(ii) CSF finding: >250 leukocytes/mm³, (iii) at least one of the following clinical findings, ie. impairment of consciousness, neck stiffness, nausea/vomiting. Identification of the infecting bacteria and determination of antimicrobial susceptibility were performed using the VITEK 2 automated system (BioMérieux Inc, Mercy Létol, France) and conventional methods. Resistance to methicillin was tested by E-test (bioMérieux). Antimicrobial susceptibility tests were evaluated according to Clinical Laboratory Standards Institute (CLSI) criteria until 2014 and EUCAST between 2015 and 2021. Chi-square and Student T tests were used for statistical comparison.

**Results.** A total of 9 patients in MSS-NM, 41 patients in MRS-NM group fulfilled the study inclusion criteria. Age, gender, and CSF findings (except CSF glucose was significantly lower in MSS-NM) were similar in both groups (Table 1). Besides, EOT clinical success and overall success (EOT success followed by one-month survival without relapse or reinfection) rates were similar (Table 1). Relapse and reinfection rates during post-treatment one month period were 0%-0% and 0%-6.6% in MSS/MRS-NM, respectively. In MRS-NM group reinfection pathogens were Acinetobacter baumannii and Pseudomonas aeruginosa after 12 and 30 days end of treatment.

**Characteristics of NM**

| Characteristics | Methicillin sensitive | Methicillin resistant | p |
|-----------------|----------------------|-----------------------|---|
| Female          | 3                    | 38                    | 0.716 |
| Age             | 48.55 +/- 12.9       | 51.43 +/- 13.14       | 0.553 |
| Intracranial tumor | 3                  | 14                    | 1 |
| Intracranial haemorrhage | 0               | 13                    | 0.089 |
| Hydrocephalus   | 3                    | 18                    | 0.716 |
| Shunt           | 5                    | 23                    | 1 |
| External ventricular drainage | 0     | 8                     | 0.321 |
| Mean CSF leukocyte count | 703.33 +/- 360 | 578 +/- 288.89        | 0.266 |
| Mean CSF protein | 180 +/- 114.55       | 465.71 +/- 1050.93   | 0.47 |
| Mean CSF glucose | 16 +/- 19.79         | 47.93 +/- 36.98       | 0.015 |
| Day 3-5 microbiological success | 5/9 (55.5%) | 27/41 (65.8%) | 0.704 |
| EOT clinical success | 9/9 (100%) | 37/41 (90.2%) | 1 |
| Overall success | 9/9 (100%)          | 35/41 (84.5%)         | 0.575 |

**Conclusion.** Overall success in MSS-NM was acceptable while it was non-significantly lower in MRS-NM. The medical community should seek better infection control measures from NM.

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269. A Review of Gram Negative Endogenous Endophthalmitis at University Hospital in Newark

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**Session:** P-13. CNS Infection

**Background.** Endophthalmitis (EO) is an ocular emergency characterized by intraocular inflammation, usually in response to infection. While most cases are exogenous, gram negative (GN) EO account for 10-24% of all cases, and endogenous EO (EEO) account for 2-8% of all cases. Risk factors for EEO include diabetes mellitus (DM); IV drug use, and indwelling catheters. Major sources of infection are urinary tract infections (UTI), liver abscesses, pneumonia, and bacteremia. Common pathogens include K. pneumoniae, P. aeruginosa, and H. influenzae. Outcomes are poor, with only 20% of patients achieving improved visual acuity, and 30-40% requiring enucleation.

**Methods.** Retrospective analysis was performed on patients diagnosed with EO (n=89) at University Hospital in Newark from January 2016 to December 2020 using ICD-10 codes H44.0-H44.09, H44.1, and H44.19. Patients included were 18 years of age or older with culture proven GN endogenous EO (GNEEO) (n=7). Outcomes included anatomical success, functional success, and mortality at 28 days and 3 months.

**Results.** 7 of 89 patients met criteria for GNEEO (median age 67, 4 males, 71.4% Hispanic/Latino). Comorbidities included hepatobiliary disease (57.1%) and DM (42.9%). All 7 patients presented with ocular symptoms and 3 had non-ocular symptoms. Primary sources of infection included UTI, prostate abscess, and pneumonia/empyema. Eye cultures identified Pseudomonas in 4 patients and Klebsiella in 3 patients. Mean antibiotic length was 17.7 days with 6 patients receiving intravitreal antibiotics. Enucleation was performed in 3 patients. 2 patients had functional success and 4 had anatomical success, with 0 mortality at 28 days and 3 months.

**Ocular Symptoms on Presentation**

| Symptom         | # of Patients |
|-----------------|--------------|
| Bilateral       | 1            |
| Unilateral      | 6            |
| Pain            | 6            |
| Redness         | 4            |
| Hypopyon        | 4            |
| Decreased perception of light | 4 |
| Decreased visual acuity | 2* |
| Uveitis         | 2            |
| Retinitis       | 1            |

**Table 1. Ocular symptoms on presentation of cases of gram negative endogenous endophthalmitis**

**Positive Cultures**

| Outcome         | # of Patients |
|-----------------|--------------|
| Eye cultures    | 7            |
| Urine cultures  | 2            |
| Blood cultures  | 1            |

**Table 2. Positives cultures obtained from cases of gram negative endogenous endophthalmitis**

270. New Onset Seizure Presented as Neurosyphilis

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**Session:** P-13. CNS Infection

**Background.** The term “neurosyphilis” refers to infection of the central nervous system (CNS) by Treponema pallidum. It can occur at any time after initial infection. Early in the course of syphilis, the most common forms of neurosyphilis involve the cerebrospinal fluid (CSF), meninges, and vasculature (asymptomatic meningitis, symptomatic meningitis, and meningovascular disease). Late in disease, the most common forms involve the brain and spinal cord parenchyma (general paralysis of the insane and tabes dorsalis).

**Methods.** A 31-year-old man who suddenly developed a new onset generalized tonic-clonic seizure, was admitted to the emergency department. He had no history of epilepsy and denied any vision or gait problems. The brain MRI showed no abnormality. He was admitted for further workup.

**Results.** No history of syphilis and did not get treated at that time. His most recent RPR titer was 1:16. HIV serology and other STD tests were all negative. His and his 3 kids were negative for syphilis. Due to serological evidence of syphilis and neurological symptoms, we arranged him to get a lumbar puncture to rule out neurosyphilis.

**Conclusion.** Although rare, GNEEO causes significant morbidity, with only 2 recovering visual acuity and 3 requiring enucleation. Risk factors, sources of infection, and microbes were all consistent with those in previous reports. Hepatobiliary disease and DM were the most prominent risk factors while sources of infection included UTI and empyema. Eye cultures were positive for K. pneumoniae and P. aeruginosa, two common pathogens previously identified. This case series highlights the importance of prompt recognition and initial treatment of GNEEO with empiric coverage that includes vancomycin and ceftriaxone.

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In the induction phase (81.3%). The most common recommendation was to continue respectively. The median TMP-SMX duration was 350 days (P=.31). The most common BA location was the frontal lobe (43.8%). The median age was 64 (IQR 58-69) years, and the majority were males (77.3%). Compared to treatment interruption. While data exists on the use of SMX level monitoring in correlating a comprehensive and robust understanding of the disease, particularly for long-term outcomes after acute diagnosis and treatment. In particular, there is a growing body of literature showing increased concern for recurrent encephalopathic disease several weeks after initial HSE recovery. We sought to describe and analyze features associated with all cause readmissions and encephalopathy associated readmissions amongst HSE cases.

Methods. HSE hospitalizations and 60-day rehospitalizations were assessed in a retrospective cohort using linked hospitalizations from the Healthcare Utilization Project (HCUP) National Readmission Database (NRD) from 2010 through 2017. Risk factors for all-cause readmissions and encephalopathy associated readmissions were assessed with a weighted logistic regression model.

Results. There were 10,272 HSE cases in the United States between 2010 and 2017, resulting in a national rate of 4.95 per 100,000 hospitalizations. A total of 23.7% were readmitted at least once within 60 days. Patients that were readmitted were older (mean age 62.4 vs. 57.9, P<0.0001), had a greater number of procedures at the index hospitalization (aOR 1.03, P<0.0001) and have a higher Charlson comorbidity score (aOR 1.11, P=0.0001). Amongst those readmitted, 465 (16.5%) had an encephalopathy related diagnosis. Over eight years, the prevalence of encephalopathy associated readmissions increased from 0.12 to 0.20 (figure 1). Encephalopathy specific readmissions were found to be associated with greater age (mean age 6.9 vs. 61.7, P=0.004) and findings of cerebral edema at index hospitalization (aOR 2.16, P<0.0001).

Most Common Diagnosis Groups Listed at the 60-Day Readmission

Conclusion. HSE 60-day readmissions are relatively common, particularly among older and sicker individuals. Readmissions were often associated with new neurological symptoms concerning for either recurrent or new encephalopathic events. Early signs and symptoms of neurological disease at index were correlated with encephalopathy specific readmissions.

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272. Clinical Utility of Sulfamethoxazole Serum Level Monitoring in the Treatment of Brain Abscesses due to Nocardia Species

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Session: P-13. CNS Infection

Background. Although trimethoprim-sulfamethoxazole (TMP-SMX) has consistently demonstrated significant interindividual variability, therapeutic drug monitoring is used to optimize dosing and avoid adverse reactions that may contribute to treatment interruption. While data exists on the use of SMX level monitoring in pneumocystis, there is a lack of data in SMX serum monitoring utility for invasive Nocardia infections.

Methods. We retrospectively reviewed adults who received TMP-SMX to treat nocardial brain abscesses (BA) and underwent SMX testing level from January 2010 to December 2020.

Results. Overall, 24 patients had Nocardia spp. BA; Twenty-two (91.7%) were treated with TMP-SMX, and 16/22 (72.7%) had a documented SMX serum level. The median age was 64 (IQR 58-69) years, and the majority were males (77.3%). Compared to those who did not have documented SMX serum level, patients with SMX levels had a higher prevalence of hemodialysis (HD, 42.9% vs. 33%; P=.99) and malignancy (50% vs. 33.3%; P=.65). The most common BA location was the frontal lobe (43.8% vs. 33.3%; P=.99), with a single (68.8% vs. 50%; P=62) and smaller (1.3 vs. 1.9 cm; P=.58) brain fluid collection, and with fewer midline shift (6.3% vs. 16.7%; P=.48), respectively. The median TMP-SMX duration was 350 days (P=.31). The most common dosing was 2-double strength, three times a day (31.8%). The SMX median was 158.5 (IQR 120-218) mcg/mL, collected at two hours (75%) post-administration in the induction phase (81.3%). The most common recommendation was to continue therapy based on the level results. Eleven (46%) patients had a level >150 mcg/mL, and 5 (45.5%) reported drug toxicity, including nausea in 3, acute kidney injury in 2, and thrombocytopenia in 2 patients. Ninety-four percent of the patients with SMX levels had surgical intervention for therapeutic purposes vs. 83% of those without it (P=.65). A total of 11 (50%) patients were cured, 3 (18.8%) relapsed, and 2 (12.5%) died.

Conclusion. Patients with SMX serum level monitoring are more likely to be on HD, during the induction phase and among those with higher and more frequent dosing. About half of patients with SMX levels >150 mcg/mL experienced drug toxicity; however, SMX levels did not impact patient outcome and length of treatment.

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273. Neurological Involvement Caused by Intracellular Bacteria

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Session: P-13. CNS Infection

Background. Infection of the central nervous system is a severe and fatal disease. Causative agents include bacteria, viruses or fungi. Intracellular bacteria are not only overlooked, but also underdiagnosed. We aimed to study the clinical, laboratory and evolutionary features of neurological involvement caused by intracellular bacteria.

Methods. We conducted a retrospective study including all patients hospitalized in the infectious disease department for neurological involvement caused by intracellular bacteria between 1995 and 2020. The diagnosis was confirmed by serology.

Results. We encountered 76 cases among which 43 were males (56.6%). The mean age was 32±18 years. The revealing symptoms included fever (97.4%), cephalalgia (73.7%), vomiting (64.5%) and arthralgia (51.3%). Lumbar puncture revealed a median white blood cell count of 120(56-340)/mm³. Lymphocytic pleocytosis was noted in 50% of the cases. Elevated cerebrospinal fluid (CSF) protein level was noted in 37 cases (48.7%) with a median of 0.84[0.6-1.3] g/L. Low CSF glucose level was noted in 14 cases (18.4%). There were 70 cases (92.1%) of meningitis and 6 cases of meningoencephalitis (7.9%). The causative agent included Rickettsia species in 47 cases (61.8%), Brucella species in 17 cases (22.4%) and Mycoplasma species in 12 cases (15.8%). Laboratory investigations included elevated C-reactive protein levels (40.7%), thrombocytopenia (32.8%) and increase in hepatic enzyme levels (21%). Anemia was noted in 27 cases (35.5%), leukocytosis in 24 cases (31.5%) and leucopenia in 6 cases (7.8%). Blood and CSF cultures were positive for Brucella in 2 cases (2.6%) and 5 cases (6.5%), respectively. The mean duration of treatment was 156±94 days for brucellosis cases, 9±4 days for rickettsiosis cases and 10±6 days for Mycoplasma cases. The disease evolution was favorable in 72 cases (94.7%). Four patients were dead (5.3%). Complications were noted in 5 cases (6.5%) and sequelae in 2 cases (2.6%).

Conclusion. Intracellular bacteria including Brucella, Rickettsia and Mycoplasma species should be considered in front of neurological symptoms. Meningitis with lymphocytic pleocytosis was the most common clinical presentation. An early diagnosis followed by the adequate therapy might avoid complications and death.

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274. Legionella bozemanii (Fluorobacter bozemanii) Brain Abscess in a Renal Transplant Recipient

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Session: P-13. CNS Infection

Background. Legionnaires’ disease is a potentially fatal multi-system disease caused by Legionella species. However, extra-pulmonary Legionella disease is rare and is typically associated with Legionella species other than L. pneumophila in immunocompromised patients.

Methods. We present a 55-year-old immunocompromised man with history of living-related renal transplant secondary to IgA nephropathy (day 0) which was complicated by T-cell mediated rejection requiring anti-thymocyte globulin and eculizumab (day 130).

Results. Patient was hospitalized on day 184 with community-acquired pneumonia and treated with piperacillin-tazobactam and azithromycin. Three weeks later (day 214), he presented with new-onset seizures and was found to have a frontal brain abscess on MRI. His clinical course and brain imaging worsened despite undergoing multiple operative drainage procedures, placement of an extraventricular drain, and receiving broad-spectrum antimicrobials. L. bozemanii was first identified from cerebrospinal fluid (CSF) on buffered charcoal yeast extract (BCYE) agar from day 240 and was also later confirmed by 16S rRNA sequencing. Susceptibilities were unavailable due to poor organism growth. Of note, his allergy history was significant for rash with ciprofloxacin and levofloxacin. Based on the low severity of the allergic reaction and need for central nervous system penetration, moxifloxacin 400 mg intravenously every 24 hours was initiated on day 244 in addition to broad-spectrum antibiotics. Subsequent CSF cultures were positive for L. bozemanii until the CSF culture on day 250. Due to poor clinical response, azithromycin and intrathecal polymyxin B were added for salvage therapy on day 255. His neurological status continued to worsen and he eventually succumbed to his illness on day 262.

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