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CLINICAL VIGNETTE

A Case of Anterior Cervical Osteophytes and Dysphagia

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Introduction

Anterior cervical osteophytes are common in elderly patients, being found in up to 20-30% of the geriatric population[1,2]. There are many causes of cervical osteophytes, though most are due to degenerative causes or diffuse idiopathic skeletal hyperostosis (DISH). Although anterior cervical osteophytes can be a common finding, they are not frequently diagnosed and patients are rarely symptomatic. Dysphagia is typically the presenting symptom, usually caused by mechanical obstruction of the esophagus. Surgical intervention should be considered in cases of severe dysphagia, aspiration or weight loss. We present the case of a patient with marked anterior cervical osteophytes that resulted in dysphagia and aspiration.

Case Report

An 84-year-old male with a history of hemorrhagic cerebrovascular accident (CVA) 8 months ago with residual left-sided weakness, hypertension, remote colon cancer and prostate cancer, and deep venous thrombosis (DVT) presented to the Emergency Department (ED) with severe cough. His symptoms began the previous evening while consuming a chocolate-covered candy. The patient's daughter reported that he had difficulty swallowing the candy and for three hours afterwards had intermittent coughing fits during which he was unable to speak. He was brought to the ED by paramedics, who noted his oxygen saturation to be 90% on room air at home. In the ED, initial vitals were notable for pulse of 114 and respiratory rate 24 and labs showed a white count of 22.72. A chest x-ray showed a right upper lobe opacity and poorly visualized left costophrenic angle. His cough was productive of thick green sputum. The patient was started on ceftriaxone and azithromycin and given oxygen via nasal cannula.

Per the patient's daughter, after his CVA, the patient had passed a clinical swallow evaluation, but he continued to suffer from episodic coughing episodes whenever he ate or drank. It was felt that the patient was likely suffering from chronic aspiration. A modified barium swallow study (Figure 1) was performed which showed aspiration with all liquid and solid consistencies. Incidentally noted on the study were enlarged cervical vertebrae forming a wedge shaped prominence occluding the lower pharynx. A CT cervical spine (Figure 2) revealed multilevel degenerative disease with large anterior osteophytes at the C2-C3 and C3-C4 levels. The C3-C4 osteophytes extended approximately 1.5 cm anteriorly resulting in marked narrowing of the hypopharynx at the level of the epiglottis.

Orthopedic spine surgery was consulted for definitive surgical management but was unable to schedule the patient urgently. A Dobhoff or G-tube was recommended as a temporizing measure to reduce the risk of aspiration, but the patient declined and elected to research surgical options as an outpatient. His cough, tachycardia, and leukocytosis improved with continued administration of ceftriaxone and azithromycin. He was discharged with an appointment with Orthopedic Spine clinic and recommendations to limit meals to thickened liquid but unfortunately was lost to follow up.

Figure 1: Modified Barium Swallow Study showing large anterior cervical osteophytes resulting in narrowing of the hypopharynx at the level of the epiglottis.

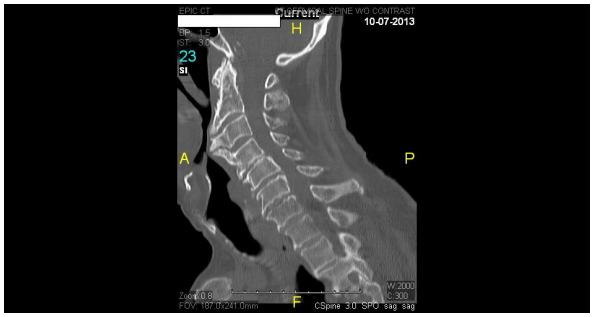

Figure 2: CT cervical spine showing the multilevel degenerative disease with large anterior osteophytes at the C2-C3 and C3-C4 level with resultant narrowing of the hypopharynx at the level of the epiglottis.

Discussion

Dysphagia affects up to 22% of patients in the primary care setting, and manifests as a conglomeration of symptoms including the feeling of food/drink sticking in the throat, retrosternal discomfort, hiccupping, regurgitation or even aspiration[1]. Dysphagia remains a challenging problem, in part because of a potentially broad differential diagnosis derived from problems that can develop anywhere along the path from the posterior oropharynx to the proximal stomach. A careful history can provide preliminary insight into whether the dysphagia is acute or chronic, primarily a motor versus sensory problem, oropharyngeal or esophageal in origin or a mechanical defect or obstructive process versus a problem of dysmotility[3].

Mechanical obstruction via anterior cervical osteophytes is not commonly included in the working differential for dysphagia. This is likely due to the fact that anterior cervical osteophytes are a common but rarely symptomatic finding, even in the geriatric population[2]. A retrospective chart review published in 2011 by Carlson et al., recruited all patients who presented to a tertiary referral center over a decade (1998-2008) with complaints of symptomatic dysphagia and subsequently underwent osteophytectomy for refractory symptoms. In total, nine patients met the full criteria[4]. Of the nine patients, one was diagnosed with senile degenerative vertebral disease, two with trauma-associated osteophytogenesis, and six with diffuse idiopathic skeletal hyperostosis (DISH). Also known as Forestier's disease, DISH involves calcification and ossification of the anterior longitudinal ligament and typically involves at least four contiguous vertebrae, with cervical vertebrae involved in roughly 78% of cases[5]. Following degenerative causes, DISH is one of the most common causes of anterior cervical osteophytes, afflicting an estimated 3% of individuals over the age of 40. Of these, 0.1-6% will actually develop symptomatic dysphagia[6]. It is hypothesized that the development of dysphagia secondary to anterior cervical osteophytes is caused by direct compression of the pharynx and neurological structures by the bony protrusions[4]. Another hypothesis is that local inflammation, caused by constant dynamic movement of the pharyngeal tissue overlying the hypertrophic hyperostosis results in repetitive mechanical trauma and chronic inflammatory edema[7].

The evaluation of anterior cervical osteophytes should consist of at a minimum a modified barium swallow study, which should demonstrate hypopharyngeal wall narrowing with resultant misdirection of contrast material into the upper airway and subsequent aspiration events. Flexible fiberoptic endoscopy may allow the clinician to better visualize a bulge in the hypopharynx if not immediately observable in the superior portions of the pharynx at bedside. Further diagnostic imaging such as lateral x-ray, computed tomography (CT), and magnetic resonance imaging (MRI) can be used to confirm the presence of cervical osteophytes if clinically indicated[4].

Appropriate management of large anterior cervical osteophytes is determined by the severity of the resultant dysphagia. Initial treatment typically involves a combination of diet modification, postural changes, muscle relaxants, anti-reflux medications, NSAIDs, and steroids[4]. Surgery is indicated only after failure of these more conservative measures, usually when the cervical osteophytes become quite prominent resulting in direct airway compression, chronic aspiration, or weight loss. The vast majority of patients with cervical osteophytes will positively respond to medical treatment, and as a result there are limited case reports in which patients with anterior cervical osteophytes actually undergo osteophytectomy. In patients in whom surgical intervention is contraindicated, a tracheostomy or feeding tube can be considered[4].

In terms of surgical approaches, anterolateral, posterolateral, or transoral approach can be employed. Most researchers agree that the anterolateral approach provides better exposure of the large cervical vessels and the vagus nerve, but places the recurrent laryngeal nerve at greater risk[2]. Several studies and case reports have successfully used the

anterolateral approach to remove the bony cervical prominences with promising results. In the retrospective chart review performed by Carlson et al., all enrolled patients underwent the anterolateral approach, with one patient requiring concurrent tracheostomy. Eight out of nine patients were able to return to an unrestricted diet and only one required avoidance of large bulky foods[4]. Two case reports discussed by Kos et al. involved anterolateral and extrapharyngeal removal of the large osteophytes with no persistent obstruction or aspiration detected by videofluoroscopy conducted at seven weeks and fifteen weeks post intervention[2]. A prospective study performed in 2009 also demonstrated successful resolution of dysphagia secondary to anterior cervical osteophytes within one month postoperatively in seven patients with DISH[8]. However, it was observed that two of the seven patients complained of moderate dysphagia ten and eleven years after surgery, with patients experiencing recurrent cervical osteophytic formation at a rate of 1mm/year post surgical intervention. The study concluded that while surgical removal of cervical osteophytes was effective in providing immediate relief in patients suffering from dysphagia, patients should continue to receive follow up beyond ten years in order to reassess growth of the osteophytes[8].

Given the severity of our patient's dysphagia, a G-tube was indicated while an appointment with neurosurgery/orthopedic surgery was being obtained. Although the patient was lost to follow-up, based upon other case reports, the patient's dysphagia has a high probability of completely resolving with an anterolateral resection of his anterior cervical osteophytes.

In elderly patients, the differential diagnosis of dysphagia can be quite broad. Despite cervical anterior osteophytes being common, they are infrequently diagnosed. Dysphagia is typically the presenting symptom and can potentially result in aspiration. Mechanical obstructions such as anterior cervical osteophytes should be considered in the differential diagnosis for elderly patients presenting with dysphagia or aspiration.

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