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### CASE

The patient is a 14-year-old girl who presented to the emergency department (ED) with a complaint of a headache for 2 weeks. A week earlier, the adolescent had seen her family physician, who prescribed cefadroxil (Duricef) for sinusitis. The patient had a scheduled follow-up visit the next morning but came to the ED because she could not take the pain any longer.

She described the pain as sharp and constant and mostly on the left side of her head. The mother denied that her daughter had experienced any trauma or fever. The mother did say that the patient had been very tired over the past 2 weeks and had been sleeping later than usual. She had also lost 10 lb during that period. The patient complained of a mild, nonproductive cough, sinus congestion, and a mild sore throat, which she said was now gone. She denied any nausea, vomiting, or diarrhea. There were no visual disturbances, photophobia, or recent dizziness. There was no recent exposure to meningitis or to others with similar symptoms. The patient stated that this was not the worst headache of her life and denied having a stiff neck.

**Physical examination** The patient appeared to be in moderate distress and preferred to have the light off in the examination room. Vital signs were as follows: temperature, 98.6°F (37°C); respiration, 16 breaths per minute; pulse, 110 beats per minute; BP, 104/63 mm Hg; and oxygen saturation, 97%. The head showed no signs of trauma. Examination of the ears and eyes produced normal results. The frontal sinuses were tender to palpation. The lungs were clear, and the heart was slightly tachycardic with a normal rhythm and no murmurs. The patient showed no signs of neurologic deficit. Deep tendon reflexes were intact throughout. The gait was without apraxia. The patient displayed good coordination.

### WHAT IS YOUR DIAGNOSIS?

- Severe sinusitis
- Meningitis
- Brain abscess
- Encephalitis
- Subarachnoid hemorrhage

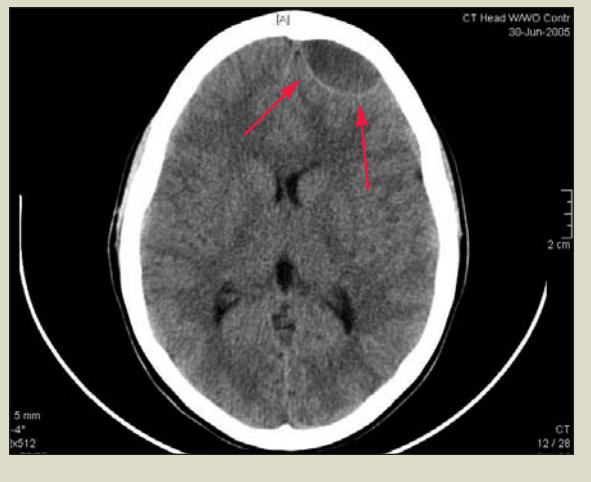
### DISCUSSION

Initially, our plan was to change the antibiotic, provide analgesia, and have the patient follow up with her family physician the next day. We also decided that the patient should undergo CT of the head (see Figure 1). The radiologist's report noted a left-sided

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FIGURE 1

### CT in a 14-year-old with left-sided head pain



frontal mass, most likely an epidural empyema that caused a mass effect. The lesion measured 3.73 cm by 1.83 cm. Hemorrhage could not be completely ruled out. Left-sided sinusitis was also noted. The WBC count came back as 13,400/mm<sup>3</sup>.

**Treatment** The patient was immediately given piperacillin/tazobactam (Zosyn), 4.5 g IV, and the dose was repeated every 8 hours. She was admitted to the hospital, and the family physician, otolaryngologist, and infectious disease specialist were contacted regarding further treatment. The otolaryngologist determined that the abscess would be best treated by neurosurgery, but he did operate on the patient's paranasal sinuses, which were severely congested. The neurosurgeon drained the brain abscess without complications. The patient made a complete recovery with no sequelae. The infecting organism was *Streptococcus intermedius*, a member of the *Streptococcus Milleri* group, which has a proclivity toward abscess formation in either the CNS or the liver.

**Comment** Brain abscesses are typically diagnosed by MRI or CT. To prevent herniation, CSF should be obtained only if no mass is seen on brain imaging. Few brain abscesses resolve completely when parenteral antibiotic therapy is the only treatment. Lesions within the confines of a highly vascularized portion of the brain can be difficult to drain. Lesions larger than 2.5 cm or those causing a mass effect should be surgically excised or centrally aspirated using stereotactic CT-guidance.<sup>1</sup> At one point, the mortality rate among those with this condition was 100%, but between 1994 and 2000, the mortality rate dropped to 15%.<sup>1</sup> □

### REFERENCE

1. Medhkour A, Hoeprich M. Brain abscess: diagnosis and early management. *Resident & Staff Physician*. June 2005;7-13. Available at: <http://www.residentandstaff.com/article.cfm?ID=394>. Accessed April 3, 2006.