Skull Base Osteomyelitis with complete Occlusion of the Right Internal Carotid Artery Presenting as a Stroke: Case Report and Review of the Literature

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Disclosures

The authors have documented that they have no financial relationships to disclose or Conflicts of Interest to resolve
Introduction

Skull base osteomyelitis is a rare but serious condition with the potential for long term neurological sequelae

Often secondary to spread of bacteria from surrounding tissues, such as malignant otitis externa, skull base osteomyelitis can invade local structures and cause soft tissue swelling

Carotid artery involvement is an extremely rare phenomenon in skull base osteomyelitis and has only been reported once in the literature as a complication due to carotid artery embolism

Carotid artery occlusion has to this point not been reported in the setting of skull base osteomyelitis secondary to local mass effect
Methods

Review of patient chart

PubMed literature review
Results

A 76-year-old female with a history of type 2 diabetes mellitus presented to the emergency department with a 3-day history of progressive neurological symptoms.

Her symptoms began with difficulty swallowing, followed by progressive slurred speech the following day. On day 3, she awoke with severe left sided facial and extremity weakness, worsening speech difficulty, and difficulty ambulating due to weakness.

Upon admission to the local hospital, the patient underwent head and neck CTA which ruled out hemorrhagic infarction but showed concern for carotid occlusion as well as an abnormal right nasopharynx soft tissue mass extending into the skull base (Figure 1).
Figure 1: CT angiogram images of skull base. Image A with narrowed carotid indicated by black arrow with soft tissue mass indicated by m. Image B shows normal left carotid at similar level correcting for angulation of the head.
Results continued

Final etiology of the stroke was determined to be right internal carotid artery narrowing due to compression from an extrinsic mass.

The nasopharyngeal mass was biopsied, revealing chronic inflammation and fibrosis.

Bacterial cultures of the nasopharyngeal mass grew *Pseudomonas aeruginosa*.

Patient was discharged from the hospital after a 20-day hospital stay on piperacillin-tazobactam, and was transitioned to oral ciprofloxacin with gradual improvement of symptoms.
Discussion

Skull base osteomyelitis is known to cause neurological deficits, but large vessel involvement is extremely rare.

Etiology of the disease is contiguous spread of *Pseudomonas aeruginosa* from malignant otitis externa, although other causative agents have been described.

The mainstay of therapy is a prolonged course of antibiotics, however surgical decompression is sometimes required.
Summary points

A patient suffered progressive neurological decline due to carotid artery occlusion

MRI revealed right hemisphere ischemia in a watershed distribution

Nasopharyngeal biopsy confirmed osteomyelitis of the skull base

The patient recovered gradually with prolonged antibiotic therapy