Cervical Osteophytic Dysphagia: Report of Three Cases

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ABSTRACT

Degenerative changes in the spine can produce osteophytic spurs on the anterior part of the cervical vertebrae. Cervical spondylosis or ankylosing hyperostosis is usually asymptomatic. Dysphagia caused by cervical osteophytic formation is quite rare. The following cases are the reports and reviews of the literature with striking radiographic findings. Their ages were little younger than previous reports and all were male patients. A massive anterior cervical osteophyte was resected without discectomy and fusion via the anterior approach followed by excellent relief of symptoms.

Key word: Dysphagia – Cervical, osteophyte

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INTRODUCTION

Cervical spondylosis are common in the aging population. Anterior cervical osteophyte occur in 20-30% of the elderly population [5] with cervical spondylosis often its cause. Ankylosing hyperostosis or diffuse idiopathic skeletal hyperostosis (DISH) produces extensive osteophytes and has been recognized as a cause of dysphagia with a strong racial predilection, almost exclusively in Whites [6, 23].

Le Roux [18] reviewed plain radiographs in 1,200 patients with dysphagia but could not recognize anterior osteophytes in any of them. Cervical osteophytic dysphagia is overlooked oftenly and infrequently considered in a diagnosis. The presence of massive osteophytes on roentgenograms of the cervical spine and the barium swallow esophagogram should raise the suspicion of osteophyte – related dysphagia. The author presents three patients with treatable osteophytic dysphagia on the neurosurgical field.

CASE REPORTS

< Case 1 >

A 39 year – old – man complained of progressive dysphagia for solid meals associated with a foreign body sensation in the throat for one year. The patient visited to the ENT department in our hospital. He...
showed no dysphagia for liquid. On physical examination, the patient was relatively well nourished, had no goiter and neck movements were good in all directions. Lateral cervical spinal roentgenograms showed that the anterior osteophyte appeared to be impinging on the esophagus and larynx at C4 to C6 vertebral body levels (Fig. 1). By the results of a barium swallow (Fig. 2) and CT (Fig. 3), the diagnosis of esophageal and laryngeal compression was confirmed.

A cervical MRI showed no compressive lesion to the spinal cord in the cervical canal (Fig. 4).
The osteophytic spurs were exposed and removed via a right vertical approach to the anterior cervical spine using a high speed drill and ronger on Mar. 1997. The patient could take oral solid meals comfortably after 48 hours of the postoperation.

< Case 2 >
A 58 year-old man presented with a one year history of progressive difficulty in swallowing solid meals and mild posterior neck pain.

Lateral cervical spine roentgenogram showed the development of anterior osteophyte at the C3 to C6 body as a DISH (Fig. 5). A CT scan and barium swallow test confirmed an esophageal compression and displaced the posterior pharyngeal wall anteriorly at the same levels.

The patient underwent anterior cervical removal of the spurs without fusion with extreme caution on May 1998. The postoperative course was uneventful and his swallowing was improved.

< Case 3 >
A 45-year-old man had difficulty in swallowing for the past six months before admission. This had become severe over the recent days, requiring him to adjust his diet to include one soft or liquid food.

Cervical spine roentgenograms showed a large anterior spur at C3-4 level (Fig. 6). The barium swallowing study showed esophageal narrowing and pooling of barium at the same level. A cervical MRI depicted that bony spur did not compress the spinal cord or root in the cervical canal. On Sep. 1998, the patient underwent anterior cervical removal of the spurs without fusion and did not disturb the disc space. Postoperatively, he had been able to take a solid diet within one week.

DISCUSSION

Dysphagia caused by anterior osteophytes, although quite uncommon, is an important and treatable cause of dysphagia that must be identified even in the neurosurgical field as well as ENT.

It has been notified that not all cases of osteophytes exhibit dysphagia and a few cases of cervical osteophytes cause dysphagia. Among the pathogenesis of the cervical osteophytes, Hirano et al.[15] stated that a decreased mobility of the spine and a decreased flexibility of the long ligaments of the spine with age lead to an immobile spine, resulting in local venous stasis and edema.
Bone morphogenic protein is released from the vertebrae into the surrounding tissues and, because of the venous stasis and edema, remains in the vicinity of the spine where it ossifies [29].

The other proposed that herniated anterior cervical discs undergo degenerative changes with subsequent endochondral ossification of proliferating inner annular fibers [3, 19].

Maran and Jacobson [20] described that dysphagia could not be due to compression by osteophytes above C6 because the esophagus commences there. However, the sensation of a mass in the throat that does not cause actual dysphagia can be caused by osteophytes at any level below C3.

The C5-6 vertebral level is involved in 40% of cases, C4-5 in 23%, C2-3 and C3-4 each approximately in 14% [12].

Differential diagnosis includes esophageal tumors, esophageal stricture, Zenker's diverticulum, motility disorders, Plummer-Vincent's syndrome and other mediastinal mass lesions [12, 14]. Additionally, congenital bony bars [14], anterior protrusion of a calcified cervical disc [8], trauma [17], osteochondroma [12] and degenerative disease of the vertebrae, including cervical spondylosis [2, 13, 27], hyperostosis [7, 11, 12, 16] and osteophytic spurs [4, 5, 14, 15, 20, 23, 25] may cause dysphagia.

Cervical osteophytic dysphagia should therefore not be accepted as the reason for the patient's symptoms until other causes have been excluded. Cervical spinal abnormalities causing mechanical respiratory problems are also rare.

Aspiration pneumonia was developed in one case [1] and dysphagia in patients with osteophytic disease is presumably due to edema of the vocal cord [16] or paralysis of the recurrent laryngeal nerve [25].

There are major characteristics of osteophytes that may cause dysphagia: 1) large osteophytes that cause mechanical blockage of the esophagus or hypopharynx, 2) impinging osteophytes that coexist with decreased laryngeal closure may act additively to cause more severe dysphagia than if present alone, 3) inflammatory reaction around rapidly enlarging osteophytes which may insite periesophagitis or pharyngitis that can physically worsen impingement causing dysphagia [10], 4) the effect of an osteophytic shelf in a patient with reduced laryngeal elevation after a stroke [30].

Cervical osteophytic dysphagia can be diagnosed by visualization of a hard mass located posteriorly to the pharynx using lateral cervical spine film, a barium swallow examination, and CT or MRI.

Large osteophytes may be difficult to be mobilized and somewhat adherent to other anterior cervical fascia due to local inflammatory reaction, but present cases did not have much adherence with esophagus subsequent mobilization. The soft tissues and periosteum were elevated and pushed laterally after the insertion of L-tube. Pathological examination revealed tissue consistent with osteocartilaginous exostosis without any abnormal finding or change of the outer wall of esophagus. The osteophyte was removed using a small rongeur and high speed drill.

Generally, osteophytes cause a transient dysphagia [30]. In these cases a conservative treatment of symptom, minimal sedation before meals, and follow-up is recommended. Steroids and antibiotics are thought to be effective in treating transient dysphagia that results from swelling in the esophagus at the level of contact with the osteophyte. Radiation is believed to prevent ectopic bone formation [9], but its value as a treatment for osteophytic disease is debated. Surgical excision is appropriate in selected patients whose symptoms are severe and progressive.

Early excision of osteophytes leads to the resolution of dysphagia by the elimination of mechanical burden. Later, further resolution of dysphagia follows abatement of inflammation and fibrosis [22].

Maran and Jacobson [20] advocated an anterior cervical fusion and removal of disc at the level of the excised anterior osteophyte. They reasoned that the removal of the osteophytes anteriorly would lead to instability of the cervical spine and that, in especially younger patients, a recurrence of osteophytic formation could occur if the corresponding degenerative disc was not excised.

Some authors [26, 28] described that re-accumulation of osteophytes has been reported many years after excision, and the growth of osteophytes and ligamentous ossification progress until rigidity is re-established. Hence, when complete resection is not
necessary for decompression, some reports required that the continuity of ossification was preserved by partial resection.

However, many authors [21, 24] reported that the total resection of the offending mass is recommended for the relief of symptoms.

Rarely, the reossification can occur even 4.5 years after surgical excision [15] and the importance of a long-term follow-up must be necessary. The present cases illustrate that cervical spinal osteophytes with two DISH and one spondylodiscitis and the cause of dysphagia in neurosurgical field as potentially treatable pathological conditions. Clinical symptoms and follow-up radiographs were obtained and performed for an average of 3.6 years.

The author consider that anterior cervical fusion must not be necessary when no bony lesion shows compression to the spinal cord or nerve root, and anterior cervical excision of the offending mass successfully leads to excellent symptomatic relief of dysphagia. More further long-term follow-up radiograph is warranted, taking into account the discussion about whether or not to fuse after removal of the anterior osteophytes and the possibility of late renewed anterior osteophyte formation.

REFERENCES


Reviewer's comment:
Masanori Ito, M.D.
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The authors described the rare cases of cervical spondylosis with dysphagia caused by anterior osteophytes. The age of the three cases was relatively young: 39, 58 and 45 years old men. They had no neurological symptoms and signs. The barium swallowing study showed esophageal narrowing and pooling of the medium. Surgical removal of the osteophytes without fusion is the treatment of choice.

It should be noted that the patients with DISH (Diffuse Idiopathic Skeletal Hyperostosis) might present with dysphagia due to compression of the esophagus between the osteophytes and laryngeal structure, although DISH mainly affects Caucasians. There were a few cases of report in which the reossification occurred several years after the surgical excision. As some genetic mechanism may be involved in this pathology, the further study based on molecular biology is needed. Although most of the surgeons advocated simple removal of the anterior spur, some advocated discectomy and fusion to prevent the instability of the cervical spine. Inasmuch as there is no cord/root compression by the osteophytes, the surgical procedures of discectomy and fusion do not seem to be justified. One may encounter the difficulty with drilling off the osteophytes when the C2-3 level is involved. Recent report suggested that the endoscopic drilling was proved to be useful.

Reviewer's comment:
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The author reports three cases with dysphagia caused by cervical osteophytic or ossified ligamentum formation. The roentgenograms consisting of barium swallowing clearly demonstrate the cause of dysphagia, impinging on the esophagus. The developed bony spurs were removed successfully to reduce the symptom in three cases, while the critical operative indication is not exactly described in this paper.

We must re-consider that there may be much more number of patients suffering from such a cervical osteophytic dysphagia in ENT clinics. This case report with short review present useful information concerning differential diagnosis and treatment in patients with dysphagia in the neurosurgical field as well as ENT.