262. Epidemiology, Treatment, and Clinical Outcomes of Methillin-Sensitive Staphylococcus aureus (MSSA) Bacteremia Complicated by Central Nervous System (CNS) Disease within the Veterans Affairs (VA) Healthcare System Jill Provzunik, MD; Jesse Sutton, PharmD, MSc; Emily Speak, MD, MSc; 1University of Utah, Division of Infectious Disease, Salt Lake City, Utah; 2Veterans Affairs Healthcare System, Salt Lake City; Utah Session: P-13. CNS Infection Background. The epidemiology of methillin-sensitive Staphylococcus aureus (MSSA) bacteremia complicated by central nervous system (CNS) involvement is not well defined or described. We aimed to identify patients with MSSA BSI with CNS disease using imaging reports and define the epidemiology, characteristics, management, and associated clinical outcomes.

Methods. We conducted a retrospective study of inpatients (1/1/2014 to 10/31/2019) with MSSA BSI and head imaging (± 7 days of BSI). Imaging reports were categorized into probable, possible, or no CNS involvement. Charts were reviewed to assess source and metastatic sites of infection, severity of illness, and clinical course. Demographics, comorbidities, antibiotic use, and morbidity and mortality were electronically extracted from the corporate data warehouse. Primary antibiotic treatment was defined as the antibiotic received for the highest proportion of treatment course.

Results. 1852 patients had MSSA BSI and a head imaging performed. 151 (8%) had probable and 56 (3%) had possible CNS involvement. Embolic disease (n=167 [87%]) was the most common type of CNS disease (136 [83%] with probable CNS disease). Overall, high severity of illness defined by ICU admission (52%), vasopressor (7%), or mechanical ventilation (15%) was observed overall and was more common with probable CNS disease. Cefazolin was the most common primary antibiotic (71 [40%]), followed by nafcillin or oxacillin (51 [29%]); 16 (31%) patients had an adverse reaction to cefazolin (33% of patients by day 9 (43%) by day 90. Recurrent CNS infections and bacteremia by day 90 was observed in 11 (6%) and 6 (3%).

Conclusion. We propose a definition of MSSA bacteremia complicated by CNS disease. CNS disease with MSSA bacteremia is infrequent with the most common manifestation being embolic disease. A significant number of patients with MSSA bacteremia were treated with cefazolin despite evidence of CNS disease. Overall mortality was high. Given higher rates of adverse drug events with nafcillin or oxacillin, comparative effectiveness studies are needed to further define the role of cefazolin for MSSA bacteremia with CNS disease.

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263. Antibody Spill-Over vs. True Coccidioidal Meningitis in a Patient with HIV/AIDS and Disseminated Coccidiodomycosis Renee E. Newby, MD1; Danny L. Sam, MD2; Joseph Cooper, MD3; Kaiser Permanente Santa Clara, SAN JOSE, California; 4Santa Clara Valley Medical Center, San Jose, California Session: P-13. CNS Infection Background. The diagnosis of coccidioidal meningitis merits life-long antifungal therapy given high rates of disease recurrence. Accurate diagnosis is important. Antibody spill-over into cerebrospinal fluid (CSF) can happen when serum titers are high. We present a case of antibody spill-over vs. true coccidoidal-resistant coccidioidal meningitis.

Methods. A 49-year-old man presented with 6 months of intermittent fever, myalgia, decreased appetite, vomiting, diarrhea, unsteadiness and 60-pound weight loss. He was recently diagnosed with HIV and a prior lymph node biopsy had grown Cocccidioides immitis (C. i) for which he was given fluconazole 100 mg twice daily.

Results. Vitals revealed a temperature of 102°F. He was cachectic and a 0.5 cm right supraclavicular lymph node was palpable. No meningeal signs were appreciated. CD4 count was 50/μL (18%). HIV-1 viral load 2,969,945 copies/mL. Computed tomography (CT) of the abdomen/pelvis suggested lung and spleen involvement. Serum C. i enzyme immunoassay (EIA) was 1.38 ng/mL, immunodiffusion (ID) was positive and complement fixation (CF) titer was 1:256. C. i was isolated from expectorated sputum. CSF cell count was normal, but ID was positive and CF titer was 1:2 however, lab reported concern for spill-over due to high serum IgG titer. He left against medical advice with fluconazole for 400 mg daily. He was hospitalized a month later for failure to thrive. MRI head revealed enlarged lateral and third ventricles with increased periventricular hyperintensity concerning for coccidoidal meningitis. Repeat serum studies were stable. CSF revealed CF 1:4 and C. i antigen by EIA 1.31ng/mL, distinguishable from spill-over and meningitis. Susceptibility results showed resistance to fluconazole and amphotericin B with minimum inhibitory concentrations (MICs) of 50 and 4 respectively, posaconazole susceptibility (MIC < 1) and itraconazole border-line (MIC 3.7). Despite amphotericin B resistance, it was used for bridge to posaconazole. ARV was initiated after concern for immune reconstitution had resolved.

Conclusion. This case highlights the difficulty in making an accurate diagnosis of coccidioidal meningitis. It also describes a fluconazole-resistant C. i isolate in the setting of prolonged low-dose fluconazole therapy.

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264. A 20-year Study of Intracranial Pyogenic Complications of Sinusitis in Children Jennifer Tat, MB BCH BAO, MSC1; Mina Smiljekovic, MD2; Susan E. Richardson, MD, FRPC2; Aaron Campigotto3; Sharon Cushion, MD, NRC3; Gary O. Huycke, MD; Nikolaus E. Wolf, MD, MSc, FRSC3, FAC3S; Peter Dekruyff, MD, PhD, FRSC3; Ari Bitunon, MD3; 1The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada; 2The Hospital for Sick Children, Toronto, Ontario, Canada; 3Hospital for Sick Children, Toronto, ON, Canada Session: P-13. CNS Infection Background. Intracranial pyogenic complications of sinusitis in children are relatively uncommon but can lead to serious sequelae. The objective of this study was to characterize the clinical, epidemiologic and microbiologic characteristics of children with such complications over a 20-year period (2000–2019).

Methods. Single-center retrospective chart review. Cases were identified based on International Classification of Diseases (ICD)-10 diagnostic codes (intracranial abscess or granuloma, extradural and subdural abscess, Pott’s puffy tumor, acute or chronic sinusitis) and by reviewing all microbiological samples of intracranial pus, tissue or fluid.

Results. 108 cases of clinically and/or radiologically diagnosed sinusitis were included after review of 1591 charts. The majority were adolescents (median age 12, IQR 9–14); 72 were male (67%). The most common presenting symptoms were fever (84%), headache (87%) and symptoms of upper respiratory tract infection (57%). Median symptom duration was 10 days (IQR 5-21) and 55 cases (51%) received oral antibiotics prior to admission. The most frequent complications were epidural empyema (n=50, 46%), subdural empyema (n=46, 43%) and Pott’s puffy tumor (n= 31, 29%). 50% (n=54) underwent neurosurgery, of which 20% (n=11) required multiple craniectomies. 38% (n=41) underwent otorlaryngological surgery. Microbiological data from sterile specimens demonstrated single organisms in 36 cases (59%) and polymicrobial growth in 25 cases (41%). The most frequently identified pathogens were Streptococcus pneumoniae (n=40, 66%) followed by Pasteurella species (n=10, 16%) and Prevotella species (n=10,16%). Most cases were treated with combination anti-biotic therapy (n=68, 63%) and 14% (n=15) with a carbapenem. The median duration of intravenous antibiotic therapy was 51 days (IQR 42-80). One child died and 23% (n=25) suffered neurological sequelae (median follow-up 344 days). 48 cases (44%) occurred between 2014-2019.

Conclusion. Intracranial complications of sinusitis continue to cause significant morbidity in children. The predominant causative pathogen was Streptococcus pneumoniae. Polymicrobial infections are common, confirming the need for prolonged broad-spectrum antibiotic treatment.

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265. Rocky Mountain Spotted Fever Encephalopathy Sangetha Isaac, MD1; Mohammed Afzal Pasla, MD1; 2Jean H. Vincent, Internal Medicine & Infectious Disease; Khushdeep Chahal, MD2; 1North Alabama Medical Center, Florence, Alabama; 2North Alabama Internal Medicine Residency Program, Florence, Alabama Session: P-13. CNS Infection Background. Rocky mountain spotted fever (RMSF) is a rickettsial disease with incidence of 11 per million and is rarely associated with encephalopathy. We discuss a patient with RMSF encephalopathy, highlighting the natural course.

Methods. A 54 year old man with history of hypertension and chronic progressive external ophthalmoplegia, presented with waxy and waning confusion, headache, slurred speech, agitation and difficulty swallowing. He was afibrile and hemodynamically stable. Investigations showed leukocytosis of 15,400 and mild transamimities. Computed-tomography (CT) head was unremarkable. Lumbar puncture revealed normal pressure. Cerebrospinal fluid (CSF) analysis was not done. He was given glucose 76 and moderately elevated total bilirubin 114. Urine drug screen was negative. Blood, fungal, and CSF cultures were sent and empiric therapy with vancomycin, ceftriaxone, ampicillin and acyclovir commenced, for suspected
encephalitis. High dose intravenous IgG/day was given due to suspicion of auto-immune encephalitis. MRI brain showed cerebral atrophy. There was slight abnormal FLAIR/T2 signal within the medial aspect of the temporal lobes, right more than left.

**Results.** Occupational history revealed that he was a logger by profession, which steered our focus on tick borne diseases. Extensive serologic evaluation was requested and RMSF IgG titres came back positive at 1:512. Doxycycline was added, while ampicillin and ceftriaxone were discontinued. With doxycycline, patient made remarkable recovery and was discharged home well. However, he returned within 48 hours with recurring encephalopathy. His clinical presentation remained convincing for RMSF encephalitis, with the natural course of the illness spanning over weeks, with waxing and waning symptoms. Patient was managed with IV doxycycline for 72 hours following which he returned to his baseline mental status.

Figure 1. MRI findings

Figure 2. Serological investigations

**Conclusion.** Patient’s occupation played a pivotal role in establishing diagnosis. In RMSF, IgM and IgG antibodies appear 7 to 10 days after the onset of the illness, and a fourfold rise in IgG is diagnostic of seroconversion and recent illness. Patient’s waxing and waning symptoms, persisting for weeks and remarkable response to doxycycline, are typical features of RMSF encephalitis.

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### 266. A Rare Case of Human Herpesvirus-6 (HHV-6) Encephalitis in an Immunocompetent Host

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**Session:** P-13 CNS Infection

**Background.** Human Herpesvirus-6 (HHV-6) seroprevalence rates in the United States range from 72-95%, but clinical illness in the adult population is extremely rare, which often presents as meningoencephalitis in immunocompromised hosts. The literature on HHV-6 encephalitis in immunocompetent adults is limited to a select number of case reports, ultimately providing scant treatment guidance for clinicians.

**Methods.** This is a unique case describing the clinical course of confirmed HHV-6 encephalitis in an immunocompetent host.

**Results.** The patient is a 77-year-old immunocompetent female presenting with two days of global aphasia and increased muscle tone. She presented hypertensive with a leukocytosis. Work-up for acute stroke was unremarkable, but lumbar puncture revealed an elevated white blood cell (WBC) count of 39 leukocytes/mm³ with a lymphocytic predominance. BioFire FilmArray® Meningitis/Encephalitis panel (FAME) demonstrated positivity for HHV-6 with a viral load of 8,500 copies/mL in the cerebrospinal fluid (CSF) and 4.1 million copies/mL in serum. The patient experienced temporary improvement in her aphasia after being initiated on intravenous (IV) ganciclovir for 12 days. Shortly after the initiation of therapy, her aphasia worsened with repeat CSF studies demonstrating an increased viral load to 35,700 copies/mL. She was subsequently transitioned to IV fosfomycin for HHV-6 coverage and discharged after completing 21 days of therapy with marked improvement in her symptoms. Two weeks later, the patient was readmitted for recurrence of aphasia. MRI brain at that time was unremarkable with repeat lumbar puncture demonstrating a WBC count of 8 with 113 copies/mL of HHV-6. Serum levels were also elevated to 4.7 million c/mL. The patient was restarted on fosfomycin but continued to deteriorate clinically. She ultimately experienced multiple seizure-like episodes resulting in a noncommunicative, somnolent state. She was transitioned to hospice care and passed away 2 days after discharge.

**Conclusion.** Despite the use of recommended medical therapies, the mortality and clinical progression of HHV-6 in immunocompetent adults is still unpredictable. Further studies are needed in this population to provide guidance for clinicians.

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### 267. Therapeutic Management of Bacterial Brain Abscess: An Overview of Diagnosis and Outcomes

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**Session:** P-13 CNS Infection

**Background.** We describe and compare the clinical, diagnostic evaluation and outcomes of patients who underwent therapeutic management for pyogenic brain abscess.

**Methods.** We retrospectively reviewed adults who presented with pyogenic brain abscess from January 1, 2009 through June 30, 2020.

**Results.** 231 patients were identified during the study period. Sixty-one (26.4%) patients received antibiotic therapy alone, and 170 (73.6%) had a combination of antibiotic therapy and surgical intervention. The median age for the medical and combined therapy group was 59 years and 58 years, respectively. Patients who received medical treatment had a higher prevalence of infective endocarditis than those who received...