All in His Head: An Unexpected Space-occupying Lesion

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PRESENTATION
Weakness in the right hand swiftly led to brain surgery for a healthy 66-year-old man. The problem worsened over a 4-day period, prompting hospital admission. He had a history of epilepsy, which began in childhood, but he had been asymptomatic for years on a regimen of phenytoin, 300 mg, daily.

ASSESSMENT
On examination, the patient had right-hand paralysis and right-leg paresis (1/5) along with corresponding upper motor neuron signs. Computed tomography (CT) of the head was soon followed by magnetic resonance imaging (MRI), which revealed a large left frontoparietal space-occupying lesion (Figure). He had a prolonged grand mal seizure while still on the table.

Laboratory studies were unremarkable. The patient had a hemoglobin level of 13.4 g/dL, a white blood cell count of 9.4 x 10^3 cells/mm^3 with a normal differential, a platelet count of 313,000 cells/μL, and a sodium level of 135 mEq/L. His C-reactive protein level was mildly elevated at 11.1 mg/dL (normal, 0-0.5 mg/dL). Results from chest and abdominal imaging were considered normal. The patient began intravenous diazepam and dexamethasone and was transferred to neurosurgery.

DIAGNOSIS
A large brain abscess was found and drained during left parietal craniotomy. Direct stains and cultures identified viridans group streptococci. Blood cultures were negative, and no immunodeficiency was found.

The incidence of brain abscesses in developed countries is as low as 1-2% of all intracranial space-occupying

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**Figure** (A) Coronal, contrast-enhanced, T1-weighted, fast field echo magnetic resonance imaging of the head showed a left parietal ring-enhancing multilocular lesion with surrounding vasogenic edema. (B) The lesion showed restricted diffusion on axial diffusion-weighted imaging. (C) Restricted diffusion also was seen on apparent diffusion coefficient (ADC) imaging.
lesions. These are potentially fatal infections with up to 25% mortality. Interestingly, 29-35.5% of patients with brain abscesses have no fever, and 32-41.5% have no headache. This was true of our patient, who presented with a progressive focal neurologic deficit followed by a generalized seizure.

Community-acquired brain abscesses most commonly originate from an infection in a contiguous site, such as the ears, sinuses, or teeth. However, hematogenous spread occurs as well and mandates a search for occult bacterial endocarditis or another source of infection. (Metastatic brain abscess is a rare complication.) In our patient, neither transesophageal echocardiography nor an examination of the oral and nasopharyngeal cavities revealed a source for his infection.

As many as 20% of patients with brain abscesses have no known predisposing factors. Viridans group streptococci are among the most prevalent causative organisms of community-acquired brain abscesses; the pathogenesis in our patient could have involved either a dental infection—although spread to the frontal lobes is more common—or bacteremia.

Diffusion-weighted MRI with gadolinium is the preferred imaging modality, but CT can often be more easily obtained. Lumbar puncture is contraindicated because of the risk for brainstem herniation.

**MANAGEMENT**

The patient was treated with intravenous ceftriaxone, 2 g, twice a day, and metronidazole, 500 mg, 3 times a day, for 4 weeks. Because hemiparesis persisted, he was referred for rehabilitation. No further related clinical events have occurred in the past 3 years of follow-up.

**References**