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Scientific Tracks & Abstracts

(Day 1)

Session

Day 1 May 11, 2017

Vaccines and Antiviral Drugs | Neuro Virology | Oncogenic Virus | Viral Hepatitis | Veterinary Virology | Mycology and its diversity

Session Chair
Palayakotai Raghavan
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Session Introduction

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Title: **Isolation, speciation and antifungal susceptibility testing of *Candida* Isolates from various clinical specimens at a tertiary care hospital, Nepal**
Sundar Khadka, National Public Health Laboratory, Nepal

Limin Chen, Virol-mycol 2017, 6:2 (Suppl)
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Unappreciated role of type-I interferon signaling in HBV and HCV persistent infections and resistance to interferon therapy

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Activation of the type-I interferon (IFN) signaling pathway poses the first line of defense against many virus infections, including HCV and HBV. With the activation of the Jak/STAT signaling leading to the increased expression of several hundred interferon-stimulated genes (ISGs) in the liver microenvironment, an anti-viral state was established and the virus replication was suppressed. However, over-activation of the type-I IFN signaling may actually benefit virus leading to its persistent infection. High throughput gene expression profiling identified 18 differentially-expressed hepatic genes between treatment responders (Rs) and non-responders (NRs) to IFN treatment of patients chronically infected with HCV. Many of these genes are ISGs and they all showed higher expression levels in the pretreatment liver tissues of NRs, indicating that over-activation of type I IFN signaling contributes to treatment non-response leading to persistent infection. Similar findings were observed in chronic HBV infection. Mechanistically, some of these ISGs, such as ISG15 and ISG16 stimulated HCV replication and blunted IFN anti-HCV activity. In line with our observations, studies from other labs demonstrated that blocking IFN signaling facilitated viral clearance in chronic infections, such as in LCMV. All these data point out that type-I IFN signaling is a "double-edged" sword, while activation of this pathway is indeed necessary to control viral spread, over-activation actually benefits virus to facilitate its persistent infection. Detailed molecular mechanisms warrant further investigation.

Biography

Limin Chen is a Professor in the Chinese Academy of Medical Sciences (CAMS) and Peking Union Medical College (PUMC) and also an Affiliate Scientist with the University of Toronto. He is now the Director and Chief Scientific Officer of the Center for Transfusion Transmitted Diseases, Institute of Blood Transfusion (IBT), CAMS/PUMC, Member of the American Association for Studies of Liver Diseases (AASLD) and Canadian Association for Studies of Liver (CASL). He obtained his MD, MSc in Biochemistry and Molecular Biology in China, PhD in Molecular Genetics at the University of Toronto. He obtained his Postdoctoral training both at the Merck Research Laboratories and at the Harvard Medical School. Currently, his research focuses on the virus-host interaction of the hepatitis viruses, especially HCV. He pioneered the work on identification of the response signature and proposed a novel mechanism on how HCV exploits host innate immune response to benefit its persistent infection and resistance to interferon-based therapy.

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Notes:

Amita Jain, Virol-mycol 2017, 6:2 (Suppl)
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Etiology of acute encephalitis cases in Bihar, India

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Statement of the Problem: Acute encephalitis syndrome (AES) is a major seasonal public health problem in many states of India including Bihar. The total number of reported AES cases and deaths from Bihar was 1358 and 355 respectively in 2014. Despite efforts of the Bihar Health Department and the Government of India, burden and mortality of AES cases has not decreased, and definitive etiologies for these illnesses have yet to be identified. The present study was undertaken to study the specific etiology of AES in Bihar.

Methodology & Theoretical Orientation: Cerebrospinal fluid and/or serum samples from AES patients were collected and tested for various pathogens including viruses and bacteria by ELISA and/or Real Time PCR.

Findings: Of 540 enrolled patients, 33.3% (180) tested positive for at least one pathogen of which 23.3% were co-positive for more than one pathogen. *O. tsutsugamushi* was the most common etiology (25%) followed by Japanese Encephalitis Virus (8.1%), West Nile Virus (6.8%), Dengue Virus (6.1%), and Chikungunya Virus (4.5%). *M. tuberculosis* and *S. pneumoniae* each was detected in ~ 1% cases. *H. influenzae*, adenovirus, Herpes Simplex Virus -1, enterovirus, and measles virus, each were detected occasionally. The presence of scrub typhus was confirmed by PCR and sequencing. Bihar strains resembled Gilliam like strains from Thailand, Cambodia and Vietnam. Most of the patients were referred from Patna and its surrounding districts. Of the 15 districts referring >10 cases, eleven showed overall high positivity (>30% positives), three districts showed moderate positivity (>20-30%) and one (Muzzafarpur) showed low positivity (10%) (p value=0.0014, Chi square=13.14).

Conclusion & Significance: The highlights of this pilot AES study from Bihar were detection of an infectious etiology in one third of the AES cases, multiple etiologies, and emergence of *O. tsutsugamushi* infection as an important causative agent of AES in Bihar.

Biography

Amita Jain is a multifaceted Medical Teacher who has contributed immensely in the Field of Microbiology. She has worked in many areas of Medical Microbiology including Tuberculosis, Bacteriology and Virology. She is a keen Researcher and has successfully completed many research and public health projects and published several papers, some of which are highly cited. She has guided 24 PhD students and provided guidance to many Under-graduate and Post-graduate students. She has established new diagnostic and research facilities, which are of immense help to medical students, researchers and patients. She has investigated several epidemics of swine flu, dengue, acute encephalitis, hepatitis, drug resistant TB, etc. She has provided diagnostic services to Uttar Pradesh State Health Services in the field of Virology and Tuberculosis. She has organized trainings for laboratorians and community awareness health programs.

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Concerted regulation of K48- and K63-linked polyubiquitination of the antiviral sensor RIG-I

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RIG-I is a well-studied sensor of viral RNA that plays a key role in innate immunity. p97 regulates a variety of cellular events such as protein quality control, membrane reassembly, DNA repair, and the cell cycle. Here, we report a new role for p97 with Npl4-Ufd1 as its cofactor in reducing antiviral innate immune responses by facilitating proteasomal degradation of RIG-I. The p97 complex is able to directly bind both non-ubiquitinated RIG-I and the E3 ligase RNF125, promoting K48-linked ubiquitination of RIG-I at residue K181. Viral infection significantly strengthens the interaction between RIG-I and the p97 complex by a conformational change of RIG-I that exposes the CARDs and through K63-linked ubiquitination of these CARDs. Disruption of the p97 complex enhances RIG-I antiviral signaling. Consistently, administration of compounds targeting p97 ATPase activity was shown to inhibit viral replication and protect mice from vesicular stomatitis virus (VSV) infection. Overall, our study uncovered a previously unrecognized role for the p97 complex in protein ubiquitination and revealed the p97 complex as a potential drug target in antiviral therapy.

Biography

Zhaocai Zhou obtained his PhD degree from University of Science and Technology of China, 2004; and received his Post-doctoral training from Brandeis University, and University of Pennsylvania, USA, 2004–2008. He joined the Institute of Biochemistry and Cell Biology, Chinese Academy of Sciences in 2009, and became a Professor of ShanghaiTech University in 2015. His primary research interest is in understanding the signaling mechanism of tumorigenesis and tumor-related immune regulation. His recent work focuses on Hippo/MST signaling pathway and macrophage plasticity.

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Etiology of acute encephalitis cases in Uttar Pradesh, India

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Statement of the Problem: Acute encephalitis syndrome (AES) is reported from all over the world. In India, it has been estimated that a population of 375 million people residing in 17 states are at a risk of acquiring AES. Uttar Pradesh (UP), a north Indian state, bears a disease burden of 70%. Therefore, the aim of this study was to know the common etiologic agents of AES and their epidemiologic characteristics in the vicinity of Lucknow, UP, India.

Methodology & Theoretical Orientation: Patients presenting with clinical diagnosis of AES whose serum and/or CSF samples were available were enrolled in the study over a four year period, from January 2013 to December 2016. The samples were tested by various ELISAs and PCRs for viruses and bacteria.

Findings: Total 1044, 1155, 1658 and 1207 AES cases were enrolled in the years 2013, 2014, 2015 and 2016 respectively. Consistently, Scrub typhus was the most common etiology detected (mean: 31.7%), followed by Japanese encephalitis virus (mean: 10.5%), Dengue virus (mean: 7.8%), and Measles virus (mean: 5.8%). Herpes simplex virus, Varicella zoster virus, Enteroviruses, *H. influenzae*, and *S. pneumoniae* were found in <1% cases. *N. meningitides* was not detected in any case. A month wise analysis showed that AES cases were reported throughout the year with a dip in the number of cases during February and March. Similarly, anti-DV IgM was detected throughout the year but with a small peak during August through October. Anti-JEV IgM and anti-scrub typhus IgM showed a distinct seasonality with maximum number of cases being observed during monsoon and post monsoon season.

Conclusion & Significance: Arboviruses and scrub typhus contribute to maximum number of AES cases in North India.

Biography

Parul Jain has completed her MD in Microbiology and has specialized in Virology. She has keen interest in research, academics and patient management. She has several publications in peer reviewed national and international journals. She is a reviewer of several international journals. The present study is based on several years of experience in serological and molecular techniques combined with the clinical expertise.

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Role of real time PCR in diagnosis of Japanese encephalitis virus in acute encephalitis cases

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Statement of the Problem: Japanese encephalitis virus (JEV) is the principal cause of vaccine preventable encephalitis in India, with an annual incidence of 1714 to 6594 cases and mortality of 367 to 1665 individuals. The mainstay of diagnosis of JEV is serological, which has certain limitations. The present study was designed to study the additional diagnostic value of real time-PCR in detection of JEV and to study the appropriate sample for serological diagnosis.

Methodology & Theoretical Orientation: Serum and CSF samples from AES cases referred to virology laboratory were enrolled in the study. All the samples were tested for anti-JEV IgM antibodies by ELISA (Mac ELISA kit by National Institute of Virology, Pune, India) and for real time PCR for JEV- RNA.

Findings: Total 217 patients were enrolled over a one year period during August 2015 to July 2016 of which 64 tested positive for JEV. Anti JE IgM antibody was positive in 34 (53.1%) cases from both CSF and serum, 19 (29.7%) from CSF only and 9 (14.1%) from serum only. Real time-PCR was positive in one serum and one CSF sample, which were negative by ELISA. Maximum cases (33.6%) were positive when tested on >3rd to 7th day of illness. The most commonly affected age group by JEV was >5 to 15 years and male to female ratio was 2.2:1. The common clinical symptoms present were seizure 52 (81.2%), altered sensorium 60 (93.8%), vomiting 24 (37.5%) and headache 10 (15.6%). JEV infection was associated with a high mortality (n=21, 32.8%) and residual disability (n=10, 17.2%) (Relative risk: 1.38 and 2.83 respectively).

Conclusion & Significance: Viremia in JE infection is short lived and therefore real time - PCR is not useful for increasing case detections in endemic areas. Detecting antibody in both serum and CSF is the best combination.

Biography

Shantanu Prakash has completed his PhD in the Field of Virology and Infectious Diseases. He is basically involved with research, academics and patient management. He has more than 25 publications, four patents and thousands of sequences submitted in NCBI of different viruses and bacteria and has been involved in many intramural and extramural projects. He has experience in the field of designing molecular diagnostics assay for infectious diseases, molecular characterization & whole genome sequencing of different viruses. Currently, he is involved extensively on epidemiology & surveillance of AES in northern India with focus of newer emerging and reemerging pathogens. The present study is based on several years of experience in serological and molecular techniques.

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Ganesh Shanmugasundaram Anusuya, Virol-mycol 2017, 6:2 (Suppl)
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Immunological and virological discordance in patients on antiretroviral therapy: Still a grey area in HIV research

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Statement of the Problem: Effective ART generally results in immune reconstitution with increased CD4 and virologic suppression with undetectable HIV viral load (VL). However a major concern regarding ART is when there is a discordant response between CD4 count and the viral load. There are two types of discordant responses: Immunological failure (decrease in CD4 count) despite VL suppression or immune reconstitution (increase in CD4 count) despite VL failure. Interestingly both types of discordant responses to ART are related to AIDS defining events and mortality.

Discussion: The discordant response to ART is still a grey area in HIV research. Several studies done around the world have shown the prevalence of discordance ranging from 8% to more than 20%. Several causes attributed for discordant response were Zidovudine based regimen, protease inhibitors, older age, younger median age, lower baseline CD4 count, associated opportunistic infections and baseline viral loads. The wide differences in prevalence of discordance can be attributed to several factors including different criteria for immunological response, virologic suppression, sample size, variation in time to failure, ethnic background and importantly different types of ART regimens. We also recommend the global HIV related authorities to implement uniform guidelines for immunological and virological response, so that the wide difference attributed to the prevalence of discordance can be assessed and decided whether it is a true difference in prevalence. These discordant groups need to be carefully monitored for opportunistic infections and more studies are needed as to ways to improve the immunologic response in these patients and also to find out the exact cause of discordance. Further studies like exploring the genetic sequencing of this discordant group is required.

Biography

Ganesh Shanmugasundaram Anusuya has been working in the field of HIV/AIDS since 2006 in India. He has worked as Tamil Nadu State AIDS Control (TANSACS) STI Medical Officer, ART Medical Officer and HIV Community Care Centre Medical Officer. After Undergraduation, he completed his fellowship in HIV Medicine from Government Hospital of Thoracic Medicine (GHTM), Tambaram, which is a Centre of Excellence for HIV treatment, care and support in India. He has been selected as best outgoing fellow and worked as Chief Fellow in International Training and Education Centre for Health, India. Subsequently, he completed his MD in Community Medicine from Sree Balaji Medical College and Hospital (SBMCH), Bharath University, Chennai. He was the first person as Principal Investigator to study about discordant response to ART in patients enrolled in a Government programme in India. He has done international presentations of his research work in Africa, UK, India, France, and in USA with many publications. He has been nominated by GHTM and SBMCH for the SAARC Prize on HIV/AIDS 2016 pertaining to his contributions in HIV research. His areas of research interest are discordant response to ART, virology, Quality of Life, clinical immunology and public health. Currently he is involved in HIV research, undergraduate & postgraduate teaching, in-charge of free medical camp activities, guiding PhD candidates, conducting conferences, CME, and Public health awareness programmes in SBMCH as an Assistant Professor in Community Medicine department.

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Prevalence of dengue virus and their serotypes causing infection in eastern UP, India

Amresh Kumar Singh, Ruchi Mishra, Jayesh Pandey and Kusum Jasuja
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Statement of the Problem: Dengue is one of the most serious mosquito borne viral infections and in India it has dramatically expanded over the last few decades, with rapidly changing epidemiology. The spectrum of manifestations is ranging from asymptomatic/mild to dengue hemorrhagic fever (DHF), to a shock syndrome (DSS). Recent research shows that there is a clear shift in dengue virus (DENV) having mortality 0.5–3.5% in DENV-2. So, this study was conducted to know the prevalence of dengue by different methods, serotypes and its impact in epidemiology, mortality in UP, India.

Methodology & Theoretical Orientation: Prospectively designed study was performed and all laboratory records were analyzed. Blood samples were tested for dengue NS1 antigen, IgM antibodies, and nucleic acid detection by; dengue early NS1 enzyme linked immune sorbent assay (ELISA), IgM capture ELISA, and real time reverse transcriptase PCR (RT-PCR), respectively. Descriptive statistics were used and data were expressed in proportions. Nested RT-PCR was performed for serotyping.

Findings: Out of total 863 samples tested, 203 (23.52%) were found positive for dengue virus infection by combination of different methods with male preponderance (65%). Seasonal trend showed a gradual increase; starting from July with a peak in September (34.5%). The most common presentation was fever (97%), only 1% cases presented with hemorrhagic manifestations. Out of total of 203 cases, 176 (86.7%) patients had fever, 16 (7.9%) DHF and 11 (5.4%) had DSS. Dengue IgG prevalence increased with age, with the lowest (16.3%) in <20 years and the highest (78.3%) in 20-40 years. The range of platelet count was; 1,69,000-11000/cumm. A total of 189/863 (21.9%) specimens were positive for NS1, 64/863 (7.4%) for IgM and 177/863 (20.5%) positive by nested RT-PCR. Of 203 positive cases, maximum serotypes were 123 (60.6%) for DENV-2 and mixed serotypes in 06 (2.96%) patients. Mortality was seen in 15 cases (7.4%), with maximum occurring in 2016.

Conclusion & Significance: Dengue has established its transmission and high prevalence (23.52%) in UP with predominantly affecting adult males and preponderance by DENV-2 virus (60.6%). This study thus emphasizes the need for continuous sero-epidemiological diagnosis/surveillance for effective dengue control in India.

Biography

Amresh Kumar Singh has expertise in different disciplines of Clinical Microbiology and Infectious Diseases Evaluation and passion in improving the health and wellbeing of people living in Eastern UP, India. He has published many national as well as international journals and has teaching experience in teaching MBBS students, BSc (Nursing), MSc (Microbiology) and MD. He participated in project for detection of antimicrobial resistance in Gram negative *bacilli*, and Gram positive *cocci* like, ESBLs, AmpC, MBLs, MRSA, VRE etc. He worked on diagnostic mycobacteriology (culture and antimicrobial sensitivity techniques including culture on standard media, BacT/ALERT® 3D system, Mycobacteria growth indicator tube (MGIT) and *Mycobacterium tuberculosis* direct detection methods), antimicrobial susceptibility testing in *M. tuberculosis* complex (MTBC) and NTM (conventional and DNA-based methods) like line probe assay and mutational study; Virology-especially in dengue virus, HIV, enteroviruses (AES), viral encephalitis, acute hemorrhagic viral infection for their diagnosis and; tissue culture techniques for isolation and identification of different medically important viruses for PCR (conventional, nested, Real-time RT-PCR), DNA sequencing, spoligotyping, pulse-field gel electrophoresis, etc.

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Risk of Human papilloma virus in causing cervical cancer and the recent advancement in vaccination as a preventive measure

J Joonu
Bishop Heber College, India

Viruses account for about 20% of total human cancer cases. Although many viruses can cause various tumours in animals, only seven of them are associated with human cancers and are currently considered oncogenic viruses. These viruses include hepatitis B virus (HBV), hepatitis C virus (HCV), human papillomavirus (HPV), Epstein Barr virus (EBV), human herpes virus 8 (HHV8), Merkel cell polyomavirus (MCPyV), and HTLV-1. High-risk HPV strains are the major causes of cervical cancer and other ano-genital neoplasms as well as a significant proportion of head and neck tumors. The molecular mechanisms of viral oncogenesis are complex and may involve the induction of chronic inflammation, disruption of host genetic and epigenetic integrity and homeostasis. The push to vaccinate girls in the age of 9. HPV is recognized by mainstream medical authorities as the most commonly sexually transmitted infection in the US with an estimated 20 million persons infected and over 6 million new infections annually. Merck, the maker of the HPV vaccine Gardasil, presented information to the Food and Drug Administration (FDA) prior to approval that their vaccine increased the risk of pre-cancerous changes by 44.6% in women exposed to HPV types 16 or 18 pre-vaccination. HPV vaccines have been shown to prevent cervical dysplasia. The protection against HPV 16 and 18 has lasted at least 8 years after vaccination for Gardasil and more than 9 years for Cervarix.

Mechanism of action: The HPV vaccines are based on hollow virus-like particles (VLPs) assembled from recombinant HPV coat proteins. The virus possesses circular double stranded DNA and a viral shell that is composed of 72 capsomeres. Every subunit of the virus is composed of two proteins molecules, L1 and L2.

Side effects: To the vaccine-risk aware community, your time to get loud is NOW. Some of these reports might be potential cases of Complex Regional Pain Syndrome (CRPS), a rare condition of persistent pain that usually affects arms, legs, hands or feet after an injury or trauma to that limb.

Biography

J. Joonu has completed her PhD at the age of 31years from Bharathidasan university, Tiruchirappalli. She is working as Asst Prof, Dept of Zoology, Bishop Heber College in the permanent (aided) post. She has 8 years of teaching experience. She has published more than 8 papers in scopus indexed journals like AJMBES, & other international reputed journals and has six Nucleotide sequences in the GenBank. She has also presented many papers in the national conferences. She has received best paper award in the national conference. Her field of interest are environmental microbiology. Dr. J. Joonu has completed her PhD on 7-Sep-2016. The title of thesis is 'Bacterial metalloregulation and Antibiotic resistant character isolated from a heavy metal polluted environment. She has attended an International conference on Biodiversity and Bioactive natural products for human welfare sponsored by ICMR & DBT organized by the Dept of Botany at Govt Arts College, Karur. She has attended a National level Seminar on Leadership Training sponsored by UBCHEA organized by St. Christophers college of Education, Vepery, Chennai. Dr. J. Joonu has attended a Christian leadership training sponsored by AIACHE organized by RLC, Bishop Heber College, Trichy. College level workshop on 'Molecular & Immunological techniques' sponsored by DBT-Star College organised by Dept of Zoology, Bishop Heber College.

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Isolation, speciation and antifungal susceptibility testing of *Candida* isolates from various clinical specimens at a tertiary care hospital, Nepal

Sundar Khadka
National Public Health Laboratory, Nepal

Candida species are responsible for various clinical infections ranging from mucocutaneous infection to life threating invasive diseases. Identification of *candida* up to species level and its antifungal susceptibility testing has paramount significance in the management of *candida*l infections. CHROM agar media can be reliably used for speciation of *Candida* isolates which helps to rapid identification of *Candida* species. The objective of the present study was to determine different species of *Candida* from various clinical specimens and to determine antifungal susceptibility pattern of *candida* species to four antifungal agents namely ketoconazole, fluconzole, miconazole, and clotrimazole. A total of 100 consecutive *Candida* isolates from various clinical samples were studied. Growths on Sabouraud's Dextrose Agar were evaluated for colony appearance, macroscopic examination, Gram staining, germ tube test and urea hydrolysis test. They were further processed for *Candida* speciation on CHROM agar. Different species of *Candida* were differentiated based on type of growth and color of isolates on CHROM agar media. Antifungal susceptibility testing was performed and interpreted for all the isolates using disc diffusion method as recommended by Clinical and Laboratory Standards Institute (CLSI) M44-A document. Out of 100 *Candida* isolates, *Candida albicans* (56%) was the most common species. Among the non-albicans *candida* (NAC), *Candida* tropicalis (20%) was the commonest isolate followed by *Candida* glabrata (14%) and Candia krusei (10%) respectively. Overall susceptibility pattern of *Candida* species to clotrimazole found to be more sensitive (82%) followed by fluconazole (64%), miconazole (44%) respectively whereas ketoconazole was found to be more resistance (86%). *Candida albicans* was the predominant species responsible for various *candida*l infections. Among commonly used antifungal drugs clotrimazole, miconazole and fluconazole showed high sensitivity while ketoconazole was the least effective for both albicans and non-albicans group. CHROM agar is a simple, rapid & inexpensive method for identification of *Candida* species and is suitable for clinical laboratory with limited resources.

Biography

Sundar Khadka has completed MSc (Microbiology) from Institute of Medicine (IOM), Tribhuvan University Teaching Hospital, Nepal. He is currently working as Microbiologist at HIV Reference Unit, National Public Health Laboratory, Nepal. He has published papers on HIV drug resistance, dermatophyte infection, etc.

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Workshop

(Day 2)

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Parul Jain

King George's Medical University, India

Etiology of acute encephalitis cases in South East Asia

Statement of the Problem: Acute Encephalitis Syndrome (AES) is defined as acute onset of fever and a change in mental status and/ or new onset of seizures (excluding simple febrile seizures) in a person of any age at any time of the year. Several etiologies, including viruses, bacteria, fungi, parasites and toxins have been described as the causative agents of AES. This session will discuss the various etiologic agents of AES with special emphasis on viruses prevalent in South East Asian countries.

Methodology & Theoretical Orientation: We extensively reviewed the published literature on incidence and etiology of AES in outbreak and non- outbreak settings in different Asian countries and explored newer viruses or genotypic changes in viruses already known to cause AES in these countries.

Findings: The most common cause of AES in South East Asian countries is still Japanese Encephalitis Virus, despite the availability of an effective vaccine. This may be due to the recently reported genotype shift phenomenon. Besides JEV, other viruses that have been incriminated to cause AES in this region include Dengue, Chikungunya, West Nile Virus, Enteroviruses, Herpesviruses, Paramyxoviruses (Measles virus, Nipah virus), Human Parvovirus B19 and Parvovirus 4, Parechovirus, Adenovirus, Rabies virus, Kyasanur Forest Disease virus and Chandipura virus. The dominance of viruses varies with the geographical region and season. Encephalitis affects people of all ages, though pediatric age group is most commonly affected. A slight male predominance has been observed.

Conclusion & Significance: Since a wide range of viruses can cause AES, surveillance is essential for identifying the geographically predominant etiological agents for better management of patients as well as for formulating targeted prevention strategies.

Biography

Parul Jain is MD in Microbiology and has specialized in virology. She has keen interest in research, academics and patient management. She has several publications in peer reviewed national and international journals. She is a reviewer of several international journals. The present study is based on several years of experience in serological and molecular techniques combined with the clinical expertise.

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Shantanu Prakash

King George's Medical University, India

Issues in laboratory diagnosis of acute encephalitis syndrome

Statement of the Problem: Acute encephalitis syndrome is a group of neurologic manifestations caused by a plethora of organisms including viruses, bacteria, fungi, parasites and toxins. There is a large amount of cross reactivity between the different etiological agents. Also, besides Japanese Encephalitis Virus, no guidelines exist for establishing the diagnosis of specific etiologic agents. This session deals with the methods available, practical problems, their advantages and disadvantages for laboratory testing of agents of AES.

Methodology & Theoretical Orientation: An extensive literature search was done to summarize a comprehensive approach for the laboratory investigations in the diagnosis of AES.

Findings: Laboratory diagnosis is generally established by testing the serum or CSF sample to detect virus specific IgM antibodies. IgM antibodies are usually detectable 3 to 8 days after onset of illness and persist usually for 30 to 90 days. Therefore, positive IgM antibodies may reflect a past infection or vaccination. Sample collected within 10 days of illness onset may not have detectable antibodies and so Real Time PCR and antibody testing on a convalescent sample becomes important. For patients with IgM antibodies, confirmatory neutralizing antibody testing should be performed. In fatal cases, nucleic acid amplification, histopathology with immunohistochemistry, virus culture of autopsy tissues can also be useful.

Conclusion & Significance: The choice of test depends upon the prevalent etiological agent in a geographical region, patient's post-illness day of presentation to the health care centre, sample available and diagnostic facilities available. A laboratory network should be established for better patient management and optimum utilization of resources.

Biography

Shantanu Prakash is PhD in field of virology and infectious diseases. He is basically involved with research, academics and in academics, research and patient management. He has more than 25 publications, four patents and thousands of sequences submitted on NCBI of different viruses and bacteria and has been involved in many intramural and extramural projects. He has experience in the field of designing molecular diagnostics assay for infectious diseases, molecular characterization & whole genome sequencing of different viruses. Right now he is involved extensively on epidemiology & surveillance of AES in northern India with focus of newer emerging and reemerging pathogens. The present study is based on several years of experience in serological and molecular techniques.

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Neurologic complications of dengue virus infection

Statement of the Problem: Dengue virus infection is an extremely common mosquito borne infection in the world. Neurologic complications are increasingly being reported in dengue cases affecting both the central and peripheral nervous system. This session is aimed to discuss the incidence and clinical spectrum of neurologic complications of dengue, methods of their diagnosis, management and outcome in patients with dengue virus infection.

Methodology & Theoretical Orientation: An extensive review of the published literature was carried out using PubMed, Scopus and Google Scholar databases. The keywords used were: "Dengue AND Neurological", "Dengue AND Neuropathy", "Dengue AND Plexopathy", "Dengue AND Acute Encephalitis Syndrome", "Dengue AND Encephalopathy".

Findings: The neurologic manifestations may be seen in 0.5-7.4% of dengue cases. These include encephalopathy, encephalitis, aseptic meningitis, stroke (intracranial hemorrhages or thrombosis), myelitis, Guillain Barre syndrome, plexus involvement (brachial plexopathy, neuralgic amyotrophy, lumbosacral plexoopathy), nerve involvement (mononeuropathies, polyneuropathies) and muscle involvement (myalgias, myositis, rhabdomyolysis, hypokalemic paralysis). Diagnosis of dengue virus infection may be made by a combination of dengue NS1Ag/Real Time PCR and anti-IgM antibody in CSF. In serum samples, dengue infection may be confirmed by PCR/culture positivity, IgM detection or by four fold rise in titers of specific IgG antibodies in paired serum samples.

Conclusion & Significance: In endemic regions, dengue should be considered as a differential diagnosis of neurological disorders. Early recognition of these complications is required for proper management of cases and for preventing further disabilities.

Biography

Amita Jain is a multifaceted Medical Teacher who has contributed immensely in the Field of Microbiology. She has worked in many areas of Medical Microbiology including Tuberculosis, Bacteriology and Virology. She is a keen Researcher and has successfully completed many research and public health projects and published several papers, some of which are highly cited. She has guided 24 PhD students and provided guidance to many Under-graduate and Post-graduate students. She has established new diagnostic and research facilities, which are of immense help to medical students, researchers and patients. She has investigated several epidemics of swine flu, dengue, acute encephalitis, hepatitis, drug resistant TB, etc. She has provided diagnostic services to Uttar Pradesh State Health Services in the field of Virology and Tuberculosis. She has organized trainings for laboratorians and community awareness health programs.

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Scientific Tracks & Abstracts

(Day 2)

Session

Viral Pathogenesis and latency, Virulence | Neurovirology | Sexually Transmitted Viral Infections | Viral Hepatitis | Viral Haemorraghic Fever | Mycology and its diversity

Session Chair
Amita Jain
King George's Medical University, India

Session Introduction

Title: **Viruses and fungi do the "darndest" things**

Jyoti Somani, Alexandra Health, Khoo Teck Puat Hospital, Singapore

Title: **High prevalence of HPV in odontogenic cysts**

Mohammad Amin Khajavi, Mashhad University of Medical Science, Iran

Title: **APTT is a better indicator than thrombocytopenia alone to assess the need of platelet transfusion in dengue**

Kalyan Koganti, Help Hospital, India

Title: **Evaluation of leaf extracts of four plant species against rice blast pathogen (*Magnaporthe oryzae*)**

Matthew Omoniyi Adebola, Federal University of Technology, Nigeria

Jyoti Somani, Virol-mycol 2017, 6:2 (Suppl)
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Viruses and fungi do the "darndest" things!!

Jyoti Somani
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This plenary talk will be a case based discussion of two proven, serious viral infections in immune-competent patients as well as a fatal fungal infection in a foreign worker. The discussion for the viral infections will focus on the immune system response to viral infections versus the pathogenicity of the viruses themselves. The differential diagnosis and work up of infectious etiologies of transverse myelitis will be discussed. Finally, the latest data on the risk of primary varicella and H. Zoster in patients who received primary vaccination with the chicken pox vaccine will be reviewed. The case based discussion about the invasive fungal infection in a young foreign worker will include a discussion on the iatrogenic risk factors for fungal infections. There will also be a focused review on the changing epidemiology of fungal and yeast infections in relatively immune-competent patients as well as the optimal activity of the newer anti-fungal agents against the more unusual yeast and fungi that are more commonly being seen. In the era of newer anti-fungal agents it is important to know the nuances of the spectrum of activity as well as the various sites of penetration (CSF, bone, etc.) for these medications.

Biography

Somani is from the U.S.A and after completing Medical School at the University of Cincinnati College of Medicine, she completed her Internal Medicine Residency training at the University of Chicago Hospitals followed by a three year Infectious Disease Fellowship at Emory University. Her research focus was on T-cell immunity and vaccines in Bone Marrow Transplant patients. She was an Assistant Professor at Emory University where she focused on Transplant ID as well as general ID and HIV. She then spent 4 years in Chennai, India where she was involved in an HIV/AIDS and Leadership Training Fellowship. She then spent time in private practice in Infectious Diseases back in the U.S. Most recently she was in Jakarta, Indonesia where she was a Consultant for the Siloam Lippo Hospital group. Since Nov 2014, she has been a Senior Consultant in Infectious Disease for Alexandra Health/KTPH in Singapore.

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High prevalence of HPV in odontogenic cysts

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Introduction: Human papilloma virus is one of the DNA viruses which seems to be a causative factor in benign and malignant epithelial proliferation by synthesis of special oncoproteins so that they are considered as etiologic or cofactors in odontogenic cysts. Up to now, limited studies evaluated the presence of this virus in odontogenic cysts and tumors and also their conflicting results made it hard to conclude. Further studies are needed to make a rational hypothesis related to the role of these viruses in the development of odontogenic lesions.

Aim: The aim of this study was to evaluate the presence of HPV in odontogenic cysts.

Material & Method: 85 cases of odontogenic cysts from archive of oral and maxillofacial pathology department of Mashhad Dental School were collected. All cases were deparaffinized and subsequently hydrated and after that DNA was extracted from specimens. By PCR technique the presence of HPV was evaluated.

Results: 85 odontogenic cysts were evaluated in our study including 20 periapical cysts, 20 dentigerous cysts (DC), 25 calcifying odontogenic cysts (COC) and 20 odontogenic keratocysts (OKC). Regarding to our results, prevalence of HPV in periapical cyst were 15%, in OKC 25%, in DC 15%, in COC 24% (Ia 18.18%, Ib 25%, Ic 16.6%, II 50%). Statistical analysis showed that there is a statistically significant difference regarding to prevalence of HPV only between COC Ia, Ib, Ic types.

Conclusion: According to high prevalence of HPV in odontogenic cysts, we concluded that these viruses may have a role in etiology and pathogenesis of these lesions.

Biography

Mohammad Amin Khajavi has completed his DMD degree from the Faculty of Dentistry at Mashhad University of Medical Sciences. After working a short time, he entered the Post-graduate Periodontics Program at Mashhad Dental School. He has published several papers in dental journals and presented at various conferences.

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APTT is a better indicator than thrombocytopenia alone to assess the need of platelet transfusion in dengue

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Background & Aim: In India, platelet transfusions are given to large no. of patients suffering with dengue due to the fear of bleeding especially when the platelet counts are low. Though many patients do not bleed when the platelet count falls to less than 20,000, certain patients bleed even if the platelet counts are more than 20,000 without any comorbid condition (like gastro intestinal ulcer) in the past. This fear has led to huge amounts of unnecessary platelet transfusions which cause significant economic burden to low and middle income countries like India and also sometimes these transfusions end with transfusion related adverse reactions. The aim of the study is to identify the role of APTT in comparison with thrombocytopenia as an indicator to assess the real need of platelet transfusions.

Materials & Methods: A prospective study was conducted at a hospital in South India which included 176 admitted cases of dengue confirmed by immunochromatography. APTT was performed in all these patients along with platelet count. Cut off values of >60 seconds for APTT and <20,000 for platelet count were considered to assess the bleeding manifestations in dengue

Results: Among the total 176 patients, 56 patients had bleeding manifestations like malena, hematuria, bleeding gums, etc. APTT >60 seconds had a sensitivity and specificity of 93% and 90% respectively in identifying bleeding manifestations whereas platelet count of <20,000 had a sensitivity and specificity of 64% and 73% respectively.

Conclusion: Elevated APTT levels can be considered as an indicator to assess the need of platelet transfusion in dengue. As there is a significant variation among patients who bleed with respect to platelet count, APTT can be considered to avoid unnecessary transfusions.

Biography

Kalyan Koganti, is an Infectious Diseases Specialist from South India, and has done his MD (Internal Medicine) from Manipal and PG certificate (Infectious Diseases) from London School of Hygiene and Tropical Medicine. He has established a centre for infectious diseases and has submitted significant scientific data on endemic infections, HIV and hospital/community acquired infections.

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Evaluation of leaf extracts of four plant species against rice blast pathogen (*Magnaporthe oryzae*)

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Rice (*Oryza sativa*) is one of the most popular food crops in Nigeria. Its successful production has been drastically affected by blast disease caused by *Magnaporthe oryzae*. In vitro control of the pathogen by four medicinal plants (*Carica papaya, Azadirachta indica, Calotropis procera* and *Anacardium occidentale*) was assessed in this study. The extracts of the plants were prepared using aqueous and methanol, and agar well diffusion method was used to assess the toxicity of each extract. The pathogen was isolated from rice infected with blast disease. The results revealed the presence of one or more phytochemicals in each of the plant extracts. Among these were alkaloids, tannins, flavonoids, saponin, anthocyanin and phenol. All the extracts inhibited mycelia growth of *M. oryzae.* The potency of all the extracts increased with increasing concentration in the order; 50 mg/ml < 100 mg/ml < 150 mg/ml. The inhibitions by methanol extracts were higher and significantly different (P>0.05) from aqueous extracts. At the highest concentration tested (150 mg/ml), *A. occidentale* and *C. procera* gave the highest inhibitions (99.0 mm and 98.6 mm respectively) which were not significantly different (P<0.05) but different from *C. papaya* and *A. indica* (89.1 mm and 90.4 mm respectively). However, in all, *A. occidentale* aqueous and methanol extracts gave the highest percentage growth inhibition of the pathogen at all levels of concentrations tested while *C. papaya* aqueous and methanol extracts though effective were the least. Therefore, field trials of these four medicinal plants on the control of rice blast disease are recommended since they are easy to obtain and the extracts could easily be made via a simple process of maceration or infusion, they could be cheaper substitute for conventional drugs in controlling rice blast disease.

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