

Neurosyphilis Presenting as the Lateral Medullary Syndrome

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Received Aug. 13, 2021; Accepted for publication Oct. 11, 2021; Published online Jan. 11, 2022
<https://doi.org/10.17161/kjm.voll5.15778>

INTRODUCTION

Syphilis is known as “the great imitator” because its clinical presentation mimics many other diseases.¹ Syphilis is classified as having primary, secondary, tertiary, and latent stages based on its clinical features and timing of symptoms. Neurosyphilis represents syphilitic infection of the central nervous system (CNS) and can occur at any timepoint of infection.¹ The presentation of neurosyphilis varies depending on the involved CNS site; with respect to temporality, early symptomatic forms include meningeal and meningovascular syphilis, and the late forms include tabes dorsalis and general paresis.^{1,2} Ischemic stroke from meningovascular syphilis is uncommon; however, it is modifiable with early recognition and treatment. This case report described an ischemic stroke caused by meningovascular syphilis with literature review.

CASE REPORT

A 30-year-old male with a past medical history of human immunodeficiency virus (HIV) infection, who had not been on antiretroviral therapy (ART) for the last two years, presented with acute onset dizziness upon waking from sleep the day prior to his emergency department presentation. The patient complained of nausea and vomiting and falls from poor balance. He also noticed left eyelid droop, left facial tingling, and left-sided weakness. He developed hiccups associated with the onset of his cluster of neurological symptoms. There was no history of trauma or neck manipulation. Past medical history was otherwise non-contributory. Further questioning revealed a generalized headache for one month, night sweats for two weeks, and mild neck stiffness for one week.

His exam showed normal vital signs, miosis and ptosis in the left eye, right beating nystagmus, and increased sensitivity to cold temperature on the left side of his face and both his right upper and lower extremities. Strength and reflexes were normal.

Initial labs showed absolute lymphopenia, normocytic anemia, and a grossly unremarkable comprehensive metabolic panel. Erythrocyte sedimentation rate was 72 mm/hour. CD4 cell count was 7 cells/ μ L.

Head computed tomography with and without contrast revealed no acute hemorrhage or enhancing lesion. Cerebrospinal fluid (CSF) testing showed cloudy fluid with white blood cell (WBC) count of 534 cells/ μ L that consisted of 63% neutrophils and 26% lymphocytes. The red blood cell (RBC) count was 96 cells/ μ L. Glucose levels were 17 mg/dL and protein levels were 194 mg/dL. A Gram stain of the CSF showed only neutrophils.

Given the CSF findings and the patient’s immunocompromised status, he was started on broad spectrum antimicrobial therapy with ceftriaxone, vancomycin, ampicillin, and acyclovir. Dexamethasone initially was added due to concern for *Streptococcus pneumoniae* etiology.

Subsequent magnetic resonance imaging (MRI) of the head showed an acute infarct in the left inferior and posterolateral medulla (Figure 1). It also showed punctate foci of T1 hypointensity with surrounding fluid-attenuated inversion recovery (FLAIR) hyperintensity and subtle enhancement near the left internal capsule.

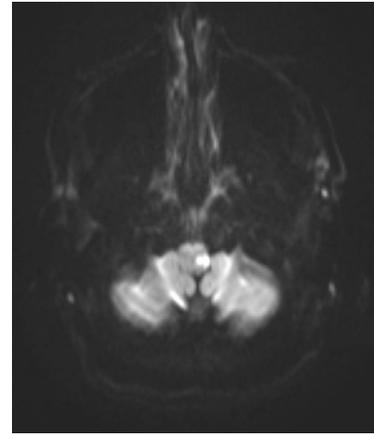


Figure 1. Axial diffusion-weighted magnetic resonance imaging of the head demonstrates restricted diffusion in the left posterolateral medulla, consistent with posterior inferior cerebellar artery territory ischemia.

Transthoracic echocardiogram showed normal ventricular function and was negative for structural abnormalities and vegetative lesions that would suggest infective endocarditis. Electrocardiography showed a sinus rhythm.

Further CSF testing showed a positive result for the venereal disease research laboratory (VDRL) test. Additional serum testing was positive for treponemal-specific IgG with an elevated rapid plasma reagin (RPR) titer. Extensive testing for other bacterial, viral, fungal, and parasitic etiologies was negative.

Given the elevated CSF WBC count, CSF VDRL titer, serum RPR titer, and treponemal antibodies, a diagnosis of stroke caused by meningovascular syphilis was made. Magnetic resonance angiography of the brain revealed multifocal areas of luminal irregularity and intracranial arterial stenoses in both the anterior and posterior circulations (Figure 2), consistent with CNS vasculitis secondary to meningovascular syphilis.

With the diagnosis of meningovascular syphilis, intravenous penicillin G was started. The patient also was started on trimethoprim-sulfamethoxazole prophylaxis given his CD4 count of 7 cells/ μ L. He was restarted on an ART regimen contingent on HIV genotype. Aspirin was initiated for secondary stroke prevention. Baclofen was started for the patient’s intractable hiccups. He completed inpatient rehabilitation and received close primary care follow-up, as well as screening for other sexually transmitted diseases. His RPR titer decreased with penicillin therapy and follow-up CSF VDRL testing was scheduled to monitor treatment response.

As an aside, the patient’s reported left-sided weakness was thought to be related to his central vestibular disturbance impairing normal ambulation, as the initial exam revealed no weakness or abnormal reflexes.

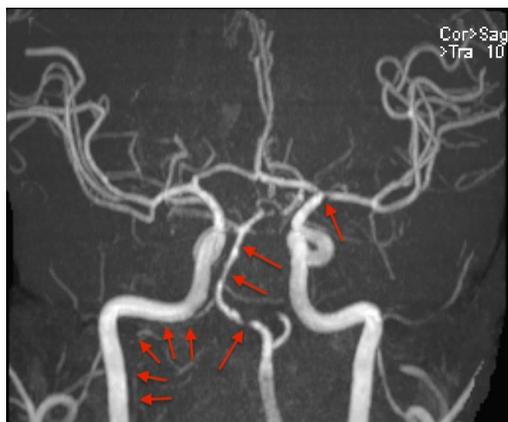


Figure 2. Tumble image from magnetic resonance angiography of the head demonstrates focal stenosis in the left vertebral artery, multifocal stenosis of the basilar artery, and left middle cerebral artery origin stenosis. In addition, there is a small caliber, nondominant right vertebral artery not well visualized in this image.

DISCUSSION

This was a case of a 30-year-old patient with HIV/acquired immunodeficiency syndrome (AIDS) and no other stroke risk factors presenting with acute onset lateral medullary syndrome, also known as the Wallenberg syndrome. The etiology was determined to be an ischemic stroke from meningovascular syphilis. History revealed subtle clues to the infectious etiology, including prodromal symptoms of headache, neck stiffness, and night sweats. These symptoms were important to highlight because half of patients with stroke from syphilitic vasculitis may present with these prodromal symptoms.³

Posterior circulation strokes and strokes in the young adult population remain challenging clinical diagnoses. An increased rate of misdiagnosis has been shown in patients under 35 years old and in cases that involve the vertebrobasilar territory, both factors likely contributed to our patient's diagnostic delay.⁴ The delayed diagnosis with vertebrobasilar involvement may be due to the vague symptomatology involving dizziness and nausea. This patient's stroke was contralateral to his nondominant vertebral artery, even though vertebral territory strokes are reported more often ipsilateral to the nondominant vertebral artery.^{5,6}

Early symptomatic neurosyphilis usually presents with symptoms of meningitis within 12 months of infection.¹ Meningovascular syphilis, as described in this patient's case study, represented endarteritis of the CNS vasculature resulting in thrombosis and infarction, a manifestation that occurs 5 to 12 years after initial infection.¹

Patients with HIV often are co-infected with syphilis, such that the prevalence of syphilis in HIV infected people is much higher than in the general population.⁷⁻⁹ Unfortunately, individuals with HIV are also more susceptible to neurologic involvement.⁹ Our patient appeared to be severely immunocompromised given his CD4 cell count of 7 cells/ μ L, which likely contributed to his acute neurologic manifestation. His cell count mostly was attributed to his lack of compliance with ART; however, syphilis infection has been shown to decrease CD4 cell counts and may have contributed to the laboratory findings.^{10,11}

While the differential diagnosis of stroke in the young adult population should remain broad, the increasing rate of syphilis infections in the U.S. suggested it is an important diagnosis to consider in this setting.¹² The association of syphilis with HIV makes the spirochete infection

even more important to consider in those with HIV and stroke. Other recent case reports of strokes secondary to neurosyphilis reported these patients were HIV-infected.¹³⁻¹⁶

This case report demonstrated the clinical heterogeneity of neurosyphilis and the importance of extending stroke workup in patients with ischemic stroke who lack common stroke risk factors, especially in HIV-infected patients. Clinicians should be familiar with the clinical presentation of posterior circulation strokes. Syphilis should be considered as an etiology of stroke in HIV positive patients, as there is effective treatment.

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Keywords: neurosyphilis, ischemic stroke, lateral medullary syndrome, HIV coinfections, case reports