

## **Selected Topics: Neurological Emergencies**



### **CEREBRAL VENOUS SINUS THROMBOPHLEBITIS AS A COMPLICATION OF ACUTE OTITIS MEDIA**

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**Abstract—Background:** While headache is a common emergency department chief complaint, cerebral venous sinus thrombosis (CVST) is an infrequently encountered cause of headache and is often not included in emergency physicians' differential diagnoses for headache. Our objective is to review the latest data on epidemiology, presenting symptoms, diagnosis, and treatment of CVST. **Case Report:** A 27-year-old female presented to our emergency department with headache, blurred vision, and vomiting a day after being diagnosed with acute otitis media. Computed tomography scan of the brain without contrast in the emergency department was suggestive of CVST. **Why Should an Emergency Physician Be Aware of This?:** Although a rare cause of headache, CVST should be considered for a subset of patients presenting to the emergency department with the common complaint of headache. CVST is diagnosed by magnetic resonance venogram or computed tomography venogram of the brain. Anticoagulation with close monitoring in consultation with appropriate experts is a safe first-line therapy for CVST, even in patients with hemorrhage on initial imaging. © 2015 Elsevier Inc.

#### **INTRODUCTION**

Management of patients with headache is common in the emergency department (ED). Although usually benign, the differential diagnosis for the headache ranges from benign to life threatening. The relative rarity of serious life threats manifested by headache further challenges

the emergency physician when evaluating a patient with headache.

We present a case report of a young woman who presented with headache, nausea, vomiting, and blurred vision 1 day after being diagnosed with acute otitis media (OM). After presentation, she rapidly decompensated as a result of left transverse and sigmoid sinus thrombophlebitis with concomitant bacterial meningitis. Details of the patient's clinical course, followed by a literature review regarding diagnosis and management of cerebral venous sinus thrombosis (CVST) and thrombophlebitis are detailed.

#### **CASE REPORT**

A 27-year-old female with no medical history presented to our ED with complaints of headache, left-sided monocular diplopia, and nausea. Although not taking oral contraceptives at the time of presentation, she reported recent intermittent use of oral contraceptives. She went to a local urgent care clinic and was diagnosed with acute left OM the day before presentation. After taking Augmentin and naproxen the morning of presentation, she noted a worsening headache prompting her to present to our ED.

The patient's initial triage vitals were temperature of 39°C, heart rate of 100 beats/min, respiratory rate of 16 breaths/min, room air saturation of 100%, and blood pressure of 140/80 mm Hg.

Approximately 1 h after initial triage evaluation, the patient complained of a 10 out of 10 headache, along with dizziness and worsening left-eye double vision noted in all visual fields with both near and far gaze. She continued to be alert, oriented, and responding appropriately at this time. The patient was promptly evaluated by a senior emergency resident in triage. The resident noted pain behind her left ear and double vision of the left eye, along with a red and inflamed-appearing left tympanic membrane upon examination. The resident's evaluation note expressed concern for mastoiditis or other intracranial processes. The patient's triage priority was escalated and the patient was placed in a room shortly thereafter. In the meantime, laboratory studies and a non-contrast head computed tomography (CT) scan were ordered.

Forty minutes later, the patient was noted to be slow to respond to verbal stimuli and was vomiting. Her Glasgow Coma Score was 9 (E: 2, V: 3, M: 4) with concern for further decline. She was intubated for airway protection and at this point, the treatment team was concerned for possible meningo-encephalitis. The patient was given intravenous anti-infective agents (i.e., ceftriaxone, vancomycin, ampicillin, and acyclovir) and steroids (1). A non-contrast head CT scan was notable for paucity of cortical sulci and fullness of basal cisterns concerning for cerebral edema; opacification of the left middle ear cavity compatible with OM; and increased attenuation within the left transverse sinus concerning for venous sinus thrombus (Figure 1) (2).

The patient was admitted to the medical intensive care unit (ICU) with the neurologic intensive care team also following the patient.

In the ICU, the patient was started on mannitol for concern for increased intracranial pressure from cerebral edema based on the head CT scan. A magnetic resonance image (MRI), including magnetic resonance angiogram (MRA) and magnetic resonance venogram (MRV), of the patient's head were then obtained to further characterize the intracranial vasculature. The MRA was unremarkable. There were foci of abnormal signal in the distal left transverse sinus and proximal left sigmoid sinus on fluid attenuated inversion recovery images with the same defects noted on MRV as well, diagnostic of venous thromboses (Figure 2).

There was no evidence of cerebral edema on MRI and mannitol was discontinued. The patient was subsequently started on therapeutic dosing of subcutaneous enoxaparin as a bridge to oral warfarin. On hospital day 2, the patient underwent left tympanostomy with noted purulent drainage, but without subsequent culture growth. She was extubated on hospital day 3 without difficulty and had no neurologic deficit, although her post-extubation course was notable for frequent complaint of headache.



**Figure 1. Noncontrast head computed tomography showing increased attenuation in left transverse sinus (arrow) and fullness of basal cistern.**

Her thrombophilia workup was negative. The infectious disease team believed that the patient had septic venous sinus thrombophlebitis and concomitant bacterial meningitis as a sequela of OM. She received 2 weeks of empiric



**Figure 2. Brain magnetic resonance imaging fluid attenuated inversion recovery sequence showing abnormal signal in the proximal left sigmoid sinus (arrow).**

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