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Poster Abstracts

Hamad Eid Al Romaihi et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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National surveillance for influenza and influenza like illness in Qatar, January–December 2015: An analysis of sentinel surveillance systems

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Influenza contributes globally to the burden of infectious diseases by an annual increase in mortality rates of 40 to 50 million cases across the world. The risk groups are predominantly young children and the elderly. The Ministry of Public Health (MoPH) and the Hamad Medical Corporation (HMC) collaborated to characterize viral etiologic agents associated with influenza like illness (ILI) and to explore epidemiological distribution of influenza virus in Qatar. A retrospective epidemiological study based on national influenza surveillance data was obtained from the system of sentinel sites and National Influenza Center (NIC). For laboratory confirmed cases, nasopharyngeal and/or oropharyngeal swabs were taken and samples were transferred for viral isolation by real time-polymerase chain reaction (RT-PCR) in the time period from January 1st to 31st December 2015. Of a total of 12,648 specimens tested, 3,250 (25.7%) were positive. Laboratory-confirmed cases were reported to MOPH by all sentinel sites in the country. Of the positive specimens, 2,820 (86.8%) were influenza A and 430 (13.2%) were influenza B virus. Seasonal influenza A viruses, 2,219 (78.7%) were subtyped as influenza A (H1N1) pdm09. Influenza A (H1N1) pdm09 viruses were the predominant strains reported from all health regions. Throughout this season, positivity for influenza A and B virus infection reported in the age group of 18-49 years was higher compared to all other age groups. Among those who tested positive, the proportion of influenza A was higher among females (66.8%) than males (33.2%). Qatari (52.7%) patients were more affected than Non-Qatari (47.3%) patients. On the contrary, laboratory confirmed influenza B virus infection was higher among Non-Qataris (74.0%) than Qataris (26.0%) and this strain partially circulated among both male and female patients. Our surveillance data confirms the predominance of viral influenza in Qatar and all age groups were affected. We recommend that national level immunization campaigns should be conducted to reduce the burden of influenza. National rates of influenza should be monitored at regular intervals and intervention programs should be evaluated for their cost effectiveness.

Biography

Hamad Eid Al Romaihi received his Medical degree from the Arabian Gulf University, Kingdom of Bahrain in 2004. He underwent Arab Board Community Medicine training in 2009 and received his Fellowship in Public Health in 2011 in UK. From September 2016 to present, he is taking up Diploma in Travel Medicine at the Royal College of Physicians and Surgeons in Glasgow, Scotland, UK. He joined the Ministry of Public Health in November 2012 as Head of Surveillance and Outbreak Control. His current post is Manager of Health Protection and Communicable Disease Control. He is also a Public Health Medicine Consultant with special interests in emerging infections, travel health and immunization.

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Viral hepatitis C serological and behavioral survey among single male laborers in Qatar

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Hepatitis C viral infection is a public health concern worldwide and a major cause of morbidity and mortality in several countries that supply the State of Qatar with many of its laborers. The objectives were to measure the prevalence of hepatitis C viral infection among single male laborers; detect the practices that may catalyze the spread of the infection; and assess the knowledge gap. A cross-sectional study was conducted in 2014 and involved 504 expatriate single male laborers seeking health care in two Qatar Red Crescent health centers. The socioeconomic and behavioral information were obtained by interviewing and blood samples were collected. Results showed that single male laborers constituted heterogeneous group from several countries notably South Asia and with a wide age range from 20-60 years. Many respondents were new comers, uneducated unskilled laborers. Study results revealed that only 5% of the total participants have ever been tested for hepatitis C and positive serology was detected in 4 respondents (0.8%), three of them from Egypt and one from Nepal. Three out of the 4 positive cases did not know they were infected and 2.5% lived with someone harboring the infection. Respondents appeared to have varying healthcare needs with 57% subject to medical procedures outside Qatar. Various risk practices for hepatitis C infection were reported including ear/body piercing (21.9%), tattooing (13.3%), contact with blood (17.0%), sharing personal equipment (12.2%) and injecting with used needles or syringes (7.4%). Less than 40% of respondents had knowledge of all modes of hepatitis C transmission. Further actions notably building HCV monitoring system, setting a prevention plan, building screening strategy were need to be complemented by a contract renewal or a 3-year screening policy.

Biography

Hamad Eid Al Romaihi received his Medical degree from the Arabian Gulf University, Kingdom of Bahrain in 2004. He underwent Arab Board Community Medicine training in 2009 and received his Fellowship in Public Health in 2011 in UK. From September 2016 to present, he is taking up Diploma in Travel Medicine at the Royal College of Physicians and Surgeons in Glasgow, Scotland, UK. He joined the Ministry of Public Health in November 2012 as Head of Surveillance and Outbreak Control. His current post is Manager of Health Protection and Communicable Disease Control. He is also a Public Health Medicine Consultant with special interests in emerging infections, travel health and immunization.

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Doaa I Hashad et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Mitochondrial DNA copy number in AU1 c Egyptian patients with hepatitis C virus-related hepatocellular carcinoma

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Aim: To assess the use of mitochondrial DNA (mtDNA) content as a noninvasive molecular biomarker in hepatitis C virus-related hepatocellular carcinoma (HCV-HCC).

Materials & Methods: A total of 135 participants were enrolled in the study. Equal numbers of subjects were enrolled in each of three clinically defined groups: Those with HCV-related cirrhosis (HCV-cirrhosis), those with HCV-HCC, and a control group of age and sex-matched healthy volunteers with no evidence of liver disease. mtDNA concentrations were determined using a quantitative real-time polymerase chain reaction (PCR) technique.

Results: mtDNA content was lowest among the HCV-HCC cases. No statistically significant difference was observed between the group of HCV cirrhosis and the control group as regards mtDNA level. HCC patients with multicentric hepatic lesions had significantly lower mtDNA content than HCC patients with less advanced disease. When a receiver operating characteristic curve analysis was used, a cutoff of 34 was assigned for mtDNA content to distinguish between HCV-HCC and HCV-cirrhosis patients who are not yet complicated by malignancy. Lower mtDNA content was associated with HCC risk when using either or both healthy controls and HCV-cirrhosis groups for reference.

Conclusions: mtDNA content analysis could serve as a noninvasive molecular biomarker that reflects tumor burden in HCV-HCC cases and could be used as a predictor of HCC risk in patients of HCV-cirrhosis. In addition, the non-significant difference of mtDNA level between HCV-cirrhosis patients and healthy controls could eliminate the gray zone created by the use of alpha-fetoprotein in some cirrhotic patients.

Biography

Doaa I Hashad has completed her Master's in 2001 and then her MD in 2007 from Alexandria University. She is an Associate Professor at the Clinical Pathology Department, Faculty of Medicine, Alexandria University. She has published many papers in reputed high ranked journals. She is Editor of two online books: *Cancer Management* and *Gene Therapy*: *Principles and Challenges*. She is the Technical Manager of Molecular Diagnostic Laboratory at the Faculty of Medicine, Alexandria University.

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Sun Shin Yi et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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A suggestion about rapid rational conditions of CNS safety from various vaccine strategies

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The most realistic way before the recent epidemic that occurred in unexpected times and places in the world is rapid supplying of vaccines related with the infectious diseases within limited times. However, little considerations about rapid supplying a precise manual for the safety assurance of central nervous system (CNS) were established well so far. Thus, this careless in the development of general and/or emergent vaccines should be corrected with a certain secure of safety protocol which can reduce the risks on CNS damages before distribution. Hereby, the present study is undertaken to establish a manual which a certain material can make CNS damage such as breaking down blood-brain barrier (BBB) protecting brain. Since BBB is a critical morphological structure which is selectively permeable between blood vessels and brain, it would be very important to know which conditions (i.e. post-injection, -time) can make BBB vulnerable by pyrogenic inflammatory agent such as lipopolysaccharide (LPS) systemic injection. Following IP administration of the LPS to the mice, the mRNA levels of typical markers of the damaged BBB tight junction such as ZO-1 and CLDN 5 were checked out. Based on conditions in the LPS, IV Evans Blue should be administered after IP LPS administration according to each concentration (four conditions of concentration) of LPS. BBB damages were able to be measured by Evans Blue existence checks by fluorescence wavelength ranges from (ex: 620 nm/em: 680 nm) in the brain tissue. Ultimately, we could observe the mutual relations by comparison with the two methods (mRNA and wavelength levels). According to the results, set LPS concentration can open BBB and by the mRNA levels of tight junction, we can apply these results to general/emergency vaccine strategy.

Biography

Sun Shin Yi has completed his PhD from Seoul National University, Republic of Korea, and Post-doctoral studies from Marquette University, USA. Now, he is a Professor in the Department of Biomedical Laboratory Science, an Associate Dean of Special Affairs for Planning and Chair of IACUC at the Soonchunhyang University. He has published more than 60 papers in reputed journals, and is a Board Member of Korea Mouse Phenotype Center.

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Alok Kumar Yadav et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Antimicrobial mechanism of n-hexane and dichloromethane extract of *Cledodendron phlomidis* on *Bacillus licheniformis*

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Resistance of microorganism against antibiotics is a serious concern in both developed and developing country. The resistance of these microorganisms against these microorganism force researches to search new antimicrobial compound from plant source to inhibit their pathogenicity. Though plants phytochemicals have antimicrobial activity but the mechanism behind their action is limited. Cledodendron philomidis n-hexane and dichloromethane extract were isolated by soxhlet to assess the antimicrobial potential by agar well diffusion over *Bacillus licheniformis*, a common food poisoning bacterium. The mechanism of action behind their antimicrobial activity was determined using DNA fragmentation, scanning electron microscopy, fluorescent activation of cell sorting (FACS). The well diffusion assay showed an inhibition zone of 19 and 15.5 mm in n-hexane and dichloromethane hexane extract of Cledodendron philomidis. The DNA fragmentation showed significance of apoptosis after an incubation of bacteria with n-hexane and dichloromethane extract of *Cledodendron phlomidis* for 72 hours. Scanning electron microscope revealed adherence of plant extract of n-hexane and dichloromethane extract of *Cledodendron phlomidis* and degradation of bacterial membrane. The flow cytometer revealed that incubating Bacillus subtilis with extract resulted in decrease in fluorescence intensity that gives significant evidence for reduction of membrane potential and hence suggesting the mechanism of antibacterial activity involves disruption of membrane potential. The antimicrobial potential of these extracts can be utilized for the treatment of various food born infections in spite of industrially produced antibiotics.

Biography

Alok Kumar Yadav is pursuing his PhD in the Department of Biotechnology, Motilal Nehru National Institute of Technology, and Allahabad under the supervision of Dr. N K Singh working on the application herbal and dietary phytochemicals for human health care. He has published 3 abstracts in international conferences and submitted one research article in reputed journal.

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Iman Abou-El-Naga et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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The effect of lopinavir/ritonavir and lopinavir/ritonavir loaded PLGA nanoparticles on experimental toxoplasmosis

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After the introduction of HIV protease inhibitors (HIV-PIs), a marked reduction has been achieved in the incidence and clinical course of toxoplasmic encephalitis. The current work was undertaken to study for the first time, the efficacy of HIV-PIs against *Toxoplasma gondii* infection in acute experimental toxoplasmosis. Lopinavir/Ritonavir (L/R) was used in the same ration present in alluvia, a known HIV-PIs drug used in the developing countries in the regimens of AID's patient treatment. Poly lactic-co-glycolic acid (PLGA) nanoparticles were used as a delivery system to L/R therapy. Both forms caused parasitological improvement. The higher efficacy was achieved by using L/R PLGA together with decrease in the effective dose. There was reduction in the parasite count in the peritoneum and the liver, parasite viability and infectivity. The antitoxoplasma effect of the drug was attributed to the morphological distortion of the tachyzoites as evident by the ultrastructure examination. Moreover, the treatment affected the egress of tachyzoites which remained enclosed within a membranous structure thus delayed the infection of new host cells. L/R also induced apoptosis and autophagy in extracellular and intracellular *Toxoplasma gondii* tachyzoites. The parasitophorous vacuole membrane was disrupted and vesiculated. The nanotubular networks inside the parasitophorous vacuole that are involved in nutrient acquisition were disrupted. Therefore, the present work opens a new possible way for the approved HIV-PIs as an alternative treatment against acute toxoplasmosis. Furthermore, it increases the list of the opportunistic parasites that can be treated by this drug. The successful in vivo effect of HIV-PIs against *Toxoplasma gondii* suggests that this parasite could be a target in HIV treated patients, thus decreases the possibility of toxoplasmic encephalitis development.

Biography

Iman Abou-El-Naga is a Professor of Medical Parasitology Department, Faculty of Medicine, University of Alexandria, Egypt. She has been working in the field of Medical Parasitology for the last 35 years, teaching Undergraduate and Post-graduate Medical students. She has published more than 30 publications. She is interested in the field of Helminthology specially Schistosoma and Toxocara as well as protozoology specially *Toxoplasma, Microsporidia, Cryptosporidia and Leishmania*.

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Hamoud Khalid Alshaya et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Isolation and characterization of bacterial species from patients with dental caries and caries-free subjects

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Background: The oral cavity harbours a large number of bacterial species as normal flora existing as biofilm. Dental disease such as dental caries results when there is a shift in the balance of bacteria towards pathogenic species within these biofilms.

Objective: The objective of this study was to isolation, identification and characterization of oral bacterial species of patients with dental caries and caries-free healthy control subjects.

Materials & Methods: A standard bacteriological procedures were followed in the isolation of bacteria. The identification of bacteria was carried out using Matrix-Associated Laser Desorption Ionisation–Time of Flight–Mass Spectrometry (MALDI–TOF–MS) (Bruker MALDI Biotyper system). The characterization of bacteria involved in the determination of biofilm forming potential and assessment of synergistic antimicrobial action of manuka honey and gentamicin against the oral species.

Results: A total of 13 bacterial species were isolated from 35 orals samples (10 from patients with dental caries); of which 7 bacterial species have been isolated for the first time in Saudi Arabia. The Streptococcus spp. exhibited varied biofilm-forming potential and response to synergistic antimicrobial activity of manuka honey and gentamicin.

Conclusion: The isolation of 7 bacterial species for the first time from dental caries and caries-free subjects in Saudi Arabia warrants a larger prevalence study involving molecular and phenotypic tests to assess their role in health and disease in Saudi population.

Biography

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Saleh Ahmed Alogla et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Prevalence of *UMOD* gene mutation among Saudi patients with kidney failure

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Background: Mutations in the uromodulin (*UMOD*) gene lead to a dominant hereditary renal disease, which may ultimately result in kidney failure. Therefore, the aim of this study was to assess the burden of *UMOD* associated renal among Saudi patients with renal failure (RF).

Methodology: PCR amplification of 10 exons (forward and reverse) enclosed in the *UMOD* gene is done on the patient's genomic DNA of 103 Saudi patients with RF.

Results: Of the 103 patients, *UMOD gene* mutation was identified in 10/103 (9.7%).

Conclusion: *UMOD gene* mutation is relatively prevalent among Saudi patients with RF. Further evaluation of different mutations in this gene is important for overall assessment of its role in RF among Saudi population.

Biography

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Catalina A López-González et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Evaluation of the enzyme iron superoxide dismutase (Fe-SODe) as a molecular marker in the diagnosis and identification of *Leishmania spp* in the school-age population of central Mexico

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Statement of the Problem: The current method for diagnosing a *leishmanias* is infection in Mexico is to perform a biopsy of the effected tissue, by observing amastigotes within macrophages. This procedure is very invasive for the patient (1). Another method uses indirect immunofluorescence. Since it uses the entire parasite, this implies low sensitivity and specificity (2). In addition, the limitation becomes evident when the parasitaemia in clinical samples is low (3). These methods do not discriminate between species of *Leishmania*, impeding optimal treatment for the patient (4, 5). The purpose of this study was to evaluate the potential of the enzyme iron superoxide dismutase (Fe-SODe) excreted by *Leishmania spp*, used as an antigenic fraction by ELISA and western blot as a reference test for the search anti-*Leishmania* antibodies in central Mexico's school-age population.

Methodology: 131 serums from 6-12 year old children were collected and analyzed by the ELISA and western blot, using the homogenate (H) and Fe-SODe like antigen.

Findings: A prevalence of 22.1% (29/131) for L. mexicana, 9.9% (13/131) for L. infantum and 14.5% (19/131) for L Braziliensis. WB-FeSODe reported 23.66% (31/131) for L. mexicana, 9.9% (13/131) for L. infantum and 12.97% (17/131) for L. braziliensis. The sensitivity obtained for ELISA-Fe-SODe on WB was 82.4% for L. braziliensis, 92.3% for L. infantum and 93.5% for L. mexicana. The specificity obtained with this technique was 95.6% for L. braziliensis, 100% for L. mexicana and 99.2% for L. infantum. The Kappa value was 0.743 for L. braziliensis, 0.957 for L. mexicana and 0.915 for L. infantum.

Conclusion & Significance: A prevalence of 22.1% was reported for L. mexicana, 9.9% for L. braziliensis and 14.5% for L. infantum in urban areas of Mexico. In addition, this study highlights the importance of the use of the enzyme Fe-SODe as a useful diagnostic tool, practical and economical for the diagnosis *Leishmania spp*.

Biography

Catalina A López-González is pursuing her Master's in Biomedicine. She has experience working with the diagnosis and treatment of vector-borne diseases. This new method mentioned above of diagnosis has been evaluated in conjunction with the University of Granada (Spain), to develop a test that has high precision and specificity in the detection of *Leishmania spp*.

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The role of B-1 cells in reducing susceptibility to oral infection by *Encephalitozoon cuniculi*

Adriano Pereira, Denise Langanke Dos Santos, Anuska Marcelino Alvares-Saraiva, José Guilherme Xavier, Paulo Ricardo Dell'Armelina Rocha, Elizabeth Christina Perez Hurtado and **Maria Anete Lallo**
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Microsporidia are intracellular pathogens that cause severe disease in immunocompromised humans and animals. We recently demonstrated that XID mice are more susceptible to *Encephalitozoon cuniculi* infection by peritoneal route, evidencing the role of B-1 cells in the resistance against infection. The present study aimed to evaluate the mechanisms of resistance and susceptibility against *E. cuniculi* oral infection, including the role of B-1 cells, using BALB/c and BALB/c XID mice. We used flow cytometry to characterize the immune cells in the peritoneal cavity, spleen and Payer's patches and also to quantify the serum levels of Th1, Th2, Th17 profile cytokines. Moreover, histopathology was performed in the intestines, lungs and liver. No clinical symptoms were observed in infected animals but histopathological analysis revealed lymphoplasmocytic enteritis with degeneration of the apexes of the villi in all infected groups. Higher parasite burden was observed in infected BALB/c XID mice. In the spleen, all infected mice showed a decrease of B-2, T CD4+ and T CD8+ cells. B-1 and B-2 cells decreased in the peritoneal cavity of infected BALB/c XID and XID+B-1 mice. Macrophages increased only in infected BALB/c mice. Pro-inflammatory cytokines increased mostly in infected XID+B-1 mice. Together, the present results demonstrated that BALB/c XID mice were more susceptible to encephalitozoonosis and, also, the B-1 cells role in the control of the immune response against *E. cuniculi* oral infection.

Biography

Adriano Pereira is a Teacher in the areas of health and biological sciences at São Camilo University, São Paulo, Brazil. He has done Master's degree in Veterinary Medicine and PhD in Environmental and Experimental Pathology. His research involves studying microsporidia with a focus on biology and immune response against this emerging and opportunistic pathogen.

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Immunohistochemistry approach in encephalitozoonosis

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Encephalitozoonosis is a common disease of a wide range of mammalian hosts caused by *Encephalitozoon cuniculi* and the detection of this pathogen in tissue samples is considered difficult. Microsporidia spores of *E. cuniculi* can be observed in histological sections stained with routine dyes in tissues of experimentally infected animals in the laboratory because the amount of spores is generally large, but in veterinary clinics of domestic and wild animals these stains are often not sufficient for diagnosis. Then, for these cases a variety of techniques, including special staining methods, immunohistochemistry (IHC), electron microscopy and molecular methods are used for diagnosis and exclusion of other microorganisms. The aim of this study was to describe about the use of IHC for the detection of *E. cuniculi* in tissue samples that have been published to some groups of researchers and veterinary pathologists throughout the world. An English literature search was done through databases (MEDLINE; NCBI, Bethesda, MD, USA) in order to examine publications. We considered papers from 1993 to today that described IHC analysis performed using formalin fixed and paraffin-embedded tissue sections. The diagnosis of encephalitozoonosis using IHC has been made in rabbits (brain, kidneys, lungs, heart, liver, eyes, and spleen), dogs (eyes), horse (villi ofvallantochorion), South American fur seal (lungs, spleen and kidneys), squirrel monkey (brain), emperor tamarins (blood capillaries, arteries, heart, liver, lung, brain and Kidney), cats (brain and kidney), cotton-top tamarins (kidneys and blood), chicken (esophagus, intestine, liver, kidneys, heart, skeletal muscle and brain) and snow leopard (eyes). *E. cuniculi* was successfully identified in different kind of tissues using IHC. Based on our results, we suggest that IHC should be regarded as a useful tool both for specific demonstration of *E. cuniculi* and for its localization within tissues helping researchers and veterinary pathologists for the diagnosis of encephalitozoonosis.

Biography

Adriano Pereira is a Teacher in the areas of health and biological sciences at São Camilo University, São Paulo, Brazil. He has done Master's degree in Veterinary Medicine and PhD in Environmental and Experimental Pathology. His research involves studying microsporidia with a focus on biology and immune response against this emerging and opportunistic pathogen.

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Ifeyinwa Aremo et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Measles trend in the federal capital territory Nigeria, 2012-2015

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Introduction: High vaccination coverage rates with measles vaccine have resulted in significant decline in the incidence of measles vaccine in many countries. This study describes the measles surveillance data for the Federal Capital Territory (FCT) for years 2012-2015.

Method: This was a secondary analysis of the FCT IDSR measles surveillance data from 2012-2015. The IDSR paper forms were filled monthly by DSNOs and entered into Ms Excel. We imported the data into Epiinfo 7 which we used to analyze it. We calculated proportions and tested associations using chi-square at p=0.05.

Results: 566 suspected measles cases were reported during the period. The age range 3-576 months. There were 203(35.5%) males, 147(26.0%) females and the rest unknown. Abuja Municipal Area Council (AMAC) had 166 (29.3%), the highest number of cases while Kwali Local Government Area had 35(6.2%), the least. The highest number of cases 266 (47%) was in 2013 and least 85(15%) in 2014. Of all cases, 133 (23.5%) were confirmed IgM positive for measles, 132(23.3%) were negative while 288 (50.4%) had no confirmatory results. IgM test for Rubella was positive in 19(3.4%) and negative in 67(11.8%). Of the133 confirmed measles cases 90(24.9%) had no measles immunization, 40(24.5%) had one dose immunization and three (7.9%) had 2 doses. Children <59 months have higher uptake of measles immunization than more than 59 months, with higher uptake in males than females.

Conclusion: Measles immunization was protective against measles and more efforts should be made to ensure that all children get at least a dose of the vaccine.

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Notes:

Khalid Sukhail G Alshammari et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Isolation and characterization of bacterial species from patients with dental caries and caries-free subjects

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University of Hail, Saudi Arabia

Background: The oral cavity harbours a large number of bacterial species as normal flora existing as biofilm. Dental disease such as dental caries results when there is a shift in the balance of bacteria towards pathogenic species within these biofilms.

Objective: The objective of this study was to isolation, identification and characterization of oral bacterial species of patients with dental caries and caries-free healthy control subjects.

Materials & Methods: A standard bacteriological procedures were followed in the isolation of bacteria. The identification of bacteria was carried out using Matrix-Associated Laser Desorption Ionisation–Time of Flight–Mass Spectrometry (MALDI–TOF–MS) (Bruker MALDI Biotyper system). The characterization of bacteria involved in the determination of biofilm forming potential and assessment of synergistic antimicrobial action of manuka honey and gentamicin against the oral species.

Results: A total of 13 bacterial species were isolated from 35 orals samples (10 from patients with dental caries); of which 7 bacterial species have been isolated for the first time in Saudi Arabia. The *Streptococcus* spp. exhibited varied biofilm-forming potential and response to synergistic antimicrobial activity of manuka honey and gentamicin.

Conclusion: The isolation of 7 bacterial species for the first time from dental caries and caries-free subjects in Saudi Arabia warrants a larger prevalence study involving molecular and phenotypic tests to assess their role in health and disease in Saudi population.

Biography

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Yu Yang et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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A quadruplex real-time PCR assays for detection of *Y. pestis, F. tularensis, B. pseudomalle and Brucella*

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Y. pestis, F. tularensis, B. pseudomalle and Brucella are acute infections with high case fatality rates. We describe here the development of a multiplex real-time PCR assay that targets the simultaneous detection of those four pathogens. Species-specific primers and Taqman probes were designed on the highly conserved sequence of each individual pathogen through whole genome sequences alignment, Taqman probes labeled by FAM, Texas Red, JOE and CY5 separately. Using synthetic plasmid DNA as positive control, the multiplexed PCR assay were optimized by evaluating different concentrations of primers and probes to allow for maximum sensitivity and specificity in a tube. The sensitivity of assay were validated to amplify genome DNA of reference strains, as 10×10^3cfu/ml for Y pestis, 14×10^3cfu/ml for F. tularensis, 8×10^3cfu/ml for B. pseudomalle and 6×10^3 cfu/ml for Brucella. The specifity were evaluated against a panel of reference strains as listed Table 1. The Multiplex real-time PCR assay provide a sensitive, reliable and efficient method to detect *Y. pestis, F. tularensis, B. pseudomalle and Brucella* simultaneously, which significantly reduces sample processing time, amount of labor required, and consumable costs while yielding an increase in diagnostic power and a high sensitivity and specificity. This method has good prospects of application for disease prevention.

Biography

Yu Yang graduated from China CDC with a PhD in 2006 for her work on the reversed genetics of Sendai virus, and then Post-doctoral experience at University of Buffalo, working on developing transposon mutagenesis system in Borrelia burgdorferi. In 2008, she moved to the Chinese Academy of Inspection and Quarantine (CAIQ) of AQSIQ undertakes work on predicting, diagnostics, prevention and control for infectious disease. She has led a number of projects in this area ever since, developed detection methods against a lot of pathogens such as *Zika virus*, *MERS-CoV, Rickettsia, C. burnetii, E. coli* O104, *Y. pestis, F. tularensis, B. pseudomalle and Brucella*. Her research interests include the development of molecular and immune diagnosis by real- time PCR, Bio-plex, immune colloidal gold technique, and currently involved in developing novel magnetic nano-labels methods and metagenomics technique for pathogen detection. She has published extensively in this area and related disciplines, and received several research awards, with 32 technology patents.

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Notes:

Fadwa M Alsharif et al., J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-027

Detection of IgG and IgA antibodies of Helicobacter pylori seroprevalence in hepatitis C virus infection

Fadwa M Alsharif and **Osama H Al-Jiffri**
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Globally, Helicobacter pylori (H. pylori) and hepatitis C virus (HCV) are the most common bacterial and viral infections respectively that are associated with wide range of complications including liver cirrhosis and liver failure. This study was designed to detect seroprevalence of H. pylori IgG and IgA antibodies among patients with HCV. Two hundred HCV patients of both sexes participated in this study, they were enrolled in to two equal groups where group (A) include HCV patients with liver cirrhosis, while group (B) include HCV patients without liver cirrhosis. The findings of this study revealed that the H. pylori infection prevalence was higher in group (A) that included HCV patients with liver cirrhosis than group (B) that included HCV patients without liver cirrhosis, also the sero-prevalence test of IgG and IgA showed a high significant difference between both groups. Helicobacter pylori infection antibodies are more prevalent among cirrhotic HCV patients than without cirrhosis.

Biography

Fadwa M Alsharif has her expertise in Medical Laboratory Technology. Her open and contextual evaluation model based on responsive constructivists creates new pathways for improving healthcare in the field of Medical Laboratory Technology. She designed this study after years of experience in hospital based research. The foundation is based on a medical problem common in Saudi Arabia.

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Notes:

Yuan Shuofeng, J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-027

A novel small-molecule inhibitor of influenza A virus that acts by disrupting PB2 cap-binding of the viral polymerase

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The conserved residues 318-483 in PB2 subunit ($PB2_{cap}$) of influenza A polymerase is an independently folded cap-binding domain that exhibits a distinct binding mode from the cap-binding proteins of host cells, thus it is conceived to be a potential target for the development of new antiviral drugs. We developed an innovative fluorescence polarization assay to identify small-molecule inhibitors that specifically disrupted the interaction between a cap analog (m^7GTP) and $PB2_{cap}$. Selected compounds were tested *in vitro* and in vivo for antiviral efficacy. Of these, the best compound PB2-19 was identified as a potent inhibitor against the replication of multiple subtypes of influenza A virus, including H1N1, H3N2, H5N1, H7N7, H7N9 and H9N2, in Madin-Darby canine kidney cell cultures. Combinational treatment of zanamivir and PB2-19 exerted synergistic anti-influenza effect *in vitro*. Intranasal administration of PB2-19 enhanced survival rate and reduced lung viral loads in BALB/c mice challenged with lethal dose of H1N1 virus. Docking analyses predicted the compound interacted with the PB2 cap-binding pocket in a similar manner as m7GTP, suggesting its role as a cap-binding competitor. Our study provides new insights for the development of a new category of influenza therapeutic agents that directly target to PB2 cap-binding domain.

Biography

Yuan Shuofeng has strong experience in Virology. He did his PhD degree from the University of Hong Kong, studying the anti-influenza drugs development. He has joined HKU Department of Microbiology as a Post-doctoral Fellow since 2015. He has extensive experiences in establishment of drug screening system and animal models. He has also published several papers on the development of antiviral agents that target on the polymerase subunits of influenza virus.

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Notes:

Zi-Wei Ye, J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-027

Isolation of the monoclonal antibody with high antibody-dependent cell-mediated cytotoxicity from the hemagglutinin head-region epitope of pandemic H1N1 influenza virus

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Engaging the antibody-dependent cell-mediated cytotoxicity (ADCC) for killing of virus-infected cells and secretion of antiviral cytokines and chemokines was incorporated as one of the important feature in the design of universal influenza vaccines. In past decades, investigation of the ADCC epitopes on the highly immunogenic influenza hemagglutinin (HA) head region has been largely absent. In this study, we determined the ADCC and antiviral activities of two putative ADCC epitopes (E1 and E2) on the HA-head of a pandemic H1N1 influenza virus in vitro and in a lethal mouse model. Our data demonstrated that sera from the E1-vaccinated mice could induce high ADCC activities. While induction of ADCC response modestly decreased viral load in the lungs of H_1N_1-infected mice, the elevated ADCC significantly increased mouse alveolar damage and mortality than that of the PBS-vaccinated group. This phenotype was potentially due to an exaggerated inflammatory cell infiltration triggered by ADCC, as an up-regulated release of cytotoxic granules were observed in the lung tissue of E1-vaccinated mice after H1N1 influenza virus challenge. Our data suggested that ADCC elicited by certain domains of HA head-region might have a detrimental rather than protective effect during influenza virus infection. Meanwhile, we have successfully cloned the E1-specific monoclonal antibody and determined the human germline V(D)J combinations on this antibody. The resultant monoclonal antibodies expressed could be visualized on SDS-PAGE and detected in ELISA. With a series of optimization, the platform for cloning ADCC antibodies has been established.

Biography

Zi-Wei Ye has her expertise in Cell Biology and Biotechnology, completed her PhD on a University Post-graduate Fellowship at the University of Hong Kong and received Post-doctoral training in HKU Li Ka Shing Faculty of Medicine.

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Notes:

Nazibrola Chitadze et al., J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-027

Laboratory capacity building of molecular genotyping technology for surveillance improvement of measles and rubella in the country of Georgia

Nazibrola Chitadze, Giorgi Babuadze, Ketevan Sanadze and **Mariam Murtskhvaladze**
National Center for Disease Control and Public Health, Georgia

Georgia has adopted the European Regional goal for measles and rubella elimination by 2020. A concurrent measles and rubella outbreak in Georgia in 2004-2005 resulted in over 7,000 reported cases of each. The most recent outbreak of measles occurred in 2013-2014– in total 7872 and 3188 cases respectively, including 2 lethal cases in 2013. The WHO accredited laboratory for serology diagnostic of Measles and Rubella are functioning at NCDC Lugar Center. The numbers of oral fluid samples are yearly sent to WHO reference laboratories for genotyping. Implementation of molecular typing techniques at Lugar center will allow fulfilling the gaps for timely tracking of the source of infection and establish epidemiological links among cases and outbreaks. Training of molecular technics was provided by CDC Atlanta, MMRH Laboratory scientists. A total 17 oral fluid sample were collected from measles and rubella suspected cases in 2016. Laboratory work was carried out in a BSL2+ facility at Lugar Center. Real-time RT-PCR assays for the detection of measles and rubella virus (MeV/RuV) were performed with controls of N gene RNA and human RNase P mRNA -a cellular reference gene, using the ABI 7500 real-time thermocycler. Among the 17 samples analyzed, 2 were found positive for MeV. The sequencing by Sanger method of the partial nucleoprotein gene was performed on 1 RT-PCR positive sample. Sequence was identified from BLAST searches against the NCBI nucleotide database chosen, based on high similarity score (E≤0.0). Genetic distances were estimated using the MEGA v7 software. The BLAST analysis showed a high coverage and absolute similarity with MeV genotype D8 strain MVs/DongThap. This newly implemented testing methodology will strength public health system in the country with timely detection and response of MeV/RuV outbreaks; the capacity will assist for the final case classification and investigation of chains of transmission.

Biography

Nazibrola Chitadze is the Head of WHO accredited Serology (measles, rubella and rotavirus groups) Laboratory of Department of Virology, Molecular Epidemiology and Genome Research at R G Lugar Center for Public Health Research, National Center for Disease Control and Public Health (NCDC&PH). She is graduated from Preventive Medicine Faculty of Tbilisi State University in 2001 and South Caucasus Field Epidemiology and Laboratory Training Program (SCFELTP), US-CDC and NCDC and PH in 2011. Since 2002, she works at NCDC and PH. Her current research interests include assessment and evaluation of cell mediated and humoral immunity developed in humans in response to *Bacillus anthracis* and tularemia infection. In 2016, she was awarded for her special contribution to the field of public health care.

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Notes:

Prashant Mule, J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-027

In-house real time PCR for the diagnosis and prognostication of invasive fungal infections in a tertiary care cancer hospital

Prashant Mule
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Introduction: Invasive fungal infections (IFI) have emerged as an important cause of morbidity and mortality in cancer patients. Aggressive chemotherapeutic protocols for treatment resulting in prolonged and profound neutropenia, are the most important contributory factors. Patients with hematological malignancies and those undergoing bone marrow transplantation are at high risk of invasive mycoses and an increase in morbidity and mortality. Blood culture lacks the sensitivity but with the availibility of molecular techniques, the diagnosis of systemic fungal infections has signifacantly improved.

Objectives: To evaluate an in-house real-time PCR for the diagnosis of IFI. To correlate the results of PCR with the EORTC classification of invasive fungal infections (IFI).

Methods: 3 ml of whole blood is collected from patients with suspected invasive fungal infections. Extraction is performed and DNA is detected using SYBR green PCR. The panfungal PCR using primers NL1 and 260R targeting a region of the ribosomal gene was done followed by species specific hybridization with probes for *Candida* species as well as *Aspergillus* species.

Results: A total of 80 in patients were included in the study from August 2015 to December 2015 at Tata Memorial Hospital. 52 patients had haematological malignancies and 28 patients belonged to the surgical disease management group (DMG). They were classified by the EORTC criteria as proven, possible and probable cases of IFI of the 80 patients, 49 were positive for yeast DNA and 3 were positive for *Aspergillus* DNA.

Discussion: Fungal infections, in neutropenic patients with malignancies do not show characteristic signs and symptoms, making accurate diagnosis difficult. Early recognition is crucial, as the progression of invasive disease from detection to death is typically less than 14 days. Empirical treatment with antifungal agents is initiated in high-risk patients with suspected fungal infection. This is associated with high toxicity and high cost.

Conclusions: The SYBR green real time PCR was useful and sensitive indicator for the detection of fungal DNA. The SYBR Green PCR is found to be a reproducile assay and it is validated for patients with Candidemia.

Biography

Prashant Mule has completed his MD in Microbiology from the Department of Microbiology, Tata Memorial Hospital, Mumbai, India in 2016. Presently, he is working as a Senior Resident in the Department of Microbiology. His areas of interests are Mycology, Virology and prevention of health care associated infections. He has worked on the evaluation of in house real time PCR for the diagnosis and prognostication of invasive fungal infections in a tertiary care cancer institute in Mumbai.

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Sun-Woo Yoon et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Virological and pathological characterization of an avian H1N1 influenza A virus

Sun-Woo Yoon and **Dae Gwin Jeong**
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Gene segments from avian H1N1 influenza A viruses have reassorted with other influenza viruses to generate pandemic strains over the past century. Nevertheless, little effort has been invested in understanding the characteristics of avian H1N1 influenza viruses. Here, we present the genome sequence, a molecular and virological characterization of a novel avian influenza A, A/wild bird/Korea/SK14/2014 (A/SK14, H1N1), isolated from migratory birds in South Korea during the winter season of 2014-2015. Full-genome sequencing and phylogenetic analyses revealed that the virus belongs to the Eurasian avian lineage. Although it retained avian-receptor binding preference, A/SK14 virus also exhibited detectable human-like receptor binding and was able to replicate in differentiated primary normal human bronchial epithelial cells. In animal models, A/SK14 virus was moderately pathogenic in mice and viral titers were detected in nasal washes from inoculated guinea pigs, but not direct-contact guinea pigs. Although A/SK14 showed moderate pathogenicity and no evidence of transmission in a mammalian model, our results suggest the dual receptor specificity of A/SK14-like may allow for a more rapid adaptation to mammals emphasizing the importance of further continuous surveillance and risk assessment activities.

Biography

Sun-Woo Yoon has completed his PhD in Department of Microbiology in Chungnam National University in South Korea on August 2008. His Post-doctoral training was at the St. Jude Children's Research Hospital (Memphis, TN, USA) in the laboratory of Dr. Richard J Webby where he studied the pathogenesis of influenza viruses including swine H1N1, HPAI H5N1, and H7N9 viruses. After his Post-doctoral fellowship, he joined the faculty in the Korea Research Institute of Bioscience and Biotechnology where he began his own lab in December 2013. His lab focuses on establishment of active surveillance program of the influenza viruses and assessment of pathogenesis about emerging infectious disease viruses including novel influenza viruses, MERS-CoV as well as other animal viruses.

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Notes:

Chandra Shekar Pingili, J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-027

Neuro sarcoidosis masquerading as neuroborreliosis (lymes)

Chandra Shekar Pingili
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Background: Medical syndromes often overlap in clinical presentations. Often there is one or more than underlying etiology responsible for the patient's Clinical presentation. We are reporting a patient who was admitted thrice with fevers and joint pains. Lymes IGG was positive. He was discharged home on doxycycline and prednisone suspecting gout. Second admission he was discharged to home on IV ceftriaxone. Patient however was re admitted twice within 3 weeks with cognitive impairment. Lymph node biopsy was positive for non caseating granulomas. Sarcoidosis was the final diagnosis.

Case Report: 74 year old white male was admitted with fever and multiple joint pains. Tmax was 100.5. WBC was 15 with normal CBC. LFTs were elevated. Rest of the labs was normal. Lymes IGG was positive. He underwent extensive rheumatologic and virological evaluation. Sonogram of the abdomen was negative. He responded to IV Ceftriaxone and was discharged home on Doxycycline for 3 weeks and Prednisone taper for a week .He was readmitted within 2 weeks with weakness and confusion. After ruling out multiple etiologies he was discharged home on IV Ceftriaxone suspecting Neuroborreliosis. But he was re admitted with worsening mentation in a week. This time he was diagnosed as case of neurosarcoidosis. He responded dramatically to IV steroids, methotrexate and one dose of infliximab. Patient continues to follow up with the clinic and is now at his base line with no recurrence.

Conclusion: He is one patient where an underlying disabling pathology was missed twice. He is a case of systemic and neurosarcoidosis masquerading as neuroborreliosis. Rarely is a clinical encounter so perplexing.

Biography

Chandra Shekar Pingili is a Director, Division of infectious diseases, Sacred Heart and Saint Joseph Hospitals. Associate Professor of Medicine, University of Wisconsin Madison at Eau Claire, Wisconsin. Actively involved in teaching family medicine residency program and nursing staff. Director of Infectious Diseases at LE Phillips Rehab Center, Eau Claire and Chippewa Falls. Chief Infectious Disease adviser to the Clearwater Care Center, Eau Claire, WI. Chief Infectious Disease adviser to the Dove Health and Rehab Center, Chippewa Falls, WI. Director of Infectious Diseases at Indian Head Medical Center.

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Notes:

V Kattel et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Immunological non responder's as real or virtual phenomenon

V Kattel, B Pradhan, P Karki, S Rijal, SK Sharma, S Pandey, B Khanal and **Y Agrawal**
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Statement of the Problem: HIV and Hepatitis C viral Infection (HCV) have same mode of transmission. A subset of HIV people on antiretroviral therapy (ART) achieves virological suppression but poor recovery of CD4 cell termed as immunological non-responders. It has been recommended to start HCV treatment in HIV coinfection if CD4 cells are more than 200/ml. Immunological non-responders could be a challenge to initiate HCV treatment especially in limited resources setting.

Case Description: A 24 years intravenous drug abuser male with HCV for last 3 years presented as HIV positive (CD4 - 186/ml) on July 2008. Despite ZDV/3TC/EFV for six months he did not achieve immunological recovery but his viral load was below 400copies/ml. On September 2009 he was presented with fever and constitutional symptoms for two weeks. On examination he was pale, icteric and had hepatospleenomegaly. Investigation revealed that pancytopenia, transaminitis, hepatospleenomegaly, sterile blood culture, normal chest X ray, sputum for acid fast bacilli and PCR for mycobacterium tuberculi negative, negative rK-39, malaria negative. He had CD4 of 156/ml, HIV viral load 72 copies/ml HCV RNA 15600copies/ml. Bone marrow aspiration revealed 3+ Leishmania Donovani (LD) bodies. ARV regimen was changed to TDF/3TC/EFV and tablet Miltefosine 50 mg twice a day for 28 days was initiated. He improved clinically and parasitologically. On April 2010 his second infection of Visceral Leishmaniasis (VL) was treated with injection amphoteracin B. On March 2011 and August 2012 he had third and fourth episode of VL infection and was treated with amphoteracin B plus miltefosine and liposomal amphoteracin B respectively. However the fourth episode was continued with secondary prophylaxis for six months with immunological recovery (CD4 756/ml). On April 2015 his HCV was treated with 12 weeks sofosbuvir and daclatasvir with rapid viral and sustained viral response.

Significance: Immunological non responders might be virtual phenomena.

Biography

Vivek Kattel is Faculty Member of Internal Medicine and Incharge of Tropical and Infectious Disease Unit at Referral Hospital and Medical School BPKIHS, Nepal. He has been involved in training more than 300 Nepalese Medical Doctors working at remote part of the country on infectious diseases of Nepal as a national expert. He has contributed for the development of national guidelines on outbreak potential infectious disease of Nepal and management of Kala Azar in Nepal. His fields of interest are HIV/AIDS, acute undifferentiated fever and sepsis.

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Pragya Khanna, J Infect Dis Ther 2017, 5:3 (Suppl)
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A study of clinical profile of HIV in pediatric patients

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Purpose: To evaluate the modes of clinical presentation and transmission of HIV, opportunistic Infection's (OI's), association of tuberculosis in HIV and its relation with CD4, clinical and immunological response of ART and its side effects and failure.

Methods: Prospective study on children living with HIV/AIDS (CLHA) >18 months to 12 years of age admitted and attended in pediatric department. Complete history, physical examination, diagnosis age, symptoms and opportunistic infections, serial CD4 count every 6 month were taken into consideration.

Results & Discussion: All CLHA were affected with OI's after 7 years when diagnosed. 75.52% (219 patients) of newly diagnosed CLHA were symptomatic at the time of presentation. Maximum numbers of symptomatic CLHA fall in WHO clinical stage 3 and based on CD4 count maximum numbers of CLHA have either no or mild immunosuppression. So, it concludes that CLHA having severe clinical disease can have no or mild immunosuppression. Therefore, CD4 count and clinical staging should be done before starting ART. Most common presentations were fever and weight loss followed by chronic cough and oral thrush and most common sign was hepatospleenomegaly. 52 CLHA (37.58%) suffered from TB had CD4 count less than 500. So, at low CD4 counts it was an OI and high CD4 count it was more of a co-infection. 79% of CLHA were anemic and out of them 6% were severely anemic required blood transfusion. 58% CLHA of >5 years were on PCP prophylaxis. Most common opportunistic infections were bacterial pneumonia and oral candidiasis. Most common side effect of ART was abnormal liver function test. 60% patients on ART substituted as because of CLHA were also having AKT. Only one CLHA was switched to 2nd line ART because of immunological failure. During the study period 6% patients died and 11% CLHA are transferred to link centers.

Biography

Pragya Khanna is a Class-1 Pediatrician at General Hospital Vadnagar and Assistant Professor at Gujarat Medical Education and Research Society (GMERS) Medical College Vadnagar, Mehsana, Gujarat, India. She has finished her Bachelor of Medicine and Bachelor of Surgery (MBBS) in 2004 and Pediatric Residency in 2009. She has worked in Special Newborn Care Unit (SNCU) funded by UNICEF - Level 2 Neonatal Care Unit, District Hospital, Shivpuri from July 2009-Jan 2011 and General Hospital, Visnagar, Gujarat from Mar 2011-Nov 2014. She is certified in facility based newborn care under National Neonatology Forum (NNF) and Pediatric Advanced Life Support. She has attended a workshop on Neonatal Ventilator in Ahmedabad, India. She has research interest in infectious diseases in children especially HIV, tuberculosis, malaria and hepatitis B, neonatal critical care, childhood obesity and neonatal resuscitation. She has been involved in newborn care training to auxiliary midwives, skilled birth attendant training and various CMEs.

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Notes:

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Jose A Gonzales Zamora, J Infect Dis Ther 2017, 5:3 (Suppl)
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Strongyloides stercoralis causing polymicrobial bacteremia and septic arthritis in a patient with AIDS

Jose A Gonzales Zamora
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Introduction: *Strongyloides stercoralis* is a nematode infection that is endemic in tropical latitudes of the world as well as southeastern United States. The clinical presentation of strongyloidiasis varies from an asymptomatic condition to hyperinfection syndrome in immunocompromised patients. We report a case of septic arthritis secondary to *Strongyloides stercoralis* hyperinfection in a patient with AIDS.

Case Description: 37 y/o male from Honduras with history of alcoholism was admitted after being found unconscious. He presented severe diarrhea and left hip pain. On physical exam, he had multiple bruises on his face and chest. Laboratory studies were significant for leukocytosis (14.4 K) and elevated creatinin (2.86 mg/dL). The patient was started empirically on broad-spectrum antibiotics. He also received aggressive fluid rehydration. Blood cultures taken on admission became positive for *Salmonella Group D, Streptococcus pneumoniae and Pseudomonas aeruginosa*. Stool cultures yielded *Strongyloides stercoralis*. HIV serology resulted positive (CD4 count: 24 cells/uL, HIV viral load: 543000 copies/mL). Severe pain on his left hip prompted a pelvic MRI, which revealed a gluteal abscess extending into the joint space. Percutaneous drainage of abscess was performed. Cultures were negative. Patient completed 6 weeks of cefepime and 2 weeks of ivermectin with total resolution of the infection.

Results & Discussion: *Strongyloides stercoralis* hyperinfection usually develops in the context of immunosuppression, which was caused in our patient by HIV and alcoholism. Gram-negative bacteremia is one of its most common manifestations that occur from intestinal mucosa damage secondary to filariform larvae invasion. Bacteremia may subsequently seed distal organs. We postulate that, our patient developed gluteal abscess and septic arthritis from bacterial seeding. To our knowledge, no prior cases of septic arthritis secondary to strongyloides hyperinfection have been reported. Clinicians should be aware of this complication and consider strongyloides hyperinfection in every patient with HIV that presents with polymicrobial bacteremia.

Biography

Jose A Gonzales Zamora has obtained his MD degree from Universidad Nacional Federico Villarreal in Lima, Peru. He has completed his Internal Medicine Residency at John H Stroger Hospital and Infectious Disease Fellowship at Rush University Medical Center in Chicago, Illinois, USA. He is currently an Assistant Professor and Fellowship Training Co-Director in the Division of Infectious Diseases at University of Miami, Florida, USA.

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Notes:

Nibedita Das et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Antimicrobial resistance management in India- policy, guidelines and recommendations

Nibedita Das[1] and **Mili Sarkar**[2]
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Introduction: Resistance to antimicrobial agent has resulted in morbidity and mortality from treatment failures and increased health care costs. Although defining the precise public health risk and estimating the increase in cost is not a simple task and there is little doubt that emergent antibiotic resistance is a serious global problem. The easy availability of antimicrobials in India increases the problem manifolds. Incorporation of these drugs into herbal remedies also leads to in-appropriates use of antimicrobials.

Methodology: Two studies were conducted on extended spectrum beta lactamase resistance pattern in two different parts of India. The first study was conducted in September 2007 on urinary isolates received from tertiary care hospital in North Eastern part of India. The second study was done in January 2010 on respiratory isolates received from an urban slum community in West Bengal, India.

Results: Both the studies revealed that emergence of ESBL resistance is becoming a serious threat to the health care sector.

Conclusion: The Government of India has come up with policies defining this public health problem and incorporation of antibiotic stewardship programs into the healthcare sector is becoming an absolute necessity.

Biography

Nibedita Das works as a Specialist (Microbiology) at Institute of Serology, Govt. of India, and Kolkata, India. She specializes in investigation of epidemics and has done substantial work as a Public Health Microbiologist at All India Institute of Hygiene and Public Health, Govt. of India, Kolkata India. Her avid interest is in antimicrobial resistance. Many of her research papers have been published in national and international journals.

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Notes:

Pavel G Alexyuk et al., J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-027

Influence of the structure of viral antigens on the activity of adaptive immunity

Pavel G Alexyuk, Madina S Alexyuk, Aizha S Turmagambetova, Elmira S Omirtaeva, Irina A Zaitseva, Andrey P Bogoyavlenskiy and **Vladimir E Berezin**
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Most modern vaccines are minimal compositions which possess low immunogenicity, while large aggregated antigen particles are required to activate a long-term immune response. Therefore, the study of molecular basis of the interaction of antigens with immunocompetent cells and the mechanisms of the immune response remains an important problem of vaccinal prevention. In this case, are demand to develop of new delivery systems and antigen presentation that can enhance immunogenicity and effectiveness of vaccine preparations without use of additional components. The purpose of this research was to identify the correlation between the form of supramolecular organization of viral antigens and the induction of inflammatory reactions in the organism. Mice weighing 20-25 grams were immunized once intraperitoneally with purified glycoprotein antigens (HA+NA) obtained from the influenza virus, strain A/Aichi/2/68 (H3N2), having the following forms of supramolecular organization: Micelles; immunostimulating nanocomplexes (virus-like nanostructures 60 - 80 nm in diameter formed by antigens, lipids and plant saponins (Quil-A and SO)); nanostructured chitosan with adsorbed antigens. For comparison, animals were also immunized with purified viral particles. Day later, peritoneal exudate cells were collected for isolation of nucleic acids. Expression level of genes responsible for the synthesis of IgA, IgG2a antibodies was determined. A highest gene expression activity was detected after mice immunization with immunostimulating complexes based on viral antigens, saponins (Quil A; SO) and lipids. Sufficiently high expression level of studied immunoglobulins, but less than immunostimulating complexes, was recorded by immunization of mice with intact virus particles and chitosan nanostructures. Viral glycoprotein antigens in the form of classical micelles showed the lowest activity in stimulation of studied genes. Thus, it was shown that the expression level of genes responsible for the induction of IgA and IgG2a antibodies at immunization of experimental animals with different structural forms of viral antigens was largely depend on molecular structure of viral antigen.

Biography

Pavel G Alexyuk has her expertise in evaluation and passion in improving the health and wellbeing. Her open and contextual evaluation model based on responsive constructivists creates new pathways for improving healthcare. She has built this model after years of experience in research, evaluation, teaching and administration both in hospital and education institutions. The foundation is based on fourth generation evaluation (Guba & Lincoln, 1989) which is a methodology that utilizes the previous generations of evaluation: measurement, description and judgment. It allows for value-pluralism. This approach is responsive to all stakeholders and has a different way of focusing.

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Notes:

Samuel Inkabi, J Infect Dis Ther 2017, 5:3 (Suppl)
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Detection of ER stress after infection of human macrophages by *Mycobacterium tuberculosis*

Samuel Inkabi
Linkoping University, Sweden

Statement of the Problem: Post infection, macrophages, the first cells in the lungs that propel defence against pathogen invasion and play crucial activity in the onset and maintenance of immune responses against Mtb. The macrophages play this crucial defence role by phagocytosis which have the macrophages "eat" up the Mtb bacilli. Macrophages therefore become infected with mycobacteria and may undergo apoptosis (programmed cell death) to destroy pathogens and prevent further spreading. Apoptosis which results in the elimination of Mtb can be triggered by endoplasmic reticulum (ER) stress which is the physiological or pathological processes that disturb protein folding in the endoplasmic reticulum caused by the phagocytosis of the Mtb bacilli by the macrophages. The dysregulation of ER homeostasis can cause chronic diseases in humans and it is crucial to study ER stress using mammalian cells to understand ER-stress related diseases such as Tuberculosis. Here, we studied the ER stress induction and the extent of ER stress induction using human monocytes derived macrophages (hMDMs). We used the ER stress inducers tunicamycin and thapsigargin, and also infecting the macrophages with different doses of Mtb and analyzing CHOP and ATF6-alpha expression by western blot. This indicated that both inducers triggered CHOP activation, that a low dose of Mtb suppressed the expression of these ER-stress markers in most donors, and that infection with a higher dose of Mtb stimulated expression of both markers in 4 out of 6 donors. Alternatively, live microscopy was also performed on raw macrophages and 16HBE epithelial cells after transfection with the ER stress plasmid sensor pEGFP-XBP1dDBD-STOP-tagRFPt and stimulation with tunicamycin and purified protein derivative of tuberculin (PPD). We have here confirmed the detection of ER-stress in human monocyte derived macrophages using positive inducers, and shown that low doses of Mtb decreases induction of ER-strress whereas high dose of Mtb induces ER-stress.

Biography

Samuel Inkabi holds an MSc Medical Biology from Linkoping University, Sweden. He also holds a Bachelor's in Biochemistry from Kwame Nkrumah University of Science and Technology, Ghana. His research focuses on infectious diseases, cancer and avian genetics. He has co-authored a publication and authored a review paper in reputed journals.

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M. Celeste Nicolao et al., J Infect Dis Ther 2017, 5:3 (Suppl)
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Exosome-like vesicles secreted by Echinococcus granulosus larval stage contain proteins involved in parasite-host communication

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Statement of the Problem: Human echinococcosis is a zoonotic cestode disease caused by Echinococcus sp. larval stage. These helminth parasites lack digestive and excretory system but they have developed active endocytic-exocytic cellular processes to regulate metabolite uptake and excretion. The purpose of this study is to analyze the cestode exosome-like production and to characterize these vesicles focusing on the parasite-host interaction. Methodology & Theoretical Orientation: Viable protoscoleces and metacestodes were in vitro cultured in presence of loperamide or in control conditions and viability and calcium concentration were determined. Additionally, extracellular vesicles were purified from parasite-culture medium through several centrifugation and ultracentrifugation steps and were analyzed by confocal imaging, TEM, western blot and proteomic analysis. Findings: Loperamide reduced the viability of both larval stages in a dose-dependent manner, provoked a cytosolic calcium level increment and induced a higher density of vesicles respect to the control. In addition, TEM analysis enabled the vesicles morphological characterization and the identification of abundant exosomes (30-100 nm vesicles with cup-shaped morphology). Finally, a large amount of exosomal proteins have been identified by proteomic analysis, among them Alix and TSG101 which are components of the endosomal sorting complex required for transport and are considered exosomal protein markers; Syntenin-1 implicated in the regulation of exosome biogenesis; Tetraspanins, related to cell adhesion (in particular CD9, whose expression was corroborated by WB); proteins involved in vesicle related transport (such as rab proteins, syntaxin-binding protein) and proteins involved in host immune response, parasite antigens and uncharacterized proteins which are of special interest for their putative role in parasite-host interaction. Conclusion & Significance: Echinococcus granulosus secretes exosome-like vesicles which could be involved in the host immune response. Further studies are needed to fully investigate these vesicles which could be involved in parasite establishment and immune tolerance that guarantees cestode survival.

Biography

M. Celeste Nicolao has a PhD in Biological Science (National University of Mar del Plata, 2016) and she is currently working as a postdoc under the direction of Prof. Dr. Andrea Cumino. She has been serving as assistant teacher for subjects such as Introduction to Biology, Clinic Microbiology and Basic Immunology that are part of the Biology and Biochemistry courses of study. She participates in several research projects on Parasitology and has published original articles. Currently, her research is focused on the study of molecular and biochemical mechanisms involved in Echinococcus sp- host interaction.

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Notes:

Samer M Al-Hulu, J Infect Dis Ther 2017, 5:3 (Suppl)
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Some Essential points about Nosocomial infections

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Statement of the problem: Hospital infections or nosocomial infections (NIs) play an important role in prolong the hospital stay; increase the cost of additional treatment with high mortality and morbidity. Nosocomial infections (NI) an infection occurring in patient in hospital or other healthcare facility in whom the infection was not present or incubating at the time of admission. The purpose of this study is to describing of some essential points about Nosocomial infections such as transfer, most frequent of Nosocomial infections ,Most group microorganism causes of nosocomial infections, Risk factors for the development of Nosocomial infection , and Prevention. Methodology & Theoretical Orientation: Nosocomial infections transferring by cross-infection, endogenous infection, spread by environmental transfer by inhalation of aerosols, or from a substance. The frequent Nosocomial infections includes lower respiratory tract surgical wounds, urinary tract infections and sepsis. Most group of microorganisms that causes Nosocomial infections includes anaerobic bacteria *Clostridium diffcile*, facultative anaerobic such as Staphylococcus aureus, coagulase-negative staphylococci, Escherichia coli, Enterococcus spp, Klebesiella spp, and *Pseudomonas aeruginosa*, and the obligate aerobic *Acinetobacter baumannii*. The Risk factors for the development of Nosocomial infection includes, age more than 70 years, Shock, Major trauma, Coma, Acute renal failure, Prior antibiotics, Mechanical ventilation Drugs affecting the immune system (steroids, chemotherapy), Prolonged ICU stay (>3 days).Controlling on Nosocomial infections, occurring by limiting transmission of organisms between patients, through adequate hand washing and glove use, and appropriate aseptic practice , isolation strategies, sterilization and disinfection practices, and laundry, controlling environmental risks for infection, protecting patients with appropriate use of prophylactic antimicrobials, nutrition, and vaccinations, limiting the risk of endogenous infections by minimizing invasive procedures and prevention of infection in staff members. Appropriate use of prophylactic antibiotics is one of the important elements of effective prevention programs. Finding: Controlling on Nosocomial infection is very important step for public health. Conclusion & Significance: NI are major source of morbidity, motility of patient, Continuing staff education is very important step for control on Nosocomial infections, and Intensive care units and in acute surgical and orthopedic wards is common source for these infections should be controlled. Recommendations: Hand washing and glove use, and appropriate aseptic practice, isolation strategies, sterilization and disinfection practices, and laundry is important for limitation transmission of organisms between patients in direct patient care.

Biography

Samer M. Al-Hulu, Assistant Professor of Microbiology, has completed his PhD from Babylon University/College of Science-Iraq. He has published more than 14 papers in microbiology field. Al-Hulu, has training at Ministry of Health at Laboratory of Babylon Maternity and Children Hospital. Now working at Al-Qasim Green University/College of Food Science-Iraq.

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Epidemiology of multi-resistant bacteria in the hospital environment of high-risk infectious units, Ibn Tofail Hospital- University Hospital Center of Marrakech

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Objective: The objective of this study is to analyze the qualitative and quantitative microbial composition of the environment of high risk infectious units at the Ibn Tofail hospital, CHU Mohammed VI, Marrakech.

Material & Methods: This is a prospective study carried out in four units (two operating units, two adult intensive care units ICU) of CHU Mohammed VI Marrakech during a period of four months (March to June 2014). The samples concerned inanimate surfaces and the hands of different staff. The level of antibiotic resistance was studied by the diffusion method in agar medium. The choice of antibiotics and the criteria for interpretation of the antibiogram were made according to the standards of the European Committee on Antibiograms (EUCAST).

Results: 95 bacterial strains were isolated from the 125 samples. The antibiotic resistance profile showed that 46% (44/95) of the strains were multi drug resistant, 19% of them were *acinetobacter baumannii* resistant to imipenem (ABRI), 17% of the *Enterobacteriacae* producing extended spectrum beta-lactamases (ESBLE), and 8% was methicillin-resistant *Stapylococcus aureus* (MRSA). The lowest rate (4%) was obtained for pseudomonas aeruginosa resistant to carbapenem (PARC). The ABRI was mainly found in the inanimate surfaces of ICU, the EBLSE were predominant in the surfaces of the operating units. However, the MRSA was isolated mostly from the staff handprints and the surfaces of the four studied units.

Conclusion: The alarming presence of MDR bacteria in the hospital environment urges the hospital actors (biologists, hygienists, clinicians, and nursing staff) to double their efforts to control these bacteria.

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Atypical lymphocyte as a predictor of dengue illness among pediatric patient admitted in a tertiary institution

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Statement of the Problem: Diagnosis of dengue during febrile stage has been challenging. There are several existing diagnostics however most are costly and not available in many tropical countries. Atypical lymphocytes (AL) or reactive lymphocytes are activated non-malignant lymphocyte seen in the peripheral blood smear. There were studies mentioning atypical lymphocytes as an adjunct tool in the diagnosis of dengue infection and could be used as marker of disease severity.

Methodology & Theoretical Orientation: This is a retrospective case control study of randomly selected pediatric patient admitted in a tertiary institution with confirmed dengue fever cases and other febrile illness (OFI). There were 296 who were able to meet the criteria. CBC results were reviewed on the day of admission and day 1 afebrile. Presence and absence of atypical lymphocytes was noted on each patient.

Findings: Significantly more proportion of subjects with dengue illness has atypical lymphocyte than those with other febrile illness ($p<0.0001$). Of the 155 confirmed cases of dengue, a total of 137 (88.4%) of patients have atypical lymphocyte and 18(11.6%) found negative. The positive and negative predictive values of atypical lymphocytes were 86.2% and 86.9%, respectively. However no difference was noted when proportion of atypical lymphocyte was compared across dengue severity. Finally, atypical lymphocytes are a significant predictor of dengue fever as derived from logistic regression analysis. The results showed that the risk of a patient with atypical lymphocyte was 41.16 times higher for dengue than those without atypical lymphocyte.

Conclusion & Significance: This study shows that the presence of atypical lymphocyte is highly associated with dengue illness. Atypical lymphocyte can be useful in predicting dengue illness. However additional study on the actual quantity of AL is required before the information can be used in usual clinical settings.

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Status of Xpert MTB/RIF assay implementation in Ethiopia

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Background: In 2010, WHO has endorsed Xpert MTB/RIF Assay for the diagnosis of tuberculosis (TB) and rifampicin resistance tuberculosis (RR-TB). Following this recommendation, Xpert MTB/RIF Assay has been implemented in Ethiopia since 2012. Monitoring and evaluation of Xpert MTB/RIF assay implementation is necessary to ensure the effective and efficient use of resources and to guide the future scale-up.

Objective: To assess the implementation Xpert MTB/RIF for the diagnosis of TB and RR-TB in Ethiopia.

Methodology: Data was collected and analyzed from 87 GeneXpert sites from May to June 2016. A structured questionnaire was used to collect information on staff profile and trainings taken. Data was extracted from GeneXpert machine since the date of installation from 70 GeneXpert sites. Records were reviewed from laboratory register book and from archived laboratory request formats by using a comprehensive assessment tool to evaluate the laboratory personnel competency and clinician's adherence to the national algorithm.

Result: A total of 80,683 specimens were examined by using Xpert MTB/RIF assay starting from the date of installation up to June 2016 in 70 GeneXpert sites. Mycobacterium tuberculosis was detected in 12,422 (15.4%) of specimens. From all TB detected results 83.75% (10,403), 12.68% (1,591) and 3.45% (428) were susceptible, resistance and indeterminate to Rifampicin respectively. The error rate was 14.1%. There were 285 Xpert MTB/RIF assay trained laboratory professionals at 87 GeneXpert sites. An average of 3 trained laboratory professionals were working in each facility. At least one trained laboratory professional was found in each facility, but untrained laboratory professionals were performing Xpert MTB/RIF assay in 67 facilities. National tuberculosis program approved Xpert MTB/RIF assay testing algorithm was not followed in 36% of sites. Most of the clinicians did not properly fill request papers. Standardized request formats and laboratory log books were not available in 15% and 8% of facilities, respectively. Xpert MTB/RIF assay results were correctly recorded on the laboratory log book in 87% of sites. Critical result (RR-TB) communication was not appropriate in 25.6% of facilities. Xpert MTB/RIF assay test results were not archived regularly in 47% of laboratories.

Conclusion: Detection rate of TB with the Xpert MTB/RIF assay was low. This may be due to inappropriate eligibility screening of the patients. Xpert MTB/RIF assay showed an advantage for detecting RR-TB cases in peripheral laboratory level, which is important for early detection of drug resistant cases as well as early treatment initiation. Error rate was high in comparing with the expected standard (≤3%). There was 100% Xpert MTB/RIF assay training coverage; however, in majority of the sites untrained laboratory professionals were performing Xpert MTB/RIF testing. This may probably have negative impact on test results.

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Meningitis in setting of spontaneous CSF leak secondary to underlying idiopathic intracranial hypertension

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Case: We present a 53 year old female with hypertension who presented with progressively worsening headache of one day duration with associated photophobia. Her vitals were body mass index of 37.79 kg/m^2 and temperature of 37.8^{o}C, blood pressure 108/75 and HR 128 beats/min. She had leukocytosis of 15.77 k/uL. Computerized tomography of brain was suggestive of cerebrospinal fluid (CSF) density within expanded sella. Lumbar puncture performed was concerning for bacterial meningitis with CSF being slightly turbid and showing white blood corpuscle count of 9344 with 71% neutrophils and elevated protein of 267. CSF culture and Gram stain were negative. She was started on intravenous Vancomycin, Ampicillin, Ceftriaxone and Acyclovir. On further history taking, she mentioned chronic nasal discharge/sinusitis and chronic migraine. There was high suspicion of CSF leak, hence, Beta-2 Transferrin on the nasal discharge was done, which was positive. Magnetic resonance imaging findings were also suggestive of Idiopathic Intracranial Hypertension (IICH). She was diagnosed as having spontaneous CSF leak in setting of IICH and started on acetazolamide and followed up with neurosurgery. Subsequently she required placement of ventriculoperitoneal shunt. Her symptoms of headache have improved since then.

Discussion: IICH is a disorder that occurs when impaired CSF absorption leads to elevated intracranial pressure (ICP). Clinically, presents in middle aged, obese women with signs and symptoms suggestive of raised ICP such as headaches, papilledema and visual disturbances. Most patients with spontaneous CSF leaks fulfill the Dandy criteria for IICH. In this case, the patient had chronic sinus discharge which was misdiagnosed as chronic sinusitis. Persistent CSF rhinorrhea, being a risk factor, put her at increased risk for meningitis.

Conclusion: Considering the history and knowledge of disease helped in favorable outcome for this young woman.

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Microbiological quality evaluation of the commercialized raw cow's milk in sale

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Among the most popular origins of diseases that have relation with feeding, we find, the perishable commodities and particularly the milk and its products especially during the very hot summer days. The matched methods for conservation of milk and the hygiene measures had never been respected. The objective of this study allows estimating the microbiological quality of raw cow's milk of 120 taken samples, at sale from four farms, four peddlers and four dairies during spring 2013. In all the samples that we analyzed, we looked for many micro-organisms, like the total aerobic mesophilic flora, the total coliforms and fecal coliforms, *Escherichia coli, Staphylococcus aureus, Streptococcus β-hemolyticus, listeria Monocytogenes, Salmonella* and *Brucella abortus*. The synthesis of the obtained global results during the microbiological tests of the cow's raw milk which is collected from farms, peddlers and dairies, doesn't show any specific fluctuations during all the way long of the trial period. Indeed, it doesn't matter if the raw milk has been collected from a farm, peddler or a dairy the microbiological quality test is always the same whether it is qualitatively or quantitatively. It is then necessary to create some effective control measures, in order to protect the health of the consumer. For the best milk quality, the dairy farmers must submit the most efficient hygienic methods.

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Toxic shock syndrome due to *Streptococcus pyogenes* in an 80-year old post-knee arthroplasty patient: A case report

Jenny Mae A Quinivista Yoon and **Ryan M Llorin**
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Prosthetic joint infection (PJI is one of the leading causes of arthroplasty failure. A high incidence of PJI follows Staphylococcus aureus and coagulase-negative staphylococci. On the other hand, *Streptococcus pyogenes* PJI is extremely rare, with only a very few case reports in the literature. Toxic shock syndrome resulting from *Streptococcus pyogenes* infection, however, has a reported mortality rate as high as 30 to 70 percent, hence early recognition of this potentially fatal infection is crucial to the successful management of patients. In this article, we report a case of an eighty-year old male who developed streptococcal toxic shock syndrome in association with a severe group-A streptococcal infection of the knee after a total knee arthroplasty done two years prior.

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Effect of noise on tumor growth cancer model

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Recently cell-mediated immunity plays an important role in immune responses against cancer. Cancer cell development and survival is a multifactor process, involving genetic mutation of normal cells as well as physiological changes within both cancer cells and also the body's defence mechanisms. In the present study we have considered a tumor growth three dimensional ordinary non-linear differential equation model. We considered the special effect of tumor-immune interaction along with the two immune components – resting (helper) T-cells which stimulate CTLs and convert them into hunting (active) CTL cell which attack, destroy, or ingest the tumor cell. We have also discussed the qualitative behavior of the solution of our system. Critically we have examined the existence of the system with local and global stability analysis at different equilibrium points. We have also developed a theoretical framework to understand the complex behavior of the tumor growth cell under the influence of stochastic fluctuations by adding the effects of additive white noise of the immune system to study real situation of the interaction between these two groups of cells. Using various sensitive parameter values and different initial densities, the numerical simulations show that the dynamical behavior of the tumor cells, together with the resting and hunting cells, lead to a variety of interesting patterns in the evolution of the tumor and immune cell populations.

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Effect of noise on tumor growth cancer model

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Design, synthesis, *in vitro* antimycobacterial screening and molecular docking studies of novel benzimidazolyl hydrazides

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Statement of Problem: The emergence of severe mutated drug resistant strains of *Mycobacterium* has reinvigorated the development of effective chemotherapy for efficient treatment of tuberculosis. Consequently, we have developed novel benzimidazole derivatives and screened them for their antimycobacterial activity along with silico studies with a validated target enzyme Enoyl-acyl-carrier reductase (Inh A).

Methodology: A series of N', N''-[1-(1H-benzimidazole-2-yl)-2-(4-substituted phenyl ethane-1, 2-diyl)] substituted aromatic hydrazide derivatives which were synthesized by condensation of o-phenylene diamine with organic acids, followed by Claisen-Schmidt reaction and then subjected to bromination and finally treated with a strong nucleophile. Structures were elucidated with spectral data and subjected to antimycobacterial screening by two models, the Alamar Blue assay and Luciferase reporter phage assay. The inhibitory concentrations and the percentage reduction in relative light units were assessed respectively to evaluate the *in vivo* efficacy of the novel compounds. Molecular docking studies with the enoyl acyl carrier protein reductase (InhA) of *M. tuberculosis* were performed to check for binding profiles of these compounds.

Findings: Four compounds showed significant activity with IC values of 0.5 mg/ml in Alamar Blue assay and greater than 90% reduction in relative light units at both 50 and 100 µgm/ml levels. Among the four, N', N''-[1-(1H-benzimidazol-2-yl)-2-(4-chlorophenyl) ethane-1, 2-diyl] di isonicotino hydrazide was found to be the most active (~98.3%) in this series, based on the percentage reduction in relative light units. In order to rationalize the biological results of our compounds, molecular docking studies with the enoyl acyl carrier protein reductase (InhA) of *M. tuberculosis* were performed. The above compounds showed good H-bond interactions with Gly-96, exhibiting a good dock score and fitted well in the binding pocket of Inh A.

Conclusion: The compounds that exhibit promising activity profile against *Mycobacterium* tuberculosis $H_{37}Rv$ strain with significant docking scores could become excellent molecules for developing more potent antimycobacterial agents.

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Mortality trends of HIV in Ecuador: 2005 to 2013

Leonardo Cano Cevallos and **Andrea Vélez**
Universidad Católica Santiago de Guayaquil, Ecuador

Background: National population based studies of HIV mortality exist for developed countries but few have been presented from developing countries. Our objective was to investigate about the situation regarding HIV mortality and trends in Ecuador in the context of adoption of public ART policies and gender differences.

Methods: Cause of death data were obtained from vital statistics registries for the period 2005 to 2013. Standardized mortality rates were assessed to identify patterns of HIV mortality over time occurring in Ecuador.

Results: During the study period, the HIV mortality trends maintained an average number of cases except in 2010 with an increment of the number of deaths to 800. HIV mortality was consistently higher in males compared to females (4508:1282).

Conclusions: Vital statistics registries provide valuable information on HIV mortality for Ecuador. The absence of significant increase of the number of deaths during the period let us concern about the objective to control the spread and management of the disease. Regarding this fact, it is important to encourage more aggressive campaigns for prevention and treatment of HIV infected patients.

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Low prevalence of hepatitis B and C among tuberculosis patients in Duhok Province, Kurdistan: Are HBsAg and anti-HCV prerequisite screening parameters in tuberculosis control program?

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Objective/Background: Viral hepatitis, particularly hepatitis B virus (HBV) and hepatitis C virus (HCV), infections and tuberculosis (TB) are a global public health concern. Co-infection with HBV or HCV among TB patients may potentiate the risk of hepatotoxicity induced by anti-TB drugs. Hence, the aim of this study was to identify the prevalence of HBV and HCV among TB patients included in the Duhok National Tuberculosis Program (NTP).

Methods: The Duhok NTP Center is a specialized institution in Duhok City, Iraq, concerned with management and follow-up of TB patients. A cross-sectional study was conducted at the center between June 2015 and May 2016. All documented TB patients were analyzed on the basis of sociodemographic and other characteristics. Thereafter, all patients underwent screening for hepatitis B surface antigen (HBsAg), anti-HCV, and anti-HIV using enzyme-linked immunosorbent assay (ELISA). The results obtained were analyzed by entering the data in binary format into a Microsoft Excel spreadsheet. A p value of <.05 was considered to be statistically significant.

Results: Two-hundred fourteen (214) documented TB patients were recruited in this study, with 127 (59.3%) males and 87 (40.7%) females. The mean age of the patients was 40.34 years (±20.29). Of the total number of patients, 4 cases (1.8%) were HBsAg-positive and one case (0.9%) was positive for anti-HCV. The variables significantly associated with HBV were history of surgical dental procedure [odds ratio (OR), 0.04; 95% confidence interval (CI), _0.01 to 0.04; p=.03], and nationality (OR, 13.67; 95% CI, 0.46–210.85; p=.007).

Conclusion: The prevalence of HBV and HCV co-infection among TB patients in this study was low. This may be explained by the low rate of blood transfusion among the patients, and the very low prevalence of HIV.

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Impact of *L119F-GSTe2* DDT/pyrethroid resistance mutation on the fitness cost and malaria transmission of Anopheles funestus in Cameroon

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Objective: Insecticide resistance in mosquitoes is potentially threatening the control of malaria. However, the ability of resistant mosquitoes to transmit malaria may be altered by reduced fitness associated with insecticide resistance (IR) genes. This study explored the fitness costs associated with *L119F-GSTe2* (a single gene mutation which confers resistance against DDT) in an *An. funestus* population in Cameroon.

Methodology: Mosquito collections were carried out in Obout, Cameroon. Bioassays were performed on reared F1 *An. funestus* and cone assays were performed on 5 commercial nets. Molecular analysis included PCR species identification of *An. funestus* from extracted gDNA and TaqMan assays for Plasmodium infection and *GSTe2-L119F* gene mutation. Oviposition rate was recorded for 100 F0 *An. funestus* but could not be compared between resistant and susceptible mosquitoes (with and without *GSTe2-L119F* mutation respectively) due to unforeseen circumstances.

Results: The Plasmodium infection rate in the Obout *An. funestus* (20% for *P. falciparum*) was significantly higher than previously recorded in the north of Cameroon. Bioassays demonstrated resistance against all classes of insecticides except for the organophosphates. Of the nets tested in the cone assay, only the top of PermaNet® 3.0 demonstrated full efficacy and suspiciously, Olyset® net showed complete loss of efficacy.

Conclusion: This study has unfortunately had setbacks due to problems with chemical reagents. Nevertheless, this is the first study to characterize the resistance profile of *An. Funestus* mosquitoes in Cameroon. The collected *An. funestus* were confirmed as a major Plasmodium vector and based on the bioassay results, organophosphates should be encouraged for use in indoor residual spraying. Tighter inspection and examination of nets sold in Cameroon is required as Olyset® net that is available in local pharmacies was suspected to be forged.

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Detection of the *mcr*-1 colistin resistance gene and extended-spectrum beta-lactamase (ESBL)-producing *Escherichia coli* from poultry in Qatar

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Antimicrobial resistance (AMR) is a growing public health concern worldwide and is one of the top health challenges facing humanity in the 21st century. AMR among Enterobacteriaceae is rapidly increasing especially to third-generation cephalosporins and carbapenems. Further, strains carrying mobilized colistin resistance (*mcr*) genes 1 and 2 have been isolated from humans, food-producing animals, and environment. Uncontrolled use of antibiotics in animals in large scale could be one of the major contributing factors to generation and spread of antibiotic resistance. No studies have been done to evaluate antimicrobial resistance in animals in Qatar. This study aimed at establishing a primary baseline data for prevalence of antimicrobial resistance among food animals in Qatar. 172 fecal samples were obtained from two broiler farms and one live bird market in Qatar and 90 *Escherichia coli* (*E. coli*) bacteria were isolated and subjected to antimicrobial susceptibility testing using E-test method. 90% (81/90) of the isolates were resistant to at least one of the 16 tested antibiotics. 15.5% (14/90) of the isolates were colistin resistant, 2.2% (2/90) were extended spectrum β lactamase (ESBL) producers and similar percentages were multi-drug resistant (MDR) to four antibiotic classes. ESBL-producing *E. coli* and colistin resistant isolates were confirmed using double disc susceptibility testing and PCR, respectively. In summary, our results indicate that high antimicrobial resistance in food producing animals in Qatar, including ESBL and colistin resistance. Such AMR bacteria could be easily transmitted to humans through consumption of undercooked food or noncompliance with hygiene practices, which mandates prompt development and implementation of stewardship program to control and monitor the use of antimicrobial agents in community and agriculture.

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Fluorescence high-throughput screening for inhibitors of TonB action

Phillip E Klebba, Olivia S Eliasson, Dallas R Hyder, Noah J Long, Aritri Majumdar, Somnath, Chakravorty, Peter McDonald, Anuradha Roy, Salete M Newton and **Brittany L Nairn**
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Gram (-) bacteria acquire ferric siderophores through TonB-dependent transporters (TBDT) in their outer membrane. By fluorescence spectroscopic high-throughput screening (FLHTS) we identified inhibitors of TonB-dependent ferric enterobactin (FeEnt) uptake through *E. coli* FepA (EcoFepA). Among 165 inhibitors found in a primary screen of 17,441 compounds, we evaluated 20 candidates in secondary tests of TonB activity, including ferric siderophore uptake and colicin killing. 6 of the 20 primary hits inhibited TonB action in all the tests. Further analysis of the inhibitors in [^{59}Fe] Ent and [^{14}C]-lactose accumulation experiments suggested several as proton ionophores, but two chemicals, ebselen and ST0082990, did not behave like proton ionophores and may inhibit TonB-ExbBD. The success of FLHTS against *E. coli* led us to adapt it to the ESKAPE pathogen *Acinetobacter baumannii*. We identified its FepA ortholog (*AbaFepA*), confirmed its involvement in FeEnt uptake by deleting the structural gene, cloned *AbafepA*, genetically engineered 8 Cys substitutions in its surface loops, modified them with fluorescein and made fluorescence spectroscopic observations of FeEnt uptake in *A. baumannii*. Among the Cys substitutions in *AbaFepA*, several (S279C, T562C, S665C) were well labeled by fluorescein and suitable for measurements of FeEnt transport. As in *E. coli*, the test monitored TonB-dependent FeEnt uptake by *AbaFepA*. In micro titer format FLHTS with *A. baumannii* produced Z' factors from 0.6-0.8. Overall these experiments both identified agents that block TonB action, and revealed the potential of FLHTS for larger screens of bigger libraries to find novel antimicrobial compounds against Gram (-) bacteria, including the CRE/ESKAPE pathogens.

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Notes:

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Cholera outbreak among residents of Bunyala in Busia County 2016

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Background: Cholera is an acute enteric infection caused by the bacterium Vibrio cholera of serogroup 01 or 0139. It is water borne disease of public health importance with an estimated number of 3-5 million cases annually and 100,000 to 150,000 deaths yearly. Outbreaks are linked to consumption of unsafe water and food, poor hygiene and sanitation. Overflowing of latrines and contamination of wells and surface water, seasonal modification of water sources for consumption and human behavior may play a role in the occurrence of cholera outbreaks. Failure to control local outbreaks and prevention of between-region transmission could result in spread of cholera outbreaks to neighboring regions or countries. The latest Cholera outbreak in Bunyala -Busia County is dated from 21st February to 11th March 2016 through on the 1st January 2017 there were five confirmed cases reported in Uganda (Lumino village) who sought treatment at our County Referral hospital Busia being at the border and then later transferred back to Uganda for further management. Cholera is one of three diseases requiring notification to WHO under the International Health Regulations

Objective: The objective of the study is to describe cholera outbreak by time, person and place.

Methodology: We conducted retrospective analysis of line lists obtained from county disease surveillance co-ordinator in Busia country. Data was analyzed using Microsoft Excel 2010.

Results: In 2016, 52 villages in Bunyala sub-county and 1 village in Samia Sub-County reported cholera outbreaks with a total of 107 cases including 6 deaths. This gave an overall case fatality rate of 5.6% exceeding the mean CFR of 1% which is acceptable by WHO. Out of the 53 villages, Khainga recorded the highest number of cases 9 (8.4%), Lunyofu 6 (5.6%), Siginga 6 (5.6%) and Khukunda 5 (4.6%). The age specific attack rate was highest among individuals 14 years of age and above 62 (58%), 5-14 years 32 (29%) and 13 (12%) cases respectively. Females were the most affected than Males 59 (55%) and 48 (45%) cases respectively. The epidemiological curve showed peaks on the 4th Feb (18cases) and 6th (10 cases).

Conclusion: Our study showed a cholera outbreak that grew in magnitude and spread to involve Bunyala North, West and Magombe central in Bunyala sub-county. It also showed potential endemicity of cholera in the villages bordering water bodies i.e. Khainga, Siginga, Lunyofu and Khukunda. Therefore there is need for a harmonized, Co-ordinated approach to cholera outbreaks through effective surveillance and response with emphasis on training and motivating frontline HealthCare workers towards timely detection and response as well as proper documentation.

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Immune mechanism as the mechanism maintenance stability of both internal energy of an organism as well as internal energy of cells of an organism

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Biophysical mechanism of immune system of an organism is dependent on the immune mechanisms of all cells of an organism. The interactions of cellular transport across cellular wall promote stability internal energy of a cell via an extracellular chemical potential and an intracellular chemical potential which induce different electrical charges on external cellular membrane and internal cellular membrane of a cellular wall. Thus the formed different cellular capacitors into cellular wall are functioned. Just the mechanism of mutual interactions between cellular capacitors of all cells and an organism promote remote reactions across distance for immune responses on strange objects. The interactions between nuclear processes, due to nuclear capacitors, and mitochondrial processes, due to mitochondrion capacitors, determine stabile basophilic chemical potential in cytoplasm, i.e. stability cellular Internal Energy. Interactions between all cells of an organism occur due to remote reactions across distance as the results of cellular capacitors operations via production of resonance waves. Interactions between cellular capacitors of cells maintain common stability of Internal Energy, according to first law of thermodynamics, both in cells and in an organism. Penetration of strange high-molecular substance into an organism creates local change of chemical potential and promotes remote reactions across distance of cellular capacitors via resonance cellular waves on common molecular wave of strange high-molecular substance, due to the wave function of any molecule which is determined as the total wave functions of the nuclear orbitals, according to Schrodinger equation of linear combination of atomic orbitals (MO LCAO). The forming resonance waves cause attraction of the immune cells to strange high-molecular substance and create the contact reaction of decomposing the high-molecular substance of the strange object, ruining it. Biophysical mechanism of immune cells, remote reactions transit into contact biochemical immune reactions for decomposition of the strange object.

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Design and identification of Mycobacterium tuberculosis glutamate racemase (MurI) inhibitors

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In the present study, we attempted to develop novel Mycobacterium tuberculosis (Mtb) inhibitors by exploring the pharmaceutically underexploited enzyme targets which are majorly involved in cell wall biosynthesis of mycobacteria. For this purpose glutamate racemase (coded by Murl gene) was selected. This enzyme is able to construct these cell walls by synthesizing D-glutamate from L-glutamate through racemization. Furthermore enzyme is not expressed nor its product, D-glutamate is normally found in mammals, and hence inhibiting this enzyme should not result in toxicity to the mammalian host organism. A library of BITS in house compounds were screened against Mtb MurI enzyme using glide module in Schrodinger software. Based on docking scores, interactions and synthetic feasibility one of the hit lead was identified, further optimization of lead was attempted and its derivatives were synthesized. 48 derivatives of 2-phenylbenzo[d]oxazole and 2-phenylbenzo[d]thiazole were synthesized and evaluated for Mtb MurI inhibition study, in vitro activities against Mtb, cytotoxicity against RAW 264.7 cell line Mtb. Few compounds have shown IC50 of 4-5μM which are remarkable and were found to be non-cytotoxic. Molecular dynamics, dormant models and cardiotoxicity studies of the most active molecules are in process.

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Rare cause of iliopsoas abscess in a patient with multiple myeloma

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Patients with multiple myeloma (MM) frequently develop infections with encapsulated organisms, such as the pneumococcus, as part of the natural history of this disease. Common sites of involvement with the Pneumococcus are brain and lungs. Pneumococcal infections outside respiratory and central nervous system are rare. In the literature only 15 cases for pneumococcal iliopsoas abscess have been reported to the best of our knowledge. We present a case of iliopsoas abscess secondary to pneumococcus in a patient with MM. A 64-year-old male with MM presented with fever, chills and worsening right hip pain. An MRI of pelvis done a month ago showed lytic lesions in the right iliac bone extending into sacroiliac joint along with suspicious soft tissue mass or infectious collection measuring 2.9x 1.9cm. Patient refused CT guided drainage at that time. He received palliative radiation therapy (RT) for right the hip pain. On the last day of RT, he developed chills with fever of 38.5 C and was admitted. Physical examination was normal except severely impaired range of motion of right hip. Laboratory evaluation showed normal white cell count and unremarkable urine analysis. Chest x-ray was negative for acute findings. CT of the abdomen and pelvis showed large abscess measuring 20x10 cm overlying the iliopsoas muscle. Patient was started on broad spectrum antibiotics including vancomycin and piperacillin/tazobactam. He underwent CT guided drainage of the abscess which yielded 400 ml of frank pus. Subsequently, cultures from the blood and abscess grew *Streptococcus pneumonia*. The patient declined IV therapy and was treated with Moxifloxacin for 8 weeks. In follow up, he was pain free and had returned to his baseline mobility. Patients with MM frequently develop infections with encapsulated organisms which is attributed to deficient immunoglobulin production along with decreased complement function and neutrophil migration. Pneumococcal infections outside respiratory and central nervous system are rare. Psoas abscess can either be primary or secondary. Primary psoas abscess occurs as a result of hematogenous or lymphatic seeding from a distant site. Risk factors include diabetes, intravenous drug use, human immunodeficiency virus infection, renal failure, and other forms of immunosuppression such as MM. The classical clinical trial for psoas abscess includes fever, back pain, and limb pain. Onset of symptoms is usually insidious, as in our case, which makes the diagnosis challenging. Skeletal and soft tissue infections with Pneumococcus are unusual however prognosis is generally good with prompt intervention and antibiotic therapy. In conclusion Pneumococcal iliopsoas abscess is a rare clinical entity. However, in patients with MM and other immunosuppressive disorders, suspicion for Pneumococcus as a cause of musculoskeletal infections should be considered.

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Microbiota in healthy Saudi males with various degrees of obesity

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Background: Obesity is a major modern global problem that is facing humanity. It is associated with major health complications and is a risk factor for diabetes and cardiovascular diseases (CVD). There is an alarming rate of increase in obesity among the Saudi population, placing a huge burden on health and economic resources in the country. Gut microbiota (GM) has been recently reported to be involved in the pathogenesis of many metabolic disorders and diseases including obesity, diabetes, and CVD.

Objective: The objective of this study was to identify obesity-associated GM dysbiosis and their relationship to body mass index (BMI) among healthy Saudi males with various degrees of obesity.

Methodology: A total of 48 healthy males with different degrees of obesity were recruited for this study. All those filled out a questionnaire related to their nutritional habits, health conditions and demographics. Their height, body weight, hip and waist circumference were measured (BMI and age). Stool samples were collected and genomic DNA was extracted from those samples. The DNA samples were sequenced via 16s rRNA next generation sequencing (MiSeq), sequencing reads were trimmed, analyzed and filtered and assigned to taxonomic units.

Results: The results indicated the presence of various bacteriological groups in the GM of individuals with different degrees of obesity. There were 37 species (found in small numbers) which were found only in the underweight, 46 in the normal, 17 in the overweight and 31 in the obese. However, at the family level the following were found: Desulfovibrio, prevotella and mesorhizobium in the underweight in the obese Lactobacilli and *Loktanella*. In the normal most *Bifidobacterium* and *Leuconostoc* and finally in the overweight the most present is *Nesternkonia*.

Conclusion/Recommendations: The results indicated that a variety of bacterial strains and microbiota populations were present among our study participants. Final goal is to use the data obtained from this study as biomarkers for early prediction, progress and for treating obesity in Saud Arabia.

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Transcriptomic, proteomic and metabolomics analysis of sexual stage development in Malaria

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Indian Institute of Science, India

The malaria parasite heavily relies on secretory functions for its pathogenesis. Is the parasite is equipped with machinery to tackle perturbations to its secretory pathway? In this talk the author will describe their study revealing a complete absence of genes involved in the canonical unfolded protein response pathway in *Plasmodium falciparum*. Accordingly, the parasite is unable to up-regulate endoplasmic reticulum (ER) chaperones or ER-associated degradation in response to ER stress. Global profiling of gene expression together with proteomic and metabolomics analysis upon redox stress revealed a network of AP2 transcription factors, their targets and specific metabolites being activated and/or upregulated. The overall outcome was an up-regulation of genes involved in protein export and the sexual stage of the parasite life cycle, culminating in gametocytogenesis. Our results suggest that the malaria parasite uses ER stress as a cue to switch to the transmissible, sexual stage.

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The high sero reversion of human immunodeficiency virus (VIH) in vertically exposed infants who received all the care measures to reduce the mother-to-child transmission in Guayaquil, Ecuador

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Background: The leading global epidemic Human Immunodeficiency Virus (VIH) infection has been well-documented. It is transmitted from an infected person to an uninfected one by two ways: Horizontal and vertical transmission (VT), which is mother-to-child transmission (MTCT) and is acquired at one or more of the following stages: Transplacentally in the uterus during pregnancy, perinatally during the process of labor and delivery and postnatally during breastfeeding. The reason of this study is to demonstrate that adequate management at each of these three moments reduces the MTCT.

Methods: A observational-retrospective study was carried out at Maternidad Matilde Hidalgo de Procel in Guayaquil, Ecuador to detect the prevalence of serorevertors newborns of VIH who received prophylactic antiretroviral treatment at birth, formula milk and whose mothers got administered antiretroviral therapy (ART) during pregnancy or partum according to the established schemes. These vertically exposed infants were followed up by an accredited pediatrician by the National Program of HIV-AIDS to receive special care during at least the first 18 months.

Results: 100 pregnant women were enrolled. ART was started between the 14th and 28th pregnancy week in a 41%, after the 28th week in 24% and during labor or delivery in 35%. 100% of pregnant women received ART intrapartum. 100% of the newborns received antiretroviral prophylaxis from 6 to 8 hours old for 4-6 weeks according to the applied scheme. In both, mothers and children, the most frequently administered regimen was the C with 48% based on zidovudine. 100% of the newborns were fed by formula milk and 100% was serorevertor of HIV.

Conclusions: This study shows that MTCT was 0% due to the seroreversion in children at >=18 months which represents that the treatments and properly applied procedures reduce the MTCT to zero and place Ecuador at the level of developed countries where the VT has been decreased at 1-2%.

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