

## Aseptic Meningitis as the Sole Symptom of Legionnaire's Disease

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### CASE PRESENTATION

A 41-year-old incarcerated male with a history of migraines and prior tobacco use presented in late summer with fevers, headaches, neck stiffness, and body aches for four days. He was sent to the ED for further evaluation after recording a temperature of 104° at the prison's infirmary. On evaluation in the ED, his temperature was 99.5°F, and his heart rate was 105 bpm. He was diaphoretic, and neck flexion elicited pain. His oropharynx appeared dry. Heart sounds were tachycardic with no murmurs or extra heart sounds, lungs were clear to auscultation bilaterally, and no focal neurologic deficits on physical exam.

Laboratory studies showed a WBC of 12,000/μL (74% PMN, 14% lymphocytes). Comprehensive metabolic panel was within normal limits, including serum sodium of 139 mmol/L (136 - 145 mmol/L). HIV Ab/Ag test was negative. A multitarget respiratory PCR swab was negative for any pathogens. He was given IV steroids, vancomycin, and ceftriaxone. CT Head did not reveal any acute intracranial abnormalities. Lumbar Puncture (LP) showed 14 WBC/μL (2% PMN, 85% lymphocytes, and 13% monocytes). Total protein and glucose were normal. Opening pressure was unable to be obtained. Multitarget PCR of spinal fluid was negative for CMV, HSV1/2, VZV, parechovirus, *S. pneumoniae*, SARS CoV2, influenza, *C. neoformans*, and *N.meningitidis*. CSF was sent for culture using standard lab protocol to isolate common meningitis-causing bacterial organisms.

Antibiotics were discontinued following the LP results. On day 2, WBC rose to 14,200/μL, and fevers continued, so ceftriaxone and vancomycin were reinitiated. Additionally, West Nile and AFB cultures were added to cerebrospinal fluid studies. His physical exam was unchanged. On day 3, the patient continued to deny further symptoms. Infectious disease specialists were consulted. Crackles and egophony in the left lower lung zone were auscultated, and chest X-ray confirmed an airspace opacity in that area. Levofloxacin was then added to his antibiotic regimen. Repeat lumbar puncture on day 4 showed a WBC of 10/μL (1% PMN and 87% lymphocytes), normal RBC, protein, and glucose. Subsequently, a urine *Legionella* antigen test returned positive. The patient improved following levofloxacin initiation and was discharged to his facility to complete a course for *Legionella pneumoniae*.

### DISCUSSION

Aseptic meningitis is the most common form of meningitis, with an incidence of 7.6 per 100,00 adults, and is characterized by the signs and symptoms of meningeal inflammation without bacterial growth on cultures of the CSF (1). Most cases of aseptic meningitis are viral but can occasionally occur in bacterial infections with negative CSF cultures (2,3)

This patient presented with signs and symptoms concerning for meningitis; however, he subsequently developed pulmonary infiltrates and was diagnosed with *Legionnaires' disease*. Although pneumonia is the most commonly described feature of a *Legionella* infection, it can cause a broad spectrum of illness, and respiratory symptoms may not be present at onset (4). Around 40-50% of *legionella pneumophila* infections present with neurological symptoms regardless of pulmonary involvement and may be considered in the workup of patients

presenting with physical exam and lab findings concerning for meningitis or other unexplained neurologic symptoms (5).

## REFERENCES

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