists to make sure that the antifungals used for prophylaxis or treatment have drug levels done (where required) & urgently discussed with the Antimicrobial Pharmacist or duty Microbiologist - if out of reference range.

Results: We not only managed to save the third patient but also stopped further cases of rare fungal infections with the robust infection control measures. The learning points are that early accurate diagnosis and standardized treatment can effectively promote the recovery of the immunocompromised haem-oncology patients thus reducing the morbidity and mortality and strict infection control measures can prevent further cases.

Conclusion: The prompt & effective response of the IPCT along with the clinical teams can prevent rare fungi in causing fungemia and invasive fungal infections in immunocompromised patients with hematological malignancies, especially those with neutropenia and acute myeloid leukemia.

Biography

Bushra Chaudhry is a Consultant Microbiologist & Infection Control Doctor at University Hospitals Dorset NHS Foundation Trust, United Kingdom. She has a strong passion for advancing healthcare and improving patient care with innovative ideas. Dr. Bushra expertise spans various disciplines gained through my clinical roles at institutions such as Holy Family Hospital, King Saud Medical City, Royal Free NHS Foundation Trust, Homerton University Hospital & University Hospitals Dorset NHS Foundation Trust. She is actively involved in clinical work, teaching & quality improvement projects. She has presented in different international conferences such as Federation of Infection Societies, UK (FIS), Oxford Bone Infection Conference, UK (OBIC) & Infection Prevention Society, UK (IPS). Dr. Bushra approach highlights concerted learning and continual improvement in healthcare.

Day-2
Oral Presentations

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EFFECTS OF HTLV-1 TAX ONCOPROTEIN ON BRCA1 EXPRESSION AND FUNCTION

Mahmoud Huleihel and Manal Suleman

Ben-Gurion University of the Negev, Israel

Abstract

HTLV-1 Tax oncoprotein is considered a key factor in HTLV-1 pathogenicity. BRCA1 gene dysfunction can lead to breast cancer development. In contrast to the tumor suppressor nature of BRCA1, Tax is a potent oncoprotein, most of its activities are strictly opposing those of BRCA1. Therefore, we hypothesize that HTLV-1 Tax expression in breast epithelial cells can antagonize BRCA1 expression and functionality, thereby sensitizing these cells to malignant transformation by environmental carcinogens. So, the main objective of this study is to provide molecular and cellular indications to validate this hypothesis. Based on earlier findings that milk of HTLV-1 infected women is rich in HTLV-1 infected lymphocytes that can transfer the virus into breast epithelial cells, the outcomes of our present project may point that HTLV-1 can be a risk factor for the development of breast cancer, with a substantially higher risk to women who practice long-term breastfeeding. Our results showed that Tax strongly inhibited estrogen induced activation of BRCA-1 expression in breast cells by sequestering CBP/p300 co-activators. It seems that Tax does not prevent the binding of CBP/p300 to ER α but rather physically associates with the ER α -CBP/p300 to form a tertiary reporter ER α -CBP/p300-Tax. Since CBP/p300 have several binding domains, we believe that Tax associates with ER α -CBP/p300 complex through binding to CBP/p300 rather than to the ER α protein. By CHIP assay, our results proved also that Tax was able to prevent the ER α complex binding to BRCA-1 promoter. We have also found that Tax inhibits BRCA1-mediated activation of p53-target promoters by inactivating p53.

Biography

Mahmoud Huleihel is a Professor in the Department: Microbiology, Immunology and Genetics, Ben-Gurion University of the Negev, Israel. His research focuses on viral pathogenesis, particularly the HTLV-1 Tax protein's role in adult T-cell leukemia and its potential links to breast cancer. Additionally, he explores the antiviral activities of natural products and utilizes infrared spectroscopy for the detection of viral infections. Dr. Huleihel is committed to advancing our understanding of viral mechanisms and their clinical implications.

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AN UNFAMILIAR FUNGAL PATHOGEN, *MAGNUSIOMYCES CAPITATUS*

Muhammad Ayhan Amir

University Hospitals Dorset NHS Foundation Trust, UK

Abstract

Background: *Magnusiomyces capitatus* is dimorphic yeast frequently isolated from environmental samples. It rarely causes fungemia and invasive fungal infection in immunocompromised patients with hematological malignancies, particularly those with neutropenia and acute myeloid leukemia (AML), and results in 90% mortality. *M.capitatus* can easily be identified by MALDI-TOF-MS. No susceptibility breakpoints have been defined for *M.capitatus*.

Case Description: A known AML patient on a background of myelodysplastic syndrome (MDS) was an inpatient for the last 3 months with prolonged neutropenia. Long courses of intravenous (IV) Vancomycin (Vanc), Meropenem (MEM) and Liposomal Amphotericin B (AmB) were tried without any benefit. Fungal markers (beta D glucan and Galactomannan were repeatedly negative). At the start of June the bronchioalveolar lavage (BAL) detected *Magnusiomyces capitatus* by MALDI- TOF-MS (also confirmed by the Bristol Mycology Reference laboratory). Unfortunately, the duty Consultant Microbiologist did not take the finding as significant. Initial imaging did not show anything significant until in late June, a CT showed early angio-invasive fungal infection. IV Vanc and MEM were stopped. Oral Voriconazole (Vori) and Flucytosine were added to the AmB. Patient started improving clinically & biochemically with resolving neutropenia. The repeat CT did not show any signs of angio-invasive fungal infection. The chest infection was treated and the blood counts recovered, the antifungals were stopped and the patient was started on Posaconazole prophylaxis.

Discussion: We achieved good prognosis with 7 weeks of antifungals course. The learning points are that early accurate diagnosis and standardized treatment can effectively promote the recovery of the immunocompromised haem-oncology patients as well as reduce the morbidity and mortality and improve the prognosis.

Conclusion: Clinicians should remain vigilant for any rare fungus isolation or imaging pointing towards angio-invasive disease or if the immunocompromised haem-oncology patients are not responding to IV AmB in 48-72 hours, re-assess to add a second antifungal agent.

Biography

Muhammad Ayhan Amir is a dedicated physician with a passion for advancing healthcare and improving patient well-being. With a strong background in research, teaching, and clinical practice, He have developed a comprehensive approach to medical care, integrating evidence-based practices with compassionate patient interactions. His expertise spans multiple disciplines gained through my clinical roles at institutions such as Shifa International Hospital and University Hospitals Dorset NHS Foundation Trust. Dr. Amir has actively involved in research, with published case reports and studies on diverse topics like the impacts of COVID-19 and innovative clinical methods. Additionally, He committed to mentoring aspiring doctors and leading quality improvement projects to positively impact both clinical and educational settings. Dr. Amir approach emphasizes collaborative learning and continuous improvement in healthcare.

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ANTIBACTERIAL ACTIVITY OF NANOCOMPOSITES ON METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (MRSA)

Suraj Thomas Alexander

Clarolif FZC, UK

Abstract

This project investigates the antibacterial activity of nanocomposites against Methicillin-resistant *Staphylococcus aureus* (MRSA). The study focuses on the synthesis and characterization of curcumin nanoparticles and their effectiveness when combined with various delivery agents such as DMSO, garlic extract, cellulose, and vinegar. MRSA, a significant cause of hospital-acquired infections, presents a challenge due to its resistance to multiple antibiotics. This research aims to identify natural remedies that can combat MRSA infections by leveraging the antimicrobial and wound healing properties of curcumin.

The study involves the extraction of curcumin, its synthesis at the nanoparticle scale, and the evaluation of its antibacterial potential using agar well diffusion and antibiofilm activity assays. The results demonstrate that curcumin, especially in its nano form, shows significant antibacterial activity against MRSA when combined with suitable delivery agents. These findings suggest that natural-based remedies could be effective alternatives to conventional antibiotics in treating MRSA infections and potentially other microbial infections. The research underscores the importance of exploring natural compounds and innovative delivery methods to address the growing issue of antibiotic resistance.

Biography

Suraj Thomas Alexander is research scientist invested in using gene therapy to a wider range of disorders. With a master's in systems biology and hands-on experience in Microbiology gained at Strides Pharma Science Ltd, he brings strong foundation in molecular biology, genomics, and gene regulation.

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USE OF SUPERPULSED LASER THERAPY IN THE TREATMENT OF SURGICAL WOUND INFECTION OF CARDIAC SURGERY

Palmerindo Antônio Tavares de Mendonça Néto, Dirceu Moraes Junior and Leonardo Lemos Rebouças

Instituto Regenerar- Dor e Medicina Regenerativa, Brazil

Abstract

Background: Surgical infection is a dreaded complication in all medical specialties. Among these specialties, the area of cardiac surgery presents high risks, with a mortality rate of more than 50% of patients affected by this type of complication. With an incidence of 2 to 5% of cardiac surgeries, a variation resulting from factors such as surgical time, complexity of the surgery and health status of the operated patient, this dreaded complication has a high economic and social impact, as it prolongs the time and cost of hospitalization and requires specific treatments such as the use of broad-spectrum antibiotics, new surgical interventions. It also has significant expenses in wound treatment such as special dressings, drainage and supportive therapies to stabilize the patient.

Objective: To demonstrate the mechanism of action and clinical feasibility of superpulsed laser in the treatment of surgical wound infection in cardiac surgery.

Methods: Literature review of surgical wound infection in cardiac surgery and superpulsed laser therapy focused on the effect of the therapy as a bactericidal agent, as well as on the effects of cellular metabolic optimization and trophic improvement on irradiated tissue to maximize the biological response against the infectious process. To demonstrate the practical effect of this treatment through a case report.

Results: Superpulsed laser therapy can act as a bactericidal agent while acting at the cellular level in the treated area, maximizing the tissue response against bacteria and curing the infection.

Conclusion: Superpulsed laser therapy can be considered an adjuvant therapeutic option in the treatment of surgical wound infection in cardiac surgery.

Biography

Palmerindo Antônio Tavares de Mendonça Néto Graduated in Medicine from the Federal University of Ceará, with a medical residency in Orthopedics and Traumatology from UNIFACISA, postgraduate in Regenerative Medicine from Orthoregen, Member of the American Academy of Regenerative Medicine, member of the Latin American Society of Pain Intervention, member of the Brazilian Medical Society of Shockwave Treatment, Certified by Multi Radiance Medical in Laser Therapy (Cleveland-USA), Certified in Magnetic Therapy by ADAMS ACADEMY (London), Professor in the Postgraduate Program in Ultrasound-Guided Musculoskeletal Intervention at the Carlos Stéfano Institute, works at the Regenera Dor Institute, in Ceará, Brazil, researcher focused on biophysical treatments and the use of orthobiologics in the rehabilitation of musculoskeletal, neurological, and degenerative diseases. Provides medical care and minimally invasive interventions for the treatment of osteoarthritis, tendinopathies, neurological injuries, and sports injuries. Develops research in the field of maximizing orthobiological products when associated with biophysical therapies and their applications in regenerative medicine.

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FABRICATION OF SYMBIOTIC MULTICELLULAR ASSEMBLIES BY USING A NOVEL “GEL LAYER-BY-GEL LAYER” TECHNIQUE

Reem Al-Haidose¹ and Vesselin N Paunov²

¹Ministry of Municipality, Qatar

²University of Hull, UK

Abstract

The research on biofilms has skyrocketed in recent years due to increased awareness of the pervasiveness and impact of biofilms on natural and industrial systems, as well as human health. A biofilm is a well-organized, cooperating community of microorganisms. Microbial cells attach to the surfaces and develop a biofilm. The yeast species *Saccharomyces cerevisiae* can form biofilms on a variety of inert and biological surfaces.

Cells in biofilms display phenotypic properties that are radically different from their free-floating planktonic counterparts, including their recalcitrance to antimicrobial agents. In this study, we described a simple, fast, inexpensive and highly reproducible formation of substrate-based yeast biofilms by employing a novel “gel layer-by-gel layer” method based on the gelling properties of alginate gels. We combined two different types of cells, i.e. yeast and *Chlorella* (algae) cells to produce symbiotic two-layered biofilms by using a similar technique. We also include some preliminary results on free standing biofilms in solution which were produced by cleaving of patterned biofilms from the substrate. We demonstrate that the cells preserve their viability upon preparation and manipulation of these artificial biofilms.

Biography

Reem Al-Haidose has Bachelor of Science in plant microbiology from the University of Qatar, Doha. She finished her MSc of Biological Chemistry at the University of Hull, UK in 2011, and MScRes in Evolutionary Biology at the University of Hull, UK in 2022. She worked as specialist at the Plant Tissue Culture 1996-2010. Currently she works as a senior biological expert in the Genetic engineering department, Ministry of Municipality, Doha, Qatar since 2011.

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MANAGEMENT OF *STAPHYLOCOCCUS AUREUS* BACTEREMIA: A COMPARISON BETWEEN TWO NHS TRUSTS

Hadia Zaheer Lone

University Hospitals Dorset NHS Foundation Trust, UK

Abstract

Background: *Staphylococcus aureus* bacteremia (SAB) is a life-threatening infection, with an associated mortality of 20-40%. Fundamental standards in the management of SAB include repeat blood cultures to ensure clearance of bacteremia, echocardiography to exclude infective endocarditis, and prolonged intravenous antibiotics. Bedside review by an Infection specialist has shown to improve outcomes including 30-day mortality in patients with SAB.

Methods: SAB clinical audits carried out in two NHS Trusts were compared. These audits were carried out to identify the compliance with the recommended management stated in the SAB section of the Trust Microguides (now Eolas). SAB cases were identified from the microbiology laboratory database and data was retrospectively collected from electronic patient records.

Results: Compliance with recommended management was as follows:

CRITERIA	MINIMUM COMPLIANCE	ACTUAL COMPLIANCE IN LONDON TRUST	ACTUAL COMPLIANCE IN DORSET TRUST
Clearance blood cultures should be sent 48-72hrs after start of appropriate antistaphylococcal therapy in 100%	95%	29%	10%
Echocardiography should be performed in at least 80%	75%	87%	78%
Bedside review by an infection specialist should be performed in 100%	95%	97%	10%
Appropriate duration of anti-Staphylococcal therapy should be administered in 100%	95%	100%	57%

Outpatient Parenteral Antimicrobial Therapy (OPAT): In the London Trust 65% received OPAT *via* elastomeric flucloxacilin infusions and Dorset Trust did not have OPAT at the time when the data was collected.

Conclusion: Simple interventions including education, accessible guidance on the management of SAB in the Trust Microguide and bedside infection specialist review significantly improved compliance with standards for management of SAB. Clinical teams need to be made aware of the recommended time for collection of the repeat blood cultures.

Increased number of Infection specialist bedside review and the availability of elastomeric devices improved antimicrobial stewardship for SAB in the London Trust. Dorset Trust needs to increase the education & bedside reviews to be compliant with the recommended practice which will definitely improve

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the patient outcomes.

London Trust OPAT proved that elastomeric flucloxacillin is safe and well tolerated. Dorset Trust has now an established OPAT service and will soon introduce the elastomeric devices for flucloxacillin infusions which will definitely help the SAB patients' early discharge from hospital & antimicrobial stewardship.

Biography

Hadia Zaheer Lone is an enthusiastic doctor who is actively involved in clinical work, teaching and quality improvement projects at University Hospitals Dorset NHS Foundation Trust, United Kingdom. She is committed to lead quality improvement projects which will have an impact on better patient outcomes. Her expertise spans various disciplines gained through my clinical roles at institutions such as Shifa International Hospital and University Hospitals Dorset NHS Foundation Trust. Dr. Hadia have presented in an international conference (Oxford Bone Infection Conference, UK 2023 - OBIC) and will soon be presenting in another international conference (Federation of Infection Societies, UK 2024).

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TWO COINS OF BERBERINE AGAINST *CLOSTRIDIUM PERFRINGENS*: COLLATERAL SENSITIVITY AND CROSS/CO-RESISTANCE

Wenhui Wang¹⁻³, Hui Chen¹⁻³ and Haihong Hao¹⁻³

¹State Key Laboratory of Agricultural Microbiology, China

²MOA Key Laboratory for Detection of Veterinary Drug Residues (HZAU), China

³MOA Laboratory for Risk Assessment of Quality and Safety of Livestock and Poultry Products, Huazhong Agricultural University, China

Abstract

Background: The resistance of antibiotics is a complex global issue. However, the mechanisms behind cross/co-resistance and collateral sensitivity caused by traditional Chinese medicine monomer resistance remain unclear.

Objective: To examine the association between in phenotype, genome, transcriptome, and metabolome of *Clostridium perfringens* resistant to berberine (BBR).

Methods: This study used the micro broth method to detect the sensitivity of 102 clinically isolated *Clostridium perfringens* to 27 antibiotics and BBR. The *in vitro* combined antibacterial test was conducted using the chessboard method to combine BBR with common antibiotics. Additionally, *Clostridium perfringens* CVCC2030 was induced, and its cross/co-resistance phenotype were analyzed. Using genomic, transcriptomic, and metabolomic analysis to explore the mechanisms of Collateral Sensitivity and cross/co-resistance in *Clostridium perfringens* under unreasonable application conditions of traditional Chinese medicine.

Results: Our findings revealed that the BBR induced strain CVCC2030-BBR-3MIC exhibits cross/co-resistance to cefotaxime, while experiencing collateral sensitivity to gentamicin. The induced strains displayed outer membrane foaming, cytoplasmic leakage, and bacterial elongation, with a weaker ability to form biofilms. Transcriptome analysis indicated that *rasC*, *rplJ*, *dnaK*, *nanA*, *dapA*, *rpsQ*, and *nanE* are key genes in BBR's response to gentamicin and cefotaxime. Metabolomics analysis revealed that the main metabolic pathways contributing to cross/co-resistance and collateral sensitivity are the ABC transport system, galactose metabolism, glycolysis/gluconeogenesis and so on.

Conclusion: This study provides the first evidence at the genomic, transcriptome, and metabolome levels that *Clostridium perfringens* exhibits a significant risk of cross/co-resistance to cefotaxime and exhibits collateral sensitivity to gentamicin after long-term exposure to low concentrations of BBR. These findings have significant implications for the systematic evaluation of traditional Chinese medicine.

Biography

Wenhui Wang, PhD candidate in Veterinary Pharmacology and Toxicology, Huazhong Agricultural University. She has expertise in pharmacology and passion for improving animal health and wellbeing. Main research interests: Research on drug resistance risk of foodborne pathogens, resistance generation, adaptive evolution, virulence coupling mechanism of zoonotic pathogens, and rational application of veterinary antimicrobials.

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VISCERAL LEISHMANIASIS IN LEBANON, A REPORT OF FOUR CASES: CASE SERIES AND REVIEW

Oussaima El-dbouni, Pierre Abihanna, Mona Beaini, Afaf Minari, Ibrahim Khalife and Gladys Gemayel

Aman Hospital, Qatar

Abstract

Introduction: Leishmaniasis comprises a complex of vector-borne diseases, caused by more than 20 species of the protozoan genus *Leishmania*, and ranging from localized skin ulcers to lethal systemic disease. It is endemic in Asia, Africa, the Americas, and the Mediterranean region. In the Middle East countries like Syria reports high incidence of the disease. In addition to the endemicity of the region for leishmaniasis, the Middle East has seen a great deal of human migration either for earning of livelihood or due to political upheaval in the region. Cutaneous form can be disfiguring but visceral form can be lethal.

Methodology: In this article we report the clinical presentation of 4 cases of visceral leishmaniasis; 3 cases were pediatrics and one immunosuppressed adult patient all of them were from Syria from different regions. The diagnosis was made by bone marrow aspirate; PCR was made for 2 of them and was positive for *leishmania infantum*. All of them were treated with Amphotericin B lipid formulation (ABELCET) with complete response (definite cure).

Results: We report in this article 4 cases of visceral leishmaniasis treated with amphotericin B lipid complex (Abelcet) following the guidelines with complete remission.

Conclusion: Visceral leishmaniasis is a serious disease and if not treated can lead to death. Lebanon is not known to be endemic for *leishmania* but since the war the ministry of health reported an outbreak of *leishmania* and mainly cutaneous *leishmania*. Here we present 4 cases of visceral *leishmania* and a review of the latest guidelines on the treatment modalities and protocols.

Biography

Oussaima El-dbouni is an Infectious Diseases Consultant and Head of Infectious Diseases Division at Aman Hospital. Qatar.

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COVID-19 AND ITS IMPACT ON HEALTHCARE WORKERS: UNDERSTANDING STIGMA, STRESS, AND QUALITY OF LIFE

Khaled Marwa

University Hospital Southampton, UK

Abstract

Background: The coronavirus disease 2019 (COVID-19) pandemic has negatively impacted public health systems worldwide and created anxiety and stress among communities, resulting in the stigmatization of patients infected with the virus. Stigmatization of individuals who are sick or thought to be infected has a long history and can lead to discrimination and prejudice. This study aims to evaluate the prevalence of COVID-19-related stigma in Jordan, assess the relationship between stigma and the quality of life (QoL) in healthcare workers, and identify possible measures to decrease stressful events. Understanding the psychological effects of healthcare workers' jobs and reducing their burden is essential to improving medical outcomes and the QoL of patients.

Methodology: This cross-sectional study was conducted in three primary hospitals in Amman, Jordan, from July to December 2021. Healthcare workers were recruited through convenience sampling and completed a self-administered questionnaire, which included demographic information, a validated COVID-19 stigma questionnaire, work conditions during the pandemic, the Depression, Anxiety and Stress Scale - 21 Items (DASS-21) questionnaire to measure depression, anxiety, and stress, and the EUROHIS-QOL questionnaire to assess the QoL. Data were analyzed using descriptive and inferential statistics, including chi-square tests and post hoc analysis. The study was approved by the institutional review board, and participation was voluntary and confidential.

Results: The study was conducted among 683 healthcare workers in Jordan, with 77.7% based in the capital city, Amman. Most of the participants were between 18 and 30 years of age, and slightly more than half were female. The study found that 38.1% of healthcare workers would not take the COVID-19 vaccine once it became available. More than half (56%) reported experiencing stress, 61% reported anxiety, and 65% reported depression during the pandemic. Internal medicine specialties and frontline nurses reported the highest levels of stress, and healthcare workers with greater exposure to COVID-19 patients reported higher levels of anxiety and stress. Only 3% of participants reported experiencing stigmatization ($p=0.043$), with low-income participants reporting it more frequently. Stigmatization was significantly correlated with feelings of depression, anxiety, and stress ($p<0.001$).

Conclusion: Healthcare workers' mental well-being has been affected negatively by the COVID-19 pandemic, resulting in depression, anxiety, and stress. Widespread mental surveillance for healthcare workers is crucial to protect healthcare workers from psychological issues and to improve the healthcare service provided to patients. Stigma among healthcare workers can be a major factor that may increase depression, anxiety, and stress.

Biography

Khaled Marwa is a physician currently working at University Hospital Southampton in the UK. He previously worked at Al-Safa Medical Center in Saudi Arabia. Dr. Marwa holds an MBBS degree from the University of Science and Technology in Yemen. He has also published articles in reputed medical journals.

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LATERAL SENSITIVITY AND COMBINATION OF LICOCHALCONE A WITH ANTIBIOTICS AGAINST *CLOSTRIDIUM PERFRINGENS*

Haihong Hao¹⁻³, Wenhui Wang¹⁻³, Hui Chen¹⁻³ and Wenhui Zhou¹⁻³

¹State Key Laboratory of Agricultural Microbiology, China

²MOA Key Laboratory for Detection of Veterinary Drug Residues (HZAU), China

³MOA Laboratory for Risk Assessment of Quality and Safety of Livestock and Poultry Products, Huazhong Agricultural University, China

Abstract

Background: The resistance of bacterial has become a huge threat to global public health. It is very interesting to investigate the novel use of Chinese herbal with antibiotics for treatment of bacterial infections.

Objective: The study was aim to 1) reveal the antimicrobial susceptibility change and the genomic, transcriptomic, and metabolomic change of *Clostridium perfringens* after exposure to licochalcone A (LCA); 2) investigate the effect of LCA in combination with antibiotics in *Clostridium perfringens*-infected mice.

Methods: This study detect the susceptibility of 102 clinically isolated *Clostridium perfringens* to 27 antibiotics and LCA. The *in vitro* chessboard method was used to evaluate the combination effect of LCA with antibiotics. *Clostridium perfringens* CVCC2030 and YS1 were gradually exposed to LCA with step-wise concentration. The molecular change of *C. perfringens* was investigated by multiple-omics analysis (genomic, transcriptomic and metabolic). We also investigated phenotypic change including the antimicrobial susceptibility and pathogenetic characteristic. The therapeutic effect of LCA in combination with antibiotics against *C.perfringens* under the action of different concentrations of the drug in the treatment of *C.perfringens* in mice.

Results: Our findings revealed that a variety of antibiotics and LCA have good inhibitory effects on *C.perfringens* and can produce synergistic antimicrobial effects. LCA induced strain has no significant effect on the formation ability of biofilms. The induced strain exhibited lateral sensitivity to some antibiotics. The genomic results showed that the tetracycline resistant genes *tetA (P)* and *tetB (P)* on the plasmid of CVCC-LCA-MIC were lost after exposure to LCA. The 282 genes and 279 genes showed transcriptional change in the CVCC2030 induced strain and YS1 induced strains, respectively. Metabolomics analysis showed that the transport of ABC outer membrane proteins, oxidative phosphorylation, galactose metabolism, sulfur relay system, and thiamine metabolism in LCA induced strains may be related to the collateral sensitivity and compensatory metabolism. Notably, the combination of LCA and tilmicosin significantly reduced bacterial haemolysis while promoting bacterial movement. The combination of tilmicosin and LCA in the treatment of *Clostridium perfringens* infections reduced drug use and improved therapeutic efficacy.

Biography

Wenhui Wang, PhD candidate in Veterinary Pharmacology and Toxicology, Huazhong Agricultural University. She has expertise in pharmacology and passion for improving animal health and wellbeing. Main research interests: Research on drug resistance risk of foodborne pathogens, resistance generation, adaptive evolution, virulence coupling mechanism of zoonotic pathogens, and rational application of veterinary antimicrobials.

Day-2
Video Presentation

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MITIGATING MULTIDRUG-RESISTANT *CANDIDA AURIS* OUTBREAK IN ICU: A COMPREHENSIVE INTERVENTION APPROACH

Estephanie Padua, Danbi Yun and Nadya Rashed Alzeyoudi

Sheikh Khalifa Specialty Hospital, UAE

Abstract

Background: Within the ICU of a 250-bed hospital, the persistent occurrence of hospital acquired Multidrug-Resistant *C. auris* (MDR *C. auris*) triggered a comprehensive investigation into potential contamination sources and the efficacy of current infection control practices. A comprehensive multimodal approach was implemented to address the outbreak.

Objective: To implement focused interventions and strategies aimed at effectively mitigating the MDR *C. auris* outbreak in the ICU.

Methods: In addressing the inherent flaw in manual disinfection process, we introduced an automated disinfection system. Recognizing the vital role of the housekeeping staff, a dedicated communication group was established and the concept of “High Alert” patient rooms was introduced. Portable medical equipment was identified as potential carriers of contaminants through ATP luminometer assessment. Radiology staff received education on proper disinfection procedures and an audit and feedback system was established. After conducting a correlational study, we acknowledged the tendency of nursing staff to overlook infection control practices during high activity period. In response we implemented a novel approach-utilizing the hospital’s public announcement system to broadcast patient safety reminders. In addition, we provided regular on-site education and discussions using the Health Belief Model.

Results: During the outbreak, the MDR *C. auris* attack rate in the ICU was 0.9 per 1000 inpatient days. Following the implementation of the intervention, by second quarter the incidence rate was down to 0.2 per 1000 inpatient days with a 78% reduction rate. Furthermore, the interventions were sustained and upon analyzing hospital-acquired MDRO data from the first and second quarter, a notable reduction were identified in third and fourth quarter of the year. These reductions extended beyond MDR *C. auris*, encompassing CRE and MRSA as well. Both MDR *C. auris* and CRE showed 100% reduction, while MRSA demonstrated substantial reduction rate of 45.7%

Conclusion: Given the complexity of pathogen transmission, the diverse interventions implemented to tackle the MDR *C. auris* outbreak yielded positive outcomes, highlighting the efficacy of a multimodal approach in outbreak mitigation and sustainable infection prevention program.

Biography

Estephanie Padua currently serves as an Infection Preventionist at Sheikh Khalifa Specialty Hospital, a government tertiary healthcare facility in the United Arab Emirates. Following the completion of her nursing education, she embarked on a career in diverse clinical settings including medical-surgical unit and intensive care unit. She pursued advanced studies in Adult Health and Leadership and Management as part of the Master of Science in Nursing Program. Overtime Estephanie honed her skills and developed profound interest in infection prevention and control. As dedicated member of the Infection Control Team, Estephanie plays a vital role in conducting outbreak investigation and implementing mitigation strategies. Her commitment extends beyond surveillance and prevention, encompassing involvement in quality improvement projects and initiatives to enhance patient safety.

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ECOLOGY OF *SCEDOSPORIUM* SPECIES IN HUMAN IMPACTED ENVIRONMENTS AND THEIR DISTRIBUTION IN SOILS OF NORTHERN LEBANON

Sara Mina, Hajar Yaakoub and Jean-Philippe Bouchara

Beirut Arab University, Lebanon

Abstract

Background: *Scedosporium* are saprophytic eutrophic fungi frequently isolated from industrial soils, polluted water, agricultural soils, and soils of city parks and playgrounds. Their ubiquitous occurrence in various environmental matrices underlines their possible use as biomarker of ecosystem exposure to anthropogenic activities, as well as their potential use in bioremediation. In humans, *Scedosporium* species are well described as emerging opportunistic pathogens causing a variety of infections ranging from localized infections in immunocompetent individuals to life-threatening disseminated infections in severely immunocompromised patients. Several ecological studies have highlighted the presence of these fungi in all continents with great variations in the relative abundance of *Scedosporium* species. Nevertheless, such studies have never been conducted in Lebanon.

Objective: In this environmental study, we aimed to assess the abundance of *Scedosporium* species in Northern Lebanon and to evaluate various chemical parameters in soil samples to better understand the ecophysiological features of these species.

Methods: One hundred and fifty-five environmental sites were sampled in the North of Lebanon representing various levels of anthropogenic influence as well as natural habitats. Physico-chemical parameters were measured to characterize the different samples included in this study. Fungal identification was performed by morphology and Polymerase Chain Reaction (PCR) amplification of the internal transcribed spacer (ITS) 1 and 2 regions of ribosomal DNA (rDNA) and part of the beta-tubulin gene (TUB).

Results: Our findings showed a fungal abundance of 25.16% in soil samples collected from different environments, particularly, human-impacted regions. These fungi were mostly abundant in soils exhibiting a neutral pH, with increasing nitrogen and phosphorus amounts and organic matter. *Scedosporium apiospermum* was the predominant species, followed by *S. aurantiacum*, and *S. boydii*.

Conclusion: These findings should raise the awareness of susceptible individuals exposure to these fungi and set the scene for further studies highlighting a possible correlation between environmental sources and clinical infections.

Biography

Sara Mina obtained my B.Sc. in Biology from the Faculty of Sciences-Lebanese University in 2008. She earned her M.Sc. in Human Molecular Diagnosis from the Faculty of Sciences-Lebanese University in 2010, and an MSc in Medical Microbiology from the Graduate School of Science and Technologies (EDST) Azm Center-Lebanese University. She was awarded a scholarship to pursue her M.Sc. training at the University of Angers-France focusing on the germ tubes constituents of *Scedosporium apiospermum*. She obtained PhD in 2014 in Microbiology, Immunology and Biotechnology from the University of Angers-France. In 2014, Dr. Mina returned to Lebanon to be appointed as lecturer at several universities: Lebanese University, Lebanese International University and Beirut Arab University. She has a number of publications in peer-reviewed journals. In 2016, she joined the Medical Laboratory Technology department, Faculty of Health sciences, at Beirut Arab University as a full-time assistant professor.

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44415 A NOVEL APPROACH TO HAND HYGIENE STEPS

Zizi Wanis

Mediclinic Welcare Hospital, UAE

Abstract

Background: Hand hygiene continues to be a challenge despite its essential role in infection control in healthcare settings. In order to determine the factors that influence adherence to hand hygiene guidelines and evaluate the current hand hygiene practices of healthcare personnel, we conducted a year-end audit as part of the annual hand hygiene competency validation.

The results of this audit indicated that healthcare personnel complied with hand hygiene steps by 27%. Prior efforts to improve adherence have yielded inconclusive results, as staff members exhibited considerable difficulties in memorizing the hand hygiene protocols. As a consequence, research was conducted to identify a technique that could enhance learning outcomes, time management, and recall of hand hygiene procedures through the elimination of regular review.

Objective: The primary intention of this research endeavor was to assess the efficacy of an intervention designed to enhance the adherence of healthcare personnel to hand hygiene protocols within a hospital environment.

Complete compliance with hand hygiene protocols must be achieved by December 2023. In addition to produce a numeric mnemonic (44415) to improve retention and comprehension.

Methods: A pre-post intervention study design was employed, involving the observation of hand hygiene practices before and after the implementation of the intervention. Data was collected through direct observation and surveys to assess healthcare workers' knowledge, attitudes, and behaviors towards hand hygiene by an innovative approach to facilitate the recollection of hand hygiene steps by healthcare professionals (44415), it is enjoyable to retrieve information by stimulating the brain with active recall.

Results: Initial findings suggest that there was a substantial increase in the rate of adherence to hand hygiene protocols subsequent to the execution of our intervention. Compliance increased from 27% to 89% in the first quarter, and active retrieval of information from memory is regarded as a more effective strategy for long-term retention and learning than simple rereading or reposing oneself on the material.

Biography

Zizi Wanis is a dedicated healthcare professional with a strong background in infection control management. With a bachelor's degree in nursing and specialized training in infection prevention and control, Zizi brings a wealth of knowledge and expertise to her role. Throughout her career, she has demonstrated a commitment to ensuring the safety and well-being of patients and staff by implementing robust infection control protocols and procedures. Her attention to detail and proactive approach have played a key role in preventing the spread of infectious diseases within our healthcare facility. Zizi is known for her strong interpersonal skills and her ability to collaborate effectively with multidisciplinary teams. She is passionate about educating others on the importance of infection control practices and works tirelessly to promote a culture of safety within our organization., she continues to make a significant impact on our organization, helping to protect both patients and staff from healthcare-associated infections.

Day-2
e-Poster Presentations

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LEGIONELLA PNEUMONIA COMPLICATED WITH NEPHRITIS AND CEREBRAL HEMORRHAGE

Miryam Piccirillo, Gianmaria Chicone, Luca Monastra, Sisto Adiletta, Vincenza Pezzullo and Dir. *Ciro Fittipaldi*

Ospedale del mare, Napoli, Italy

Abstract

Background: Legionella infection is an emerging public health concern monitored by the World Health Organization (WHO). Mortality rates of 5%-10% can reach 40-80% in untreated immunosuppressed patients. Complications range from pneumonia to shock and renal failure, requiring antibiotic treatment.

Objective: Legionella Pneumonia complicated with nephritis and cerebral hemorrhage, treated with targeted antibiotic therapy, decapneization, CRRT, and Polymyxin B hemoperfusion.

Case: A 63-year-old male was admitted to the emergency room with dyspnea and hyperpyrexia, unresponsive to home treatment. Transferred to the Emergency Medicine and Surgery Unit for severe respiratory distress and sepsis, he was treated with Meropenem and Clarithromycin; culture, Sars-Cov 19 test, and Legionella antigen research were performed. Despite NIV, respiratory acidosis persisted, with evidence of septic shock requiring intubation. Culture tests and endotoxemia assessment were performed in ICU. A positive Legionella urinary antigen led to starting levofloxacin and azithromycin antibiotics with noradrenergic support. The chest CT evidenced bilateral lung consolidation; severe hypoxic/hypercapnic respiratory acidosis prompted the initiation of decapneization. Further renal failure with immunoglobulin deficiency necessitated renal replacement therapy and immunoglobulin infusion. With an endotoxemia value 0.82, Polymyxin B hemoperfusion was initiated to neutralize endotoxins associated with lateralization maneuvers to recruit non-hepatized lung fields. Skull CT scans revealed a non-surgical intraparenchymal hemorrhage, necessitating the suspension of decapneization while continuing CRRT with citrate. Subsequent Legionella antigen and endotoxemia tests resulted negative. Following CT control, percutaneous tracheotomy was performed with gradual weaning

Results: After two months, the patient was transferred to Rehabilitation with a GCS score of 15, spontaneous breathing via tracheotomy.

Conclusions: Legionellosis should always be suspected in pneumonia cases, as it can lead to fatal respiratory failure. Guidelines recommend using fluoroquinolones and macrolides. Polymyxin B hemoperfusion is a gold standard in unresponsive endotoxin-mediated septic shock. In our case, the synergistic approach of targeted combination antibiotic therapy, decapneization, CRRT, and Polymyxin B hemoperfusion successfully resolved the severe septic shock.

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INHIBITION OF THE GROWTH OF PATHOGENIC BACTERIA THROUGH THE USE OF EXTRACTS OF PLANT ORIGIN

Rocío Pérez y Terrón and Etsuri Chávez-Hernández

Benemérita Autonomous University of Puebla, Mexico

Abstract

Background: Currently there is a global health problem due to infectious agents that are resistant to antibiotics, making many diseases caused by bacteria difficult to treat. The use of medicinal plants as an alternative in the treatment of diseases, because they contain secondary metabolites, has allowed us to take advantage of the great diversity of plants that can be found in our country.

Objective: Inhibit the development of pathogenic bacteria through the use of plant extracts.

Methods: For this work, the fruit, seeds and leaves of the plants were used as appropriate. The aqueous extract was obtained from the species of *Allium sativum*, *Coffea arabica*, *Cinnamomum verum* and *Rosmarinus officianalis*. Aqueous extracts were prepared from the plants and used to inhibit the development of the bacteria *Yersinia enterocolitica*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Enterococcus faecalis*. Inhibition was determined by turbidimetry measuring absorbance at 625 nm. Additionally, phytochemical tests were carried out to investigate the compounds present in the extracts.

Results: The results showed that garlic inhibited the growth of the four bacterial species by 100%, coffee alone inhibited *E. faecalis* and *P. aeruginosa*, cinnamon inhibited *P. aeruginosa* and *S. aureus*, while rosemary inhibited a lower percentage. (92 to 95%) to the four bacterial species. The main compounds present in the extracts were phenols, flavonoids, coumarins and alkaloids.

Conclusion: The garlic extract totally inhibited the growth of the four bacterial species. Rosemary had less inhibitory effect. Phenols are present in all extracts. The use of plant extracts is a good alternative to inhibit the growth of pathogenic bacteria.

Biography

Rocío Pérez-y-Terrón has experience in the use of plant extracts to inhibit pathogenic bacteria that are of great medical importance and a public health problem, which significantly affect the population. Proposing this alternative against pathogens that allows the use of natural materials is the main objective, since it is not associated with side effects as in the case of the use of antibiotics, and they show a good antimicrobial effect.

Virtual - Day-1
Keynote Presentations

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ADVANCES IN MICROBIOME RESEARCH REVEALS NOVEL PREDICTIVE AND THERAPEUTIC OPTIONS FOR CHILDHOOD ECZEMA

Ting Fan LEUNG

The Chinese University of Hong Kong, Hong Kong

Abstract

Microbes at different mucosal sites is a potent driver of immunological maturation. There is rich evidence on early-life evolution of gut microbiome following child birth and in particular in response to different exposome. A healthy microbiome competes with pathogens, improves nutrient metabolism, enhances gut barrier integrity and regulates immune system maturation. Dynamic interactions also exist between microbes, the immune system and food allergens that may lead to innate and adaptive tolerance, and any disruption of such 'balanced' microbiota in early-life will adversely affect health later in life. Decreased *Bifidobacterium* and Enterococci were found in dysbiotic stool microbiome observed in children with eczema, which prompts the design of a novel probiotic formulation called SIM03 that aims to replenish the relevant *Bifidobacterium*. My team has just completed a clinical trial that tested the clinical benefits of this probiotic in local toddlers with eczema. Our results showed this SIM03 to be useful in ameliorating eczema severity and improving quality of life of these young patients. Evidence for the importance of microbiome at other body sites is limited. Our ongoing birth cohort of healthy Chinese babies confirmed substantial temporal variations in skin microbiota between the first and sixth month. Infants with persistent eczema had lower microbial biodiversity than those with the transient form. Our metagenomics data revealed inverse relationship between eczema severity and microbial biodiversity. In conclusion, microbiota in stool and skin are important driver for childhood eczema. We are now in the era in which such knowledge about microbial uniqueness and compositions may be employed to design novel biomarkers and targeted biotherapy for eczema.

Biography

Ting Fan LEUNG graduated from The Chinese University of Hong Kong in 1992, and he received subspecialty training on Immunology and Allergy in the Hospital for Sick Children in Toronto, Ontario, Canada in 1997-1998. He was awarded Doctor of Medicine degree by The Chinese University of Hong Kong in 2004 for his research works on immunogenetics of childhood asthma. Professor Leung is currently a professor in Department of Paediatrics at The Chinese University of Hong Kong, and a visiting professor in the Central South University in mainland. He is Immediate Past President of Hong Kong Society for Paediatric Immunology, Allergy and Infectious Diseases. His main research interests include natural history, novel diagnostics and host-microbe interactions for allergic diseases. He published more than 430 peer-reviewed journal articles and won many research awards in international conferences. Professor Leung supervised ten post-doctoral fellows, 11 PhD students and 29 master students.

***Virtual - Day-1
Presentations***

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THE DETECTION OF THE VIRAL NUCLEIC ACID OF LATENT VIRUSES IN PERIPHERAL BLOOD MONONUCLEAR CELLS AND NEUTROPHILS OF HEALTHY SUBJECTS

Sahar Essa and Chehadah W

Kuwait University, Kuwait

Abstract

Background: Herpesviruses, which include cytomegalovirus (CMV), herpes simplex viruses (HSV-1 & HSV-2), Epstein bar virus (EBV), and varicella-zoster virus (VZV) characteristically establish latent infections in their hosts. Adequate clearance of herpesvirus infections through immune responses is usually followed by the permanent presence of the viral genome in the host cells in a state of reproductive latency. So far, it's unknown whether peripheral blood mononuclear (PBMC) and neutrophils can serve as a site for herpesvirus latency.

Objective: to detect the presence of latent herpesvirus genomes in PBMC and neutrophils.

Methods: Eight milliliters of venous blood were taken from all participants. Ethical approval from the College of Medicine was obtained. ELISA IgM & IgG antibody detection techniques detected previous infections with these viruses. The viral genomes for CMV, HSV-1&2, EBV, and VZV were investigated in the serum, neutrophils, and PBMC of 100 healthy individuals by nested polymerase chain reaction techniques (PCR).

Results: The IgM screening was negative for all subjects. The CMV IgG was detected in 79%, HSV IgG in 54%, EBV IgG in 72%, and VZV IgG in 100% of the subjects. The CMV genome was found in 2% of serum samples. In the PBMC, the CMV genome was detected in 4% of the samples, and the HSV genome was detected in 3% of the samples. As for the neutrophils, the CMV genome was detected in 4%, the HSV genome in 2%, and the EBV genome in 1% of the samples.: The prevalence of CMV is 79%, HSV is 54%, EBV is 72%, and VZV is 100% in the Kuwait population.

Conclusion: Our result shows that PBMC is a latency site for CMV and HSV. On the other hand, the neutrophils serve as a site of latency for CMV, HSV, and EBV.

Biography

Sahar Essa is a virologist who completed her Ph.D. at Warwick University, United Kingdom. In addition to teaching, Dr. Essa is professionally involved in medical research. She is mainly interested in viral immunopathology. Her experience is detecting and evaluating cytokine responses in virally infected patients and animal models. She has published more than 30 papers in reputed journals.

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EFFICACY, SAFETY, AND IMMUNOGENICITY OF mRNA-1345 FOR RESPIRATORY SYNCYTIAL VIRUS PREVENTION IN ADULTS: A SYSTEMATIC REVIEW

Manuji Bandara and Gayani Liyanage

University of Ruhuna, Sri Lanka

Abstract

Background: Respiratory syncytial virus (RSV) is a major pathogen that causes respiratory illness in adults and most commonly affects populations with additional comorbidities or the elderly. RSV poses a significant risk for severe respiratory infections among adults. mRNA-1345 vaccine utilizes advanced mRNA technology. While mRNA vaccines have demonstrated considerable success in other infectious disease contexts, detailed evidence on the efficacy, safety, and immunogenicity of mRNA-1345 specifically for RSV among adults remains scarce.

Objective: We aimed to evaluate the effectiveness and safety profile of the mRNA-1345 vaccine in preventing RSV infections in adult populations. **Method:** A search was conducted through PubMed and the Cochrane Library to identify randomized controlled trials examining the efficacy and safety of the mRNA-1345 vaccine against RSV. The review was conducted adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Results: The mRNA-1345 vaccine demonstrated an overall efficacy of 68.4% against RSV-associated respiratory illness (ARI) and 83.7% against RSV-associated lower respiratory tract disease (LRTD) with at least two signs or symptoms in individuals aged 60 and older. Concerning RSV-associated respiratory illness (ARI), the vaccine provided 78.5% protection against RSV-A and 51.7% against RSV-B strains. The vaccine's safety profile was comparable to a placebo, with mild to moderate adverse events like injection-site pain and fever. Adverse events were rare and equally distributed between the vaccine and placebo groups.

Conclusion: The mRNA-1345 vaccine has demonstrated significant benefits in preventing RSV-associated LRTD and ARI in adults 60 and older. Additionally, it has proven to have an acceptable safety profile across age groups, particularly in those aged 18-49 and 60 and above. The vaccine also elicited a robust immune response, with clear evidence of immunogenicity. Overall, the mRNA-1345 vaccine emerges as a promising candidate for adult vaccination.

Biography

Manuji Bandara, a higher achiever in the Edexcel A/Level examination, ranking top 10 in the world for Mathematics, studied at the University of Ruhuna, a prestigious university in Sri Lanka. She graduated with First Class Honors with distinctions in 10 out of 14 subjects and a Gold Medal for Pathology. She was ranked 18 out of nearly 1500 medical students from the whole of Sri Lanka at her final MBBS and got the opportunity to work at the National Hospital of Sri Lanka, Colombo. Currently, she works as a research assistant at the university while working at a private hospital as a clinician.

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COMMENTARY ON THE IMPACT OF THE COVID-19 PASSPORTS IN LITHUANIA

Rimas Jankunas, Leonidas Sakalauskas, Kristina Zamaryte Sakaviciene, Donatas Stakisaitis and Migle Helmersen

Lithuanian University of Health Sciences, Lithuania

Abstract

Background: Lithuanian scientists published a paper speculating that COVID-19 passports prevented approximately 26,000 – 57,000 COVID-19 infections and 330 – 720 deaths in Lithuania and that they could be an effective measure for controlling future epidemics.

Objective: To provide a broader view including consideration of data of randomized controlled clinical trials (RCT), neighbouring countries, natural immunity etc.

Methods: The analysis included the endpoints of RCT serving as basis for marketing authorization, excess mortality in the EU counties of Baltic region and consideration of natural immunity.

Results: Neither effect on transmission, nor effect on mortality served as endpoints of RCT of COVID-19 vaccines. Data from the Health Security Agency of the UK demonstrate that the number of COVID-19 cases in vaccinated people is lower than in unvaccinated ones several months after vaccination but later turns out to be higher. Excess mortality in the EU counties of Baltic region without COVID-19 passports was lower than in those with them. There is no explanation why did authors advocating COVID-19 passports assume 1000 infections per day as a psychological threshold; why did they consider the effects of the COVID-19 passports were delayed despite they deprived non-holders of basic human rights prohibiting multiple activities from the first day of application; why did they consider that spread of the delta wave was stopped by the COVID-19 passports with ignorance of the natural immunity after infection; why did they assume the time relation being a proof of causation in delta wave but not in omicron wave.

Conclusion: There is no sound evidence that COVID-19 passports prevented deaths in Lithuania. The mathematical modelling demonstrating the benefits of COVID-19 passports is inappropriate. There is no scientific evidence that COVID-19 passports could help control future epidemics.

Biography

Rimas Jankunas, MD PhD has expertise in pharmacology, marketing authorization and safety of medicinal products. Currently, he works as associated Professor at Lithuanian University of Health Sciences and as Director of Health Law Institute. From 2003 to 2012, he was a Deputy Director at States Medicines Control Agency of Lithuania. His responsibilities included marketing authorization of medicinal products, supervision of clinical trials, and pharmacovigilance. In addition, he was a member of Working Group of Medicinal Products and Devices at European Council and Pharmaceutical Committee at European Commission. He has a critical view on the administration of medicinal products, emphasizes the importance of evidence-based medicines and consideration of risk/benefit ratio.

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HOW AFGHANISTAN IS TACKLING INFECTION CONTROL: AN IN-DEPTH EVALUATION OF PRACTICES AND STRATEGIES

Mohammad Naeem Lakanwall¹, Preet Katyara², Rozina Roshan², Syed Faisal Mahmood², Iman Heweidy³, Mahmoud Hamouda³, Safiullah Nadeeb³ and Karima Mayar Amiri¹

¹Ministry of Public Health, Afghanistan

²Aga Khan University Hospital, Afghanistan

³World Health Organization, Afghanistan

Abstract

Background: Healthcare-associated infections (HAI), also commonly known as nosocomial infections, continue to prove to be a major public health challenge. HAIs exert a substantial global burden, affecting over 1.4 million people worldwide. The greater weight of this burden is born by low-resource countries where the prevalence of HAI has been reported to be over 15.5 per 100 patients.

Methods: A cross-sectional assessment was conducted between July 2021 and June 2022 at 15 governmental hospitals in Afghanistan including 11 tertiary hospitals from Kabul, 3 regional hospitals from Herat, Kandahar, and Nangarhar respectively, and 1 provincial hospital from Laghman which is the only secondary healthcare facility in this assessment. Two infection prevention and control (IPC) experts from the Ministry of Public Health (MoPH), Kabul Afghanistan conducted hospital assessments. The World Health Organization (WHO) Infection Prevention and Control Assessment Framework (IP-CAF) tool was used to assess the strengths and weaknesses of all healthcare facilities regarding IPC.

Results: Of the 15 hospitals evaluated, most achieved a basic IPC level with only 2 hospitals achieving an intermediate level of IPC standards, and none of the hospitals achieved advanced level. The highest overall IPC standard compliance score was observed with aseptic techniques (63.9%), and the lowest overall scores were observed with control of MDROs (3.3%), isolation precautions (31%), and COVID-19 measures (32%).

Conclusion: Significant efforts must be made considering the current bleak state of the IPC programs in Afghanistan

Biography

Mohammad Naeem Lakanwall is graduated from Shaikh Zayed University in 2014 and attended clinical Pathology residency program for 4 years in FMIC Kabul. Recently he joined World Health Organization as National IPC Officer here in Kabul.

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IN SILICO DOCKING STUDIES ON THE ANTICANCER EFFECT OF CURCUMIN AS AKT KINASE INHIBITOR

Selma HOUCHI

University of Ferhat Abbas Setif-1, Algeria

Abstract

Background: AKT has a crucial regulatory function in the PI3K/AKT/mTOR signaling pathway. Abnormal regulation of AKT activity, particularly its excessive activation, is strongly linked to the onset of many types of cancers and resistance to chemotherapy. Throughout the years, a diverse range of AKT inhibitors has been identified by experimental and computational methods.

Objective: Here, we investigate the inhibition of AKT by curcumin through the use of molecular docking. Curcumin, a polyphenol, has been found to selectively interact with various signaling molecules and exhibit cellular effects, hence contributing to its diverse range of health advantages.

Results: Exhibited a good potential inhibition against AKT (PDB: 3lj3) active site. its binding energy is -8.68 kcal/mol. Furthermore, curcumin showed three effective H-bonds with GLN 291 and 846 and ARG 849. Regarding to the Physicochemical and drug-likeness properties, curcumin obeyed to Lipinski's, Ghose's, Veber's, Egan's and Muegge's rules. This compound assessing their flexibility as well as their surface area, with bioavailability score of 0.55 and consensus log Po/w of 3.03. The oral bioavailability radar plots showed that this compounds was in the optimal range for all physicochemical properties (lipophilicity: $-0.7 < XLOGP3 (3.20) < 5.0$, size: $150 \text{ g/mol} < MW (368.38) < 500 \text{ g/mol}$, polarity: $20 \text{ \AA}^2 < TPSA (93.06) < 130 \text{ \AA}^2$, solubility: $-6 < \text{Log S (ESOL)} (-3.94) < 0$, flexibility: $0 < \text{Num. of rotatable bonds} (8) < 9$) with the exception of saturation: $0.25 < \text{Fraction Csp3} (0.14) < 1$. curcumin was moderately unsaturated

Conclusion: Results suggesting that curcumin has to fall entirely the pink area and therefore exhibiting good drug-likeness properties and orally bioavailable.

Biography

Selma HOUCHI, Associate Professor at the University of Ferhat ABBAS SETIF-1 Algeria, head of the Biotechnology and molecular pathology specialty, teacher at the postgraduate level, member of the laboratory of applied biochemistry and the editorial board of journal of research in pharmacy. Her research interest including public health and safety, infectious disease, bacterial resistance to antibiotics, Multi Drug Resistant strains, Extended Spectrum Betalactamases, Biological activities, Medicinal plants, valorization of biomolecules, phytochemicals analysis, inhibition of enzymes such as beta-lactamases, Acetylcholinesterase (AChE), butyrylcholinesterase (BChE); Drug discovery and development using Docking analysis, SARS-CoV-2.

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KNOWLEDGE AMONG DOCTORS, RESIDENTS AND MEDICAL STUDENTS IN LEBANON OF THE HUMAN PAPILLOMAVIRUS, ITS VACCINATION AND CERVICAL CANCER

Jacques Choucair

Saint Joseph University of Beirut and Hôtel-Dieu de France, Lebanon

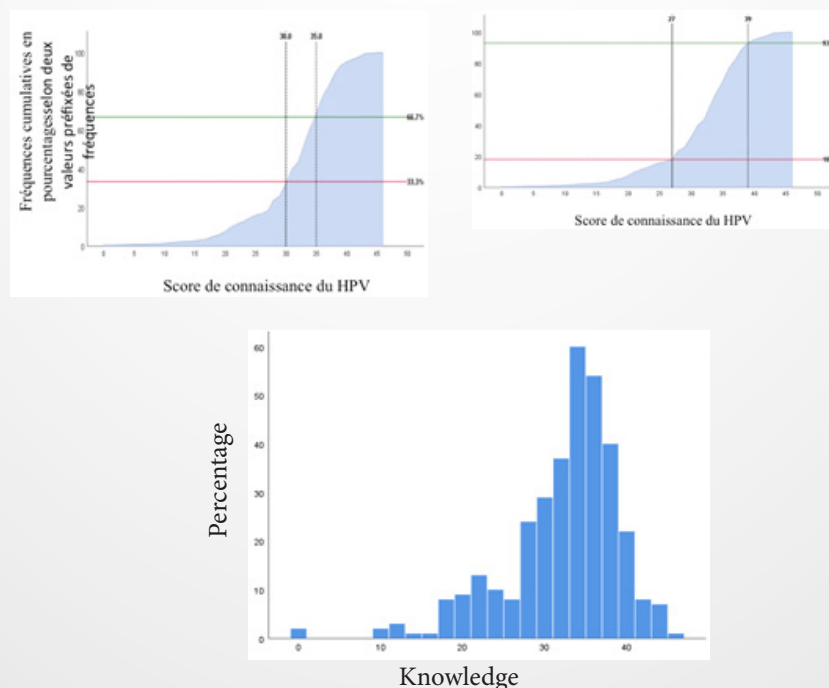
Abstract

Objective: Our objective is to study the level of knowledge of students in Medicine and Lebanese doctors regarding the Human Papillomavirus HPV, its vaccination and the cervical cancer in order to assess the relevance of an initiative aimed at improving this level of knowledge among Lebanese medical providers on increasing the vaccination rate to reduce the incidence of cervical cancer.

Materials & Methods: This is a cross-sectional observational epidemiological study, having as target population: Lebanese doctors and medical students. It is based on a questionnaire covering concepts of HPV, its risk factors, its screening, cervical cancer, its risk factors and symptoms and vaccination against PVH, as well as general participant information and personnel reviews on HPV vaccination.

Results: 88 participants (26%), 119 (35.1%) and 132 (38.9%) simultaneously had a score indicating a poor to moderate, moderate and moderate to high level of knowledge. In addition, there is a lack of knowledge among students, doctors of all specialties even in gynecology/obstetrics and infectious diseases, concerning some fundamental notions of HPV, cervical cancer or the vaccination.

Conclusion: The study allowed us to conclude that a campaign aimed at increasing the level of knowledge of the Lebanese medical community on the HPV virus, its vaccination and cervical cancer would be beneficial. The level of recommendation of the vaccine is nevertheless high but its strengthening could improve the quality of this recommendation so that doctors can increase the rate of vaccination within the Lebanese population.



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Biography

Jacques Choucair is an Infectious Diseases Specialist in Hotel Dieu de France teaching hospital in Beyrouth. He has obtained his MD degree in 1994 from the Saint-Joseph University, Faculty of Medicine in Beyrouth. He has completed a 2 years Fellowship from 1998-2000 at Bichat Claude Bernard Hospital and Bacteriology at Broussais Hospital affiliated to University of Paris V. He has received his Diploma in Infectious Diseases (1999), Saint-Joseph University, Beyrouth.

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ASPERGILLUS SECTION *FUMIGATI* ISOLATED FROM SOIL SAMPLES IN LEBANON: MOLECULAR IDENTIFICATION AND AZOLE SUSCEPTIBILITY TESTING

Sara Khalife, Agustin Resendiz Sharpe, Katrien Lagrou, and Emilie Frealle

Beirut Arab University, Lebanon

Abstract

Background: *Aspergillus fumigatus* is a human pathogen and a widespread fungus in the environment. This fungus could cause a range of diseases, including allergic syndromes, chronic pulmonary infections or acute invasive infections in immunocompromised patients. Azoles are considered the first-line antifungal drugs used in the prophylaxis and treatment of *Aspergillus* diseases. However, azole resistance has been recorded worldwide, threatening current treatment options. Data regarding *A. fumigatus* azole resistance in clinical samples remains limited in Lebanon, and the occurrence of resistance remains unknown in the environment.

Objective: In this study, we sought to assess the prevalence and mechanisms of *Aspergillus* section *Fumigati* azole resistance in environmental samples in North Lebanon through the collection of soil samples from selected areas.

Methods: 262 soil samples of different environmental origins were collected in North Lebanon from May to December 2018. The screening of azole-resistant *A. fumigatus* was performed using multidish agars supplemented with itraconazole, voriconazole, and posaconazole. Azole MICs were determined using the EUCAST broth microdilution method. A partial fragment of the *cyp51A* gene was amplified and sequenced to identify azole-resistant *A. fumigatus* isolates.

Results: *Aspergillus* section *Fumigati* detection was positive in 28 samples (10.7%). Molecular identification yielded *A. fumigatus* sensu stricto, *Aspergillus fischeri*, and *Aspergillus neoellipticus* for 26, 1, and 1 isolates, respectively. The *A. fischeri* isolate presented azole resistance, but no azole-resistant *A. fumigatus* sensu stricto could be identified in our study.

Conclusion: This first report of *A. fischeri* and *A. neoellipticus* detection in Lebanon confirms that cryptic species of *Aspergillus* section *Fumigati* share the geographic ubiquity of *A. fumigatus* sensu stricto. Further clinical and epidemiological studies, together with systematic screening of *A. fumigatus*, are warranted to offer updated information on the prevalence of azole resistance in the environment and the potential transmission to the clinical setting.

Biography

Sara Khalife is an Assistant professor in the department of Medical Laboratory Technology at Beirut Arab University since September 2016. She obtained in 2014 a PhD in Biology and Physiology of Organisms from the University of Lille 2- France, and a PhD in Medical and Food Microbiology from the Lebanese University. She has been awarded the ANOFEL Prize (French Association of Teachers in Parasitology and Mycology) and the university of Lille 2 prize for the best Ph.D. thesis for the year 2014. She participated in national and international conferences and has a number of publications in peer-reviewed journals. Sara Khalife's research interest focuses on studying the epidemiology, transmission, pathogenicity, and antimicrobial resistance with emphasis on the dynamics of airborne transmission, Lung defense, and elimination of pathogens.

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GENETIC ANALYSIS OF COLISTIN RESISTANCE, ASSOCIATED VIRULENCE FEATURES AND ANTIMICROBIAL EFFECT OF *SAUSSUREA LAPPA* IN *ACINETOBACTER BAUMANNII*

Umaira Ahsan

Green International University, Pakistan

Abstract

Acinetobacter baumannii is notorious for consistently increase in nosocomial infections in developing countries. Pakistan is one of the nations with the highest global rates of reports of carbapenem-resistant *A. baumannii* infections. World Health Organization has put carbapenem resistant *A. baumannii* on the top of list of organisms against which novel antibiotics need to be developed. Colistin is considered as the last treatment option to treat carbapenem resistance *A. baumannii* CRAB. Misuse of colistin can lead to the emergence of developing resistance to colistin in *A. baumannii* and other Gram negative rods. Mostly bacteria acquire colistin resistance through modification or loss of lipopolysaccharides (LPS) that is achieved by mutations in genes associated with LPS biogenesis. Occasionally, cases of plasmid mediated colistin resistance are also found. The accurate status of colistin resistance is not known in *A. baumannii* isolates because conventional disc diffusion method has been abandoned for colistin susceptibility. Therefore, colistin sensitivity is either not being reported in routine or falsely reported due to adaptation of inadequate method of colistin susceptibility in our region.

Understanding the phenotypic and genetic status of colistin resistance in local isolates was one of the main goals of this investigation, in addition to analysing the effect of colistin resistance on virulence features of *A. baumannii*. Accordingly, antimicrobial drug-resistant features of 150 clinical isolates were tested.

In total, 150 clinical isolates of *A. baumannii* were collected from clinical samples of patients visited or hospitalized in Jinnah hospital, King Edward Medical University/ Mayo Hospital, Services Institute of Medical Sciences, Ittefaq Hospital, and Lahore during 2019–21. *A. baumannii* 17978 was used to create a colistin resistant derivative CR-1. The hyper virulent strain AB5075 and its opaque and translucent colony variants were used for infection tests (Ahmad et al., 2019). *Escherichia coli* ATCC 25922 was used as a control strain in MIC value tests. The strains were preserved at minus 80°C in 10% glycerol prepared in LB broth. Standard Kirby-Bauer disk diffusion method was used to test antimicrobial susceptibility using Mueller-Hinton agar (MHA) (Oxoid, United Kingdom), according to Clinical Laboratory Standards Institute (CLSI) guidelines (Clinical and Laboratory Standards Institute (CLSI), 2019). The minimal inhibitory concentration of colistin was determined by micro broth dilution method. MIC results were read and interpreted according to the CLSI 2019 breakpoints for *A. baumannii*.

The colistin resistant isolates were typed using single-locus molecular schemes based on the allelic identity of the *A. baumannii* intrinsic blaOXA-51-like gene. PCR amplification of blaOXA-51-like was performed using in house designed primers and followed by Sanger sequencing of the amplicons. This approach was able to detect the occurrence of insertion sequence (IS) elements, such as ISAbal, in the bordering regions of blaOXA-51-like. The whole genome sequencing of colistin resistant clinical isolate AB-4 and colistin resistant variant of *A. baumannii* 17978 CR-1 was performed using the MiSeq Desktop Sequencer and MiSeq Reagent Kit v3 (Illumina, San Diego, CA, United States). The whole genome sequence of *A. baumannii* ATCC 17978 (DDBJ/EMBL/GenBank database accession number CP000521)

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was used as a reference sequence. The MLST web-based search engine, hosted by the Center for Genomic Epidemiology in Denmark (<http://www.genomicepidemiology.org/>), was used to assign the isolate into STs according to the Institute Pasteur's MLST scheme (<http://www.pasteur.fr/mlst>). The occurrence of acquired antimicrobial resistance genes was detected using the Res Finder service, also hosted by the Center for Genomic Epidemiology in Denmark. The occurrence of resistance, genes was verified, and genetic surroundings were annotated based on the yields of nucleotide similarities obtained using the Basic Local Alignment Search Tool (<http://blast.ncbi.nlm.nih.gov/Blast.cgi>) against the "Nucleotide collection (nr/nt)" and/or "Whole-genome shotgun contigs (wgs)" databases.

The colistin sensitive strain *A. baumannii* 17978 and colistin resistant strain *A. baumannii* AB-4 and were selected for time kill assay. The root of *S. lappa* weighing 200g was washed, dried, crushed into powder form and afterwards dissolved in autoclaved distilled water. Water extract was prepared as per protocol. The MIC of this water extract was tested against colistin resistant isolates. BALB/c mice were used in the study. All animals were maintained and treated in accordance with the recommended rules of the WMA Helsinki declaration and the permit granted by University of Health Sciences, Lahore, Pakistan, ethical and research committee wide letter number UHS/REG-19/ERC/1236.

The mice were inoculated with selected *A. baumannii* strains by intraperitoneal route. The effect of *S. lappa*, neutrophil count and quantitative bacteriology was observed.

Out of 150 isolates collected from four hospitals in Lahore during 2019–21, 84% were carbapenem resistant and 7.3% were additionally resistant to colistin. There were two isolates resistant to only tetracycline family drugs doxycycline and minocycline. Doxycycline exhibited a synergetic bactericidal effect with colistin even in colistin resistant isolates. Exposure of *A. baumannii* 17978 to sub inhibitory concentrations of colistin identified novel point mutations associated with colistin resistance. Colistin tolerance acquired independent of mutations in *pmrAB*, *lpxA*, *lpxB*, *lpxC*, *lpxD*, suppressed the virulence in a mouse infection model. Moreover, the oral administration of water extract of *S. lappa*, although not showing antimicrobial activity against *A. baumannii in vitro*, lowered the number of colonizing bacteria in liver, spleen and lung of the mouse model and also lowered the levels of neutrophils in mice. Our findings suggest that the *S. lappa* extract exhibits an immunomodulatory effect with potential to reduce and cure systemic infections by both opaque and translucent colony variants of *A. baumannii*.

One hundred and fifty isolates were taken from four hospitals in Pakistan between 2019- 21, of those, 84% were resistant to carbapenem, and 7.3% were also resistant to colistin. Two isolates were resistant to every antibiotic that was tested, and only doxycycline and minocycline were effective against 83% of colistin-resistant isolates. Even in colistin resistant isolates, doxycycline and colistin had a synergistic bactericidal activity. Exposure of *A. baumannii* 17978 to sub inhibitory concentrations of colistin identified novel point mutations associated with colistin resistance. Colistin tolerance acquired independent of mutations in *lpxA*, *lpxB*, *lpxC*, *lpxD*, and *pmrAB* suppressed the virulence in mouse infection model. Furthermore, although *Saussurea lappa's* water extract did not exhibit antibacterial action against *A. baumannii in vitro*, it reduced the amount of colonizing bacteria in the mouse model's liver, spleen, and lung as well as the number of neutrophils in the mice.

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THE PREVALENCE OF UROGENITAL AND INTESTINAL SCHISTOSOMIASIS AMONG SCHOOL AGE CHILDREN (6-13 YEARS) IN THE OKAVANGO DELTA IN BOTSWANA

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Abstract

Background: The termination of the Botswana national schistosomiasis control program in 1993 contributed to its neglect. An outbreak of schistosomiasis in 2017 at one of the primary schools in the northeastern part of the country resulted in 42 positive cases, indicating that the disease exists.

Objective: This study sought to investigate prevalence of urogenital and intestinal schistosomiasis among school age children 6–13 years in selected communities in the Okavango Delta.

Methods: A total of 1,611 school age children 6–13 years were randomly selected from school registers in 10 primary schools; from which 1603 urine and 1404 stool samples were collected. Macroscopic examination of urine and stool for colour, odour, blood; viscosity, consistency, and the presence of worms. Urine filtration and centrifugation methods were used to increase sensitivity of detecting parasite ova. Kato-Katz and Formalin-Ether were used for the examination of stool samples. Data were analyzed using SPSS version 25

Results: A total of (n = 1611) school age children 6–13 years participated in the study, mean age 9.7 years (SD 2.06), females (54%) and males (46%). Results indicated an overall prevalence of *SS. hematobium* and *S.mansoni* at 8.7% and 0.64% respectively. Intensity of *SS. hematobium* was generally light (97.6%) and heavy intensity (2.4%). Results also revealed a knowledge deficit, about 58% of children had never heard of bilharzia even though they lived in communities where the disease was previously endemic. Learners who had a family member who previously suffered from schistosomiasis had higher knowledge than those who did not. Interestingly, these learners were likely to engage in risky behaviours compared to those with lower knowledge of the disease.

Conclusion: An integrated approach that emphasizes health education, mass drug administration, water, sanitation, and hygiene infrastructure should be prioritized for prevention and control of schistosomiasis.

Biography

Tuduetso L Molefi's background is in medicine, with an MBChB degree and DTMH qualification. She currently serves as a Chief Medical Officer in the Ministry of Health of Botswana and holds the role of Neglected Tropical Diseases Program Manager. In this capacity, she plays a crucial role in overseeing the implementation of prevention and treatment activities related to Neglected Tropical Diseases across 27 districts in Botswana. Her extensive experience in clinical medicine and public health work, particularly in the primary healthcare setting, is undoubtedly valuable in her role in the coordination of the integrated NTD program. Dr. Molefi's dedication to the NTD program is evident, as she has been involved since 2016, starting as a program officer and eventually assuming the Program Manager position in 2018. Dr. Molefi's ultimate dream is to see the elimination of leprosy in Botswana, aspiring to restore dignity to those who have been affected by the disease and other neglected tropical diseases.

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ROLE OF ANTIVIRAL DRUGS AND MONOCLONAL ANTIBODIES IN TREATMENT OF COVID-19

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Abstract

Background: The SARS- coV-2 virus is the infectious disease known, as coronavirus disease (COVID-19), most virus-infected individual with good immune system will recover without need for special care. Meanwhile some patients will get sever infection and need consultation. Sever infection is most common in older patient and patients with chronic disease such as diabetes, hypertension, asthma and other respiratory disease, although several therapeutic strategies have been investigated, the optimal treatment approach for patients with coronavirus disease (COVID-19) remains to be elucidated.

Objective: This review paper will be concentrated on antiviral drugs and a role of different monoclonal antibodies in COVID-19 treatment.

Method: In order to conduct this systematic review, we searched the medical literature for studies that discussed the use of immunoglobulin and antiviral medications in COVID-19 patients from October to December 2022, an English only literature search was conducted utilizing the electronic databases of MEDLINE (via PUBMED), EMBASE, SCOPUS, OVID, and Cochrane Library.

Results: Anti-SARS-CoV-2 treatments at the ACE-2 level, for instance, might be based on interfering with the virus-host ACE2-S1- RBD interface, for instance. Utilizing low compound with the capacity to interact negatively with the dynamic network of protein-protein interactions that is essential for viral entry into the cell. Antiviral drugs such as sofosbuvir and daclatasvir prevent viral RNA replication by inhibiting the NS5A and NS5B polymerase, respectively.

Remdesivir may work by preventing viral replication in order to cure COVID-19. The RNA dependent RNA polymerases (RdRps) enzyme is necessary for SARA CoV replication. The data show that remdesivir likely has little to no impact on mortality and raises the percentage of patients who recover in hospitalized individuals with COVID-19.

A completely human anti-SARS-CoV-2 mAb called CT-P59 (regdanvimab) was identified from the plasma of a recovering. Korean patient by the Celltrion Group working on behalf of the Korea Center for Disease Control, Tocilizumab has showed good outcomes in a clinical trial for the Treatment of severe COVID-19 patients in China

Conclusion: several antiviral drugs have been used in the treatment of Covid-19 in addition of the role of monoclonal antibodies in improvement of clinical outcome.

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FIRST STUDY ON THE SEROPREVALENCE AND RISK FACTORS OF *TOXOPLASMA GONDII* INFECTION IN SLAUGHTERED CHICKENS IN TRIPOLI, LEBANON

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Abstract

Toxoplasma gondii is a cosmopolitan protozoan parasite that has a wide range of intermediate hosts. It infects all warm-blooded animals, including humans and birds. The latter typically pick up the infection by ground feeding, and people can contract the parasite from eating undercooked chicken meat. In recent years, investigations into *T. gondii* infection in poultry have been reported worldwide. However, there is no epidemiological data regarding the seroprevalence of anti-*T. gondii* antibodies in chicken in Lebanon. Thus, the current investigation was carried out to determine the seroprevalence and associated risk factors of *T. gondii* infection in chicken destined for human consumption in the Tripoli district of Lebanon. For this, a cross-sectional study was carried out between April 2021 and February 2022. Blood samples were collected from 400 chickens in four poultry abattoirs in Tripoli. The modified agglutination test (MAT) was used to test sera for *T. gondii* antibodies. The association of *T. gondii* seroprevalence with potential risk factors was assessed using the Chi-square test. Multivariate analysis was used to confirm the association. The seroprevalence of *T. gondii* antibodies reported in this study was 13% (52/400); it was higher in the free-range chicken group (19.3%, 29/150) than in the caged group (9.2%, 23/250) (OR = 2.365; 95% CI: 1.311–4.267) (P = 0.004). The wet season and the presence of cats in the poultry farms were significantly associated with an increased seropositivity to *T. gondii* infection (P ≤ 0.0001). Given the occurrence of *T. gondii* antibodies in slaughtered chicken in this area, the consumption of raw or undercooked chicken meats may pose a serious threat to public health and highlight the need to implement appropriate precautionary strategies to halt the spread of *T. gondii* to humans.

Biography

Sara Khalife is an Assistant professor in the department of Medical Laboratory Technology at Beirut Arab University since September 2016. She obtained in 2014 a PhD in Biology and Physiology of Organisms from the University of Lille 2- France, and a PhD in Medical and Food Microbiology from the Lebanese University. She has been awarded the ANOFEL Prize (French Association of Teachers in Parasitology and Mycology) and the university of Lille 2 prize for the best Ph.D. thesis for the year 2014. She participated in national and international conferences and has a number of publications in peer-reviewed journals. Sara Khalife's research interest focuses on studying the epidemiology, transmission, pathogenicity, and antimicrobial resistance with emphasis on the dynamics of airborne transmission, Lung defense, and elimination of pathogens.

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INTEGRATIVE SINGLE-CELL AND BULK SEQUENCING ANALYSIS REVEALS MICROGLIA/MACROPHAGE- DRIVEN ANGIOGENESIS VIA IL-6 CYTOKINES IN GBM BVZ SUBCLASSES

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Abstract

Background: Glioblastoma (GBM), the most aggressive primary CNS tumor, poses a significant challenge in neuro-oncology. Despite advancements in treatment, GBM prognosis remains poor. Recent therapeutic strategies, such as anti-angiogenesis and immunotherapy, have shown promise. The interleukin-6 (IL-6) cytokine family has attracted attention for its roles in modulating immune responses and angiogenesis in various pathologies, including GBM. Bevacizumab (BVZ), targeting VEGF, is a key anti-angiogenic therapy. Our studies have identified BVZ-responsive GBM subtypes with unique clinical and molecular characteristics. However, BVZ's effectiveness varies, with non-responsive patients experiencing adverse effects and common relapse even among responders. This situation underscores the need for further exploration of the cellular and molecular intricacies within these GBM subtypes.

Objective: To examine the roles of the IL-6 family in angiogenesis of GBM.

Methods: After classifying glioblastoma samples into BVZ-responsive and BVZ-nonresponsive subclasses by machine learning approaches, we performed single-cell RNA sequencing (scRNA-seq), bulk RNA-seq analysis, and validation experiments on several GBM datasets including BVZ-processed datasets.

Results: The IL-6 family has distinct immune signatures and genomic profiles in tumor-associated microglia/macrophages (TAMs), forming two clusters. Among them, IL-6 was identified as a pro-angiogenic factor, and its expression was upregulated in BVZ-responsive subclasses compared to BVZ-nonresponsive subclasses in GBM; but IL-31 may act as an anti-angiogenic factor in TAMs of GBM. In addition, the high expression of IL-6 is related to a shorter overall survival (OS). Furthermore, our scRNA-seq studies reveal that GBM subtypes, particularly BVZ-responsive ones, display significant heterogeneity. In these BVZ-responsive subclasses, a greater proportion of glioblastoma cells transition into mesenchymal-like (MES-like) states, a process potentially reversible by BVZ treatment.

Conclusion: The IL-6 cytokine family influences GBM angiogenesis through activated TAMs, with high pro-angiogenic factor expression linked to shorter OS in patients. This research highlights the value of single-cell RNA sequencing and machine learning in dissecting the GBM tumor microenvironment, offering new insights for targeted GBM treatment and research.

Biography

Jian Shi has expertise in neuroscience and is passionate about improving human health and well-being in basic and translational research. Her primary research interests include brain tumors, brain injury, and neurodegenerative diseases, utilizing artificial intelligence and bioinformatics skills, molecular and cellular techniques, and preclinical animal studies. In neuro-oncology, she has identified GBM BVZ-responsive subtypes, their microRNA biomarkers, and the detective machine learning pipeline through years of research experience. This study contributes to precision medicine for GBM treatment and marks the beginning of a new era in exploring novel targets in brain tumor studies. Additionally, Dr. Shi has published over 20 papers in journals such as *Cell Death & Differentiation*, *Scientific Reports*, and *Stem Cells*.

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