were collected for diagnostic testing at enrollment, once during days 14–28, and at 3 months after enrollment.

Results. Subject ages ranged from 1 to 63.2 years old (median of 4.9 years old), and underlying diseases were reported in 35 (30.7%) subjects. Standard-of-care, molecular, and serological testing identified pathogens in 56 (49.1%) cases, as detailed in the table. Of the 19 subjects who died, 18 presented with decreased consciousness and 5 were infected with *Rickettsia typhi*, which was clinically misdiagnosed in each case.

Conclusion. The findings from this study will improve the diagnosis and treatment of patients presenting with CNS syndromes in Indonesia. Additionally, the discovery of misdiagnosed, fatal etiologies highlights the general need for greater diagnostic testing capacity to aid clinicians and inform public health policy makers.

---

### Table: Table of etiology and status

| Etiology | Consciousness | Mortality (%)
|----------|---------------|---------------|
| Unknown (32) | Unknown (1) | Unknown (9) |
| HHV-6 (9) | Unknown (16) | Dengue (5) |
| Dengue (8) | Influenza (2) | Influenza (1) |
| Chikungunya (5) | E. coli (2) | Salmonella spp. |
| Influenza (3) | E. coli (1) | |
| Leptospira spp. (1) | S. pneumoniae (1) | |
| K. pneumoniae (1) | Chikungunya (1) |
| Streptococcus pyogenes (1) | |
| S. Typhi (1) | |
| RSV (1) | |
| Dengue (1) | |

### Table: Table of etiology and status

| Etiology | Consciousness | Mortality (%)
|----------|---------------|---------------|
| Unknown (32) | Unknown (1) | Unknown (9) |
| HHV-6 (9) | Unknown (16) | Dengue (5) |
| Dengue (8) | Influenza (2) | Influenza (1) |
| Chikungunya (5) | E. coli (2) | Salmonella spp. |
| Influenza (3) | E. coli (1) | |
| Leptospira spp. (1) | S. pneumoniae (1) | |
| K. pneumoniae (1) | Chikungunya (1) |
| Streptococcus pyogenes (1) | |
| S. Typhi (1) | |
| RSV (1) | |
| Dengue (1) | |

Disclosures. All authors: No reported disclosures.

1010. Viral Infections of the Central Nervous System in Qatar: Epidemiology, Pathogenesis and Clinical Outcomes

Fatma Ben Abd, MD; Mohammed Abukhattab, MD; Obada Salameh, MD; Ahmed Gohar, MD; Muna Al Masalmani, MD; Abdullatif Al-Khal, MD and Adeel Butt, MD, MS; Medicine, Hamad Medical Corporation, Doha, Qatar, Hamad Medical Corporation, Doha, Qatar

Session: 137. Adult CNS Infection

Friday, October 6, 2017: 12:30 PM

Background. Viral central nervous system (CNS) infections are common causes of morbidity and mortality globally. There are no existing data about viral CNS infections in Gulf Cooperation Council countries. We conducted this study to determine the etiology, clinical and epidemiological characteristics, and outcomes of viral central nervous system infection in patients in Qatar.

Methods. We retrospectively evaluated all cerebrospinal fluid findings from January 2011–March 2015 at any of the 7 hospitals in the Hamad Medical Corporation. We included those with an abnormal CSF findings and excluded those with missing medical records, no clinical evidence of CNS infection and those with proven bacterial infection. Based on pre-defined clinical and CSF (lab, culture, PCR) criteria, patients were classified as having meningitis, meningoencephalitis, encephalitis or myelitis. We reviewed the laboratory results to determine the proportion of persons with confirmed viral etiology.

Results. Among 7690 patients with available CSF results, 550 cases met the case definition criteria for viral CNS infection (meningitis 75%; meningoencephalitis 16%; encephalitis 9%; myelitis 0.4%). Two-thirds (65%) were male and 50% were between 16-60 years old. The most common presenting signs and symptoms are listed in the table. Persons of Southeast Asian origin accounted for 39.6% of all infections. A definitive virologic etiologic agent was found in 38%, with enterovirus being the most common (44.3%) followed by Epstein-Barr virus (31%) and varicella-zoster virus (12.4%). The clinical outcome was overall good, only 2 cases died and the rest were discharged to home. Among those with confirmed viral etiology, 83.8% received ceftriaxone (mean duration 7.3 ± 5.2 days), 38% received vancomycin (mean duration 2.7 ± 5.4 days) and 38% received at least one other antibiotic.

Conclusion. Viral etiology is common among those evaluated for CNS infection in Qatar, and is most commonly seen in Southeast Asian immigrants. Clinical outcomes are generally excellent in this group of patients. Antibiotics are overly used even when a viral etiology is confirmed. There is a need for clinician education regarding etiology and treatment of CNS infections.

Disclosures. A. Butt. Merck: Investigator, Grant recipient

1011. Acute Flaccid Myelitis Cases Presenting During a Spike in Respiratory Enterovirus D68 Circulation: Case Series From a Single Pediatric Referral Center

Sama Najmache, PhD; Jeffery Bender, MD; Jay Desai, MD; Tam Van, PhD; Lindsay Meyers, BS; Jay Jones, MS; Kanokporn Mongkolratanathai, MD and Jennifer Dien Bard, PhD; "Pathology and Laboratory Medicine, Children's Hospital Los Angeles, Los Angeles, California, Pediatrics, Children's Hospital Los Angeles, Los Angeles, California, Division of Neurology, Children's Hospital Los Angeles, Los Angeles, California, Biointerface Diagnostics, Salt Lake City, Utah, Biointerface Diagnostics, LLC, Salt Lake City, Utah

Session: 137. Adult CNS Infection

Friday, October 6, 2017: 12:30 PM
1012. Hearing Loss in Cryptococcal Meningitis Survivors
Sarah Loogren, MD1; Martha Montgomery, MD, MHS2; Nathan Yueh, BA2; Alice Namuddle, Nursing3; Joshua Rhein, MD3; Mahsa Abassi, DO4; Abdul Musubire, MMEd5; David Meyers, PhD6; David Bouwalle, MPH, MPH7, and ASTRO-CM Team; 1Department of Medicine, Division of Infectious Diseases and International Medicine, University of Minnesota, Minneapolis, Minnesota, 2University of Minnesota, Minneapolis, Minnesota, 3Infectious Disease Institute, Kampala, Uganda, 4Division of Infectious Diseases and International Medicine, Department of Medicine, University of Minnesota, Minneapolis, Minnesota, 5Infectious Disease Institute, Makerere University, Kampala, Uganda

Session: 137. Adult CNS Infection
Friday, October 6, 2017: 12:30 PM

Background. Hearing loss is a known complication cryptococcal meningitis (CM); however, there is a paucity of data. We aimed to describe hearing loss in CM survivors.

Methods. We assessed hearing via audiometry 8 and 18 weeks after diagnosis of CM through the period 2015-2016. We measured at 0.5, 1, 2, 4, 8, 12 and 20 kHz. Normal hearing was defined as minimum hearing level at 25 decibels (dB), mild at 25-39, moderate at 40-69, severe at 70-89, and profound hearing loss at 90+ dB. We compared clinical factors, fungal burden, and CSF parameters to evaluate factors associated with improvement (change in hearing level category).

Results. We evaluated hearing symptoms via audiogram at week 8 (n = 117) and week 18 (n = 98). At 8-weeks, 6 (5%) participants had normal hearing, 36 (31%) had mild hearing loss, 72 (62%) had moderate hearing loss, 3 (3%) had severe hearing loss and none had profound hearing loss. Of those with mixed hearing loss, 63 (54%) had mixed conductive + sensorineural hearing loss, 15 (13%) had sensorineural hearing loss, and 14 (12%) had conductive hearing loss. An additional 19 (16%) had sensorineural loss but unknown air conduction, and 3 (3%) did not have sensorineural loss but unknown bone conduction. We compared risk factors for hearing loss summarized in Table 1. We assessed 66 participants who had repeated audiograms at week 8 and week 18. Of those 31 (47%) had no change, 30 (45%) had improvement and 5 (8%) had worsening.

Conclusion. Moderate/severe hearing loss was common 8 weeks after diagnosis of CM. CM patients with mixed hearing loss and 20% had conductive hearing loss which represents a higher incidence than noted in other types of meningitis. The data is complicated by advanced HIV. Further research is needed evaluating immunologic factors causes hearing impairment in those who survived CM.

Table 1. Risk Factors for Hearing Loss 8 weeks post Cryptococcal Meningitis

| CSF Parameter | N | Normal Hearing or Mild Hearing | Moderate, Severe, or Profound Hearing | P-value via Chi-square |
|-------------|---|------------------------------|----------------------------------|----------------------|
| Diagnosis Opening Pressure | | | | |
| >25 cm H2O | 63 | 24 (17%) | 28 (45%) | 0.017 |
| Average Opening Pressure | 96 | 34 (31%) | 43 (41%) | 0.025 |
| >25 cm H2O | 116 | 14 (33%) | 26 (35%) | 0.84 |
| Quantitative Culture | 105 | 16 (42%) | 29 (43%) | 0.91 |

1013. Infectious Causes and Infectious Mimics of Acute Encephalitis: a Prospective Study from Thailand
Benjawat Sulakjirapura, MD1; Supaporn Wacharapluesadee, PhD2,3; Sinapat Pitchart, BSc2,4; Thiravat Hemachudha, MD, FACP2,5; Abhimben Saraya Wasontiwong, MD2; and Opas Putcharoen, MD, MSc6; 1Division of Infectious Diseases, Department of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, 2Neuroscience Center for Research and Development & WHO-CC for Research and Training on Viral Zoonoses, Bangkok, Thailand, 3Division of Neurology, Department of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Session: 137. Adult CNS Infection
Friday, October 6, 2017: 12:30 PM

Background. Previous reports of infectious encephalitis in Thailand showed viruses as major pathogens similar to worldwide data. Major viruses in studies varied among Japanese encephalitis, Enteroviruses and Herpesviruses. Infectious etiologies vary by regions, seasons and preventive strategies done. Dynamic change of pathogen is believed to occur continually. Local data in each region is important to develop an algorithm of investigations for the cost-effectiveness.

Methods. This is a prospective study of patients with encephalitis between January 2014 to March 2017 at a tertiary hospital in Bangkok. Microbiological and serological studies were done according to an algorithm based on initial cerebrospinal fluid analysis. Initial tests were for bacteria, fungus, mycobacterium and commonly prevalent viruses. Further tests for infectious etiology were done by stepwise approach if initial tests yielded negative.

Results. Fifty-two patients were enrolled. Twenty-seven (51.9%) patients had no etiology identified. Three patients (5.8%) had bacterial etiology, 10 (19.2%) had viral etiology, and 2 (3%) had immune-mediated encephalitis. Among viral etiologies, VZV was identified in 4 cases, HSV in 3 cases, CMV in 2 cases and measles in 1 case. Baseline characteristic of HIV infection or skin rash was associated with viral infection (p = 0.031, p = 0.006). Patients with VZV encephalitis might not have active skin lesion. The presence of prodrome, duration of prodrome, neurological onset to peak and physical examination of focal neurodeficit, meningitis, irradiation signs, and reflex were similar across all etiologies. White blood cell [mean 7.0 (range 0–30) cells/µL] and protein [mean 32.5 (range 11–70.4) mg/dL] from the cerebrospinal fluid of noninfectious etiologies tended to be lower than the levels of infectious causes (p = 0.009, p = 0.020). All patients survived at 7 days after admission.

Conclusion. A quarter of patients presenting with acute encephalitis in this study had autoimmune and paraneoplastic encephalitis. Infections caused by herpesviruses was the most prevalent viral etiology. Autoimmune and paraneoplastic encephalitis should be kept in the differential diagnosis in patients with acute encephalitis.

Disclosures. S. Wacharapluesadee, USAID: Investigator, Research grant. O. Putcharoen, USAID: Grant Investigator, Research grant.

1014. Long-term Outcomes of Acute Aseptic Encephalitis In Adults - a Single Center Study
Marija Kusulja, MD1; Marija Santini, MD, PhD2, and Neven Papić, MD, PhD2; 1University Hospital for Infectious Diseases Zagreb, Zagreb, Croatia, 2School of Medicine, University of Zagreb, Zagreb, Croatia

Session: 137. Adult CNS Infection
Friday, October 6, 2017: 12:30 PM

Background. Encephalitis is a heterogeneous syndrome associated with significant mortality and neurophysiological sequelae. The etiology is identified in only 50%-70% of patients. The aim of this study was to describe long-term outcomes of patients with aseptic encephalitis of various etiologies.

Methods. The study population consisted of a retrospectively identified cohort of consecutive adult patients diagnosed with viral and etiologically undiagnosed encephalitis during a 24-month period (2014-2015) at the University Hospital for Infectious Diseases Zagreb, Croatia. Clinical, laboratory data and short-term outcomes were not available for 26 patients. The study population included 159 adult patients (101 (63.9%) males, 58 (36.1%) females). The mean age was 54.2 (range 10–75) years. All patients were divided into three etiological groups: viral etiology (n = 73), undiagnosed etiology (n = 86), and other etiology (n = 10). The median follow-up time was 18 months (range 2–72). The clinical follow-up was conducted in person and over the phone. The main endpoint was measured by the GOS (Global Outcome Scale) score at 12 and 24 months after the onset of disease. The main result was a significantly lower GOS score in the group of patients with viral etiology compared to the group of patients with undiagnosed etiology. The rate of patients in the group of patients with viral etiology who had a GOS score ≥3 was significantly lower compared to the group of patients with undiagnosed etiology.

Conclusion. The patients with acute aseptic encephalitis have a significant rate of mortality and neurophysiological sequelae. The etiology is identified in only 50%-70% of patients. Long-term follow-up is necessary because patients in the group of patients with viral etiology have a significantly lower GOS score compared to the group of patients with undiagnosed etiology.

Disclosures. All authors: No reported disclosures.