Septic Sigmoid Sinus Thrombosis Associated with Otitis Media

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Background: Septic sinus thrombosis is an uncommon clinical syndrome that can cause high morbidity and mortality. We report a case with septic thrombosis of the sigmoid sinus caused by otitis media.

Case Report: A 58-year-old male presented with a 12-day history of headache. Cerebrospinal fluid (CSF) analysis showed elevated white cells (1020/uL, polymorphonuclear cells-89%), decreased CSF glucose (103 mg/dL vs. 303 mg/dL in serum), and an increased protein level (115 mg/dL). Even after empirical antibiotic treatment, the headache and fever persisted, and left abducens palsy and mild exophthalmos developed. At that time, brain MRI showed thrombosis on the right sigmoid sinus and the bilateral cavernous sinus. Additional treatment with heparin and broad-spectrum antibiotics from day 7 ameliorated his symptoms and lowered his CSF cell counts.

Conclusion: In septic thrombosis of the dural sinus, early recognition and prompt management using broad-spectrum intravenous antibiotics are crucial for patient recovery.

KEY WORDS: Septic thrombosis · Sigmoid sinus · Otitis media.

Introduction

Septic thrombosis of the transverse and sigmoid sinuses can develop as an intracranial complication of otomastoiditis by a direct extension of infection from the tympanomastoid compartment of the ear or via emissary veins. Since the era of antibiotic treatment, the frequency and mortality rate of lateral sinus thrombosis have decreased significantly. An early diagnosis of septic lateral sinus thrombosis, however, is still difficult to achieve because it typically presents with nonspecific symptoms. Moreover, CT shows low sensitivity, although it is a great tool for excluding intracranial lesions. We report a case of septic thrombosis of the sigmoid sinus caused by otitis media.
treatment with heparin and broad spectrum antibiotics, administered on day 7 of his hospital stay, ameliorated his symptoms, and lowered his CSF cell counts [RBC-20/uL, WBC-110/uL (polymorphonuclear cell-95%)].

**Discussion**

Diagnosis of septic thrombosis of the sigmoid sinus is challenging, as demonstrated by this case. When the patient was admitted to the ER, where only CT was performed, he was initially diagnosed with a tension-type headache. When his fever developed, he visited our neurology department and was diagnosed with bacterial meningitis. Even with empirical antibiotics, his symptoms worsened, and exophthalmos and left abducens nerve palsy developed, suggesting cavernous sinus thrombosis. An accurate diagnosis of septic thrombosis on the right sigmoid sinus and the bilateral cavernous sinus took approximately 18 days. Weon et al. has reported that the delay in diagnosis of lateral sinus thrombosis ranges from 8 to 60 days, with a mean of 27 days (SD: ±12.8 days) after admission to the hospital. The delay in diagnosis is primarily due to non-focused CT scans or MRIs performed at the initial presentation and an absence of systematic radiological reading of the related fatty spaces and skull base in bone windows. Like many other cases, our patient was not initially diagnosed with septic thrombosis. Early diagnosis is very important in determining the appropriate treatments.

In addition, the diagnosis of the septic origin of a thrombo-

**FIGURE 1.** Septic thrombosis confirmed by brain MRI and temporal bone CT. Brain MRI and temporal bone CT show filling defects of the right sigmoid and bilateral cavernous sinuses, suggesting septic thrombosis or thrombophlebitis due to right chronic mastoiditis. A: Non-opacification and filling defects in the right sigmoid sinus (thin arrow), internal jugular vein (arrow head), and cavernous sinus (thick arrow) are shown in the brain MRI. B: Temporal bone CT shows a focal bony defect of the posterior wall (arrow) and loss of mastoid pneumatization with multiple inflammatory soft tissue density lesions in the right mastoid antrum (arrowhead).
sis is also greatly important because it can completely modify the therapeutic plan. Early recognition of the septic origin and prompt management with broad spectrum intravenous antibiotics and anticoagulants are crucial to a patient’s recovery. Acute or chronic otitis media are known to be common causes of septic thrombosis of the sigmoid sinus, as shown in this case. If a patient is diagnosed with septic thrombosis of the sigmoid sinus, otitis media should be considered as a possible cause.

A diagnosis of septic thrombosis of the sigmoid sinus remains a difficult task due to the lack of suggestive neurological or otolaryngologic symptoms. If a patient’s symptoms persist even after treatment with antibiotics for bacterial meningitis, brain MRI and temporal bone CT should be re-evaluated and closely scrutinized.

REFERENCES