Cervical osteophyte resulting in compression of the jugular foramen

Case report

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Jugular foramen syndrome is a condition characterized by unilateral paresis of cranial nerves IX, X, and XI in the setting of extrinsic compression. Here, the authors describe the case of a giant cervical osteophyte resulting in compression of the jugular foramen. A 74-year-old man who presented with progressive dysphagia and dysarthria was found to have right-sided tongue deviation, left palatal droop, and hypophonia. His dysphagia had progressed to the point that he had lost 25 kg over a 4-month period, necessitating a gastrostomy to maintain adequate nutrition. He underwent extensive workup for his dysphagia with several normal radiographic studies. Ultimately, CT scanning and postcontrast MRI revealed a posterior osteophyte arising from the C1–2 joint space and projecting into the right jugular foramen. This resulted in a jugular foramen syndrome in addition to delayed filling of the patient’s right internal jugular vein distal to the osteophyte. Although rare, a posterior cervical osteophyte should be considered in cases of jugular foramen syndrome.

On initial examination in the clinic, he exhibited right-sided tongue deviation, left palatal droop, and profound hypophonia and dysarthria. Further workup included a CT scan of the neck and an MR image of the skull base. Initial interpretation of these images was unremarkable for a causative pathological process. A bronchoscopy was performed and revealed no evidence of endobronchial masses. Direct laryngoscopy demonstrated paralysis and edema of the right vocal cord. Biopsies of the epiglottis and vallecula failed to show a pathological process. An esophagogram was significant for reflux, although pharmacological treatment of this disorder did not improve his symptoms. A follow-up CT scan of the neck revealed no laryngeal mass but findings consistent with a paralyzed right vocal cord. There was narrowing of the right internal jugular vein just below the level of the skull base, with the more distal portion of the internal jugular artery appearing widely patent.

A reread of the previous brain MRI study revealed an enhancement in the region of the pars nervosa of the jugular foramen and effacement of the right internal carotid artery at this level, suggesting a mass lesion. A second MRI study was obtained and showed a posterior osteophyte caused by a degenerated atlantoaxial joint at C1–2 adjacent to a small area of enhancement anteromedial to the right internal jugular vein, with no features.

Abbreviation used in this paper: CN = cranial nerve.
suggesting a tumor (Fig. 1). An indium-111–labeled pentetreotide scan was obtained, as was a SPECT scan, neither of which revealed any area of abnormal signal.

Further workup included a CT venogram of the head and neck, demonstrating narrowing of the right internal jugular vein as well as severe stenosis of the pars nervosa and pars vascularis (Figs. 2 and 3), which were congruent with the patient’s cranial nerve (CN) deficits. Currently, the patient is being managed expectantly. While resection of the mass is technically feasible via a standard far lateral approach, the patient’s medical comorbidities place him at significant risk for complications. While he defers surgical intervention at this time, he continues to follow up at regular intervals to review treatment options.

Discussion

The sequela of cervical osteophytes is well documented and primarily related to their anatomical location. Osteophytes of the atlas and axis affect structures of the basiocciput, those of C2–3 involve the posterior pharynx, and bony growths of C4–7 diminish the retropharyngeal space and compress the larynx and esophagus. With the esophagus resting on the anterior border of C4–7, anterior cervical osteophytes have repeatedly been found to mechanically disrupt normal esophageal or laryngeal function, resulting in dysphagia.

While anterior osteophytes are known to cause dysphagia, osteophytes of the posterior vertebral body causing dysphagia are much more rare. In the featured case, dysphagia, dysarthria, tongue deviation, and palatal droop are believed to be consistent with a jugular foramen syndrome.

The jugular foramen is divided into the smaller anteromedial pars nervosa, which contains CN IX and the venous return from the inferior petrosal sinus, and the larger posterolateral pars vascularis, which contains CN X, CN XI, and Arnold’s nerve, a branch of CN X. Jugular foramen syndrome is defined as the unilateral involvement of CNs IX, X, and XI as a result of narrowing of the jugular foramen. Jugular foramen syndrome is commonly seen in response to skull base lesions, such as meningiomas and schwannomas; however, there are case reports of metastatic tumors, trauma, infection, cholesteatomas, aneurysms, and even varicella zoster infection leading to this condition. Development of jugular foramen syndrome in association with a posterior cervical osteophyte has not been reported in the literature.

In the present case, localization of the patient’s pathology corresponded to his neurological findings. His
Giant osteophyte compressing the jugular foramen

![Image](image.png)

**Fig. 3.** Axial CT venogram (A), coronal CT (B), and parasagittal CT (C) demonstrating the relationship of the cervical osteophyte with the pars nervosa (red arrow) and, to a lesser extent, the pars vascularis of the jugular foramen.

progressive dysphagia, palatal droop, tongue deviation, and hypophonia in combination with the venous obstruction on MRI distinctively suggested a process in the jugular foramen. Isolated lesions of CNs IX–XI are rare, and upper motor neuron damage is not typical due to the number of corticobulbar projections to the brainstem. Furthermore, a lesion in the brainstem would typically manifest with more symptoms given the myriad structures in close proximity.

The first line of treatment for cervical osteophytes is typically conservative and involves nonsteroidal anti-inflammatory drugs to minimize the inflammatory reaction around the osteophyte. Surgical treatment should be considered if conservative management fails. Improvement following neural decompression is uncertain and very likely depends on the extent and duration of neural compression preoperatively.

**Disclosure**

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

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