

Symptomatic Internal Carotid Artery Stenosis in the Setting of Large Facial Nerve Schwannoma: A Case Report

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Background

Facial nerve schwannoma is typically managed conservatively given the risk of facial weakness associated with surgical resection. In cases of large tumor with cerebral compression, however, intervention may be required. Here, we present a case of large facial nerve schwannoma coinciding with symptomatic internal carotid artery (ICA) stenosis.

Case Description

A 34-year-old male with a history of severe, uncontrolled migraine presented following an episode of severe headache and loss of consciousness associated with straining. He incidentally had a right facial weakness (House-Brackmann 2/6) which preceded the LOC event. Initial CT angiogram demonstrated significantly narrowed right ICA lumen (Figure 1, Figure 2), initially suspected to be ICA dissection. MRI demonstrated a contrast-enhancing lesion consistent with a facial nerve schwannoma with a large middle cranial fossa component continuous with the geniculate ganglion (Figure 3). The tumor abuts the petrous portion of the ICA (Figure 4). The patient then presented to our institution, at which time facial weakness had progressed to House-Brackmann 4/6, and the patient continued to experience symptoms with straining which alleviated with relaxation.

Test results:

- 1) Cerebral arteriogram demonstrated significant collateral supply to the right ICA from the vertebrobasilar circulation via the posterior communicating artery.
- 2) Balloon occlusion test: passed.
- 3) Nuclear medicine brain scintigraphy: slight decreased perfusion of the right anterior and lateral temporal lobe and right frontal lobe.

The case was taken to multidisciplinary tumor board for discussion. Ultimately, the neurovascular team did not recommend ICA stenting based on the above test results due to associated risks. Treatment of daily migraines was also discussed with the patient. Schwannoma management options were reviewed, including observation, surgical resection, and radiation.

Discussion

This case exemplifies a rare presentation of facial nerve schwannoma in the setting of ICA stenosis which was initially attributed to the facial nerve tumor. Upon closer evaluation of the scans, it was determined that these two findings may be independent of one another, and that the ICA stenosis was likely resultant of long-term arterial remodeling, with a congenital malformation as a possible cause. The new symptoms with straining suggested an acute change to cause a change in symptomatology. Endovascular stenting would require a long-segment stent, which introduces risks that were considered to outweigh the benefits of the procedure at the time of initial evaluation.

Given the size of the tumor, the team has leaned toward intervention with either stereotactic radiosurgery (SRS) or surgical resection. We reviewed the risks of facial weakness with middle cranial fossa surgical resection and discussed facial reanimation options including nerve transfer (CN5-CN7). While the risk of intraoperative carotid injury is low, this is an additional consideration in this particular case. Discussions with the patient about next steps are ongoing.

Conclusions

Symptomatic ICA stenosis is an unusual presentation for facial nerve schwannoma and may represent an indication for active treatment. Multidisciplinary care with vascular intervention and facial nerve reanimation are required for comprehensive care in these cases.



Figure 1. Axial CT angiogram demonstrating significantly narrowed ICA lumen (red arrow).

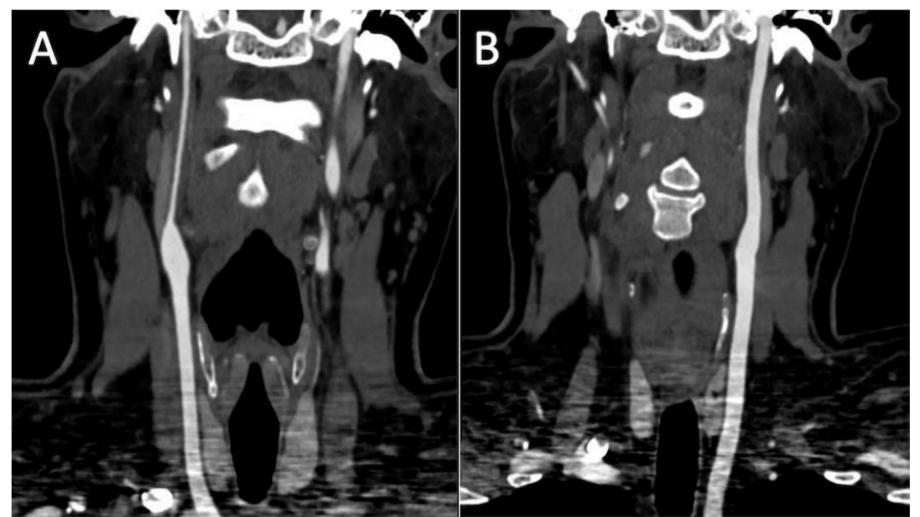


Figure 2. Coronal CT angiogram demonstrating significantly narrowed ICA lumen on the right (A) compared to the left (B).

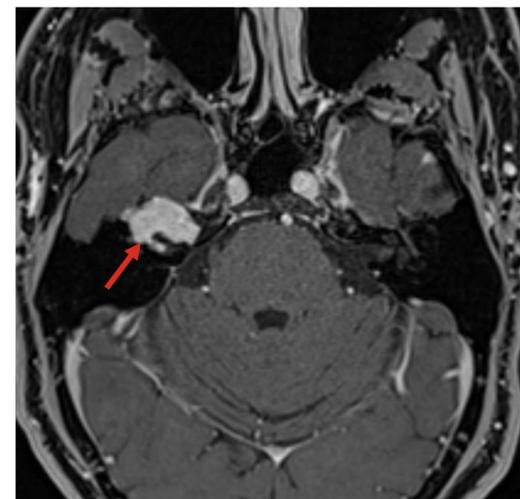


Figure 3. Axial T1-weighted fat-suppressed MRI sequence demonstrating contrast-enhancing middle cranial fossa lesion involving the right geniculate ganglion (red arrow).

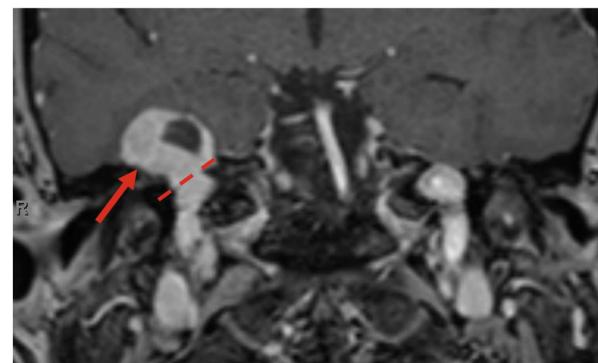


Figure 4. Coronal T1-weighted fat-suppressed MRI sequence demonstrating right middle cranial fossa lesion (red arrow) abutting the right ICA (interface between lesion and ICA demonstrated by red dashed line).

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