

Culture-Negative CNS Abscess with CSF Detection of *Streptococcus intermedius* After Nondiagnostic Aspiration, Avoiding Additional Invasive Sampling

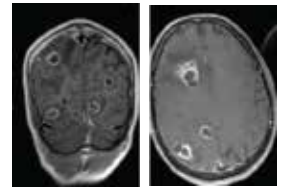
1 Presentation

A previously healthy 50-year-old male presented with 2 weeks of progressive altered mental status, gait instability, and two generalized tonic-clonic seizures. He had no known immunosuppression or major medical comorbidities. Exposure history included intermittent consumption of unpasteurized milk and untreated spring water. On examination, he was afebrile, alert and oriented $\times 3$, with mild gait unsteadiness; the remainder of the neurologic and systemic examination was unremarkable.



2 Clinical Workup

Laboratory evaluation demonstrated leukocytosis (WBC $17.8 \times 10^9/L$) with otherwise normal renal and hepatic function. Brain MRI revealed multiple rim-enhancing cystic lesions in the right frontal and parietal lobes, concerning for multifocal brain abscesses. Stereotactic aspiration demonstrated Gram-positive cocci on Gram stain, although cultures remained negative after 7 days. CSF analysis showed pleocytosis (WBC 867 cells/ μL ; 62% neutrophils), elevated protein (112 mg/dL), normal glucose, and negative Gram stain and cultures. Empiric antimicrobials and anticonvulsants were initiated.



3 Delve Detect

Given persistent culture negativity, the differential diagnosis included septic emboli, nocardiosis, *Listeria monocytogenes* infection (given exposure to unpasteurized milk and untreated spring water), and parasitic CNS infections such as cysticercosis and toxoplasmosis. Additional evaluation, including HIV testing, TB Quantiferon, parasitic studies, and transthoracic echocardiography, was unrevealing. CSF was subsequently submitted for Delve Detect CSF mNGS, which identified *Streptococcus intermedius*, supporting diagnosis of a pyogenic CNS abscess and targeted antimicrobial management.



4 Clinical Impact

mNGS results supported targeted antimicrobial management with de-escalation to ceftriaxone monotherapy and discontinuation of vancomycin and metronidazole. Identification of a single causative organism, without evidence of additional pathogens, helped guide ongoing management following nondiagnostic stereotactic aspiration and avoided additional invasive diagnostic procedures or repeat tissue sampling.



5 Delve Insights

CSF mNGS provides clinically actionable organism identification in cases of CNS abscess and ventriculitis, where cultures are frequently negative and causative organisms are typically not represented on targeted PCR or multiplex panels. Earlier organism identification can support targeted antimicrobials and reduce the need for invasive procedures such as brain biopsy.

