Presentation and treatment of anterior cervical hyperostosis

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ABSTRACT

We report a case of severe anterior cervical hyperostosis presenting with dysphagia.

KEYWORDS

Anterior cervical hyperostosis – Diffuse idiopathic skeletal hyperostosis – Dysphagia

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Anterior cervical hyperostosis is a manifestation of diffuse idiopathic skeletal hyperostosis (DISH) or Forestier's disease.¹ First described in the 1950s, DISH is a non-inflammatory degenerative enthesopathy that frequently affects the spine but lacks the systemic features of ankylosing spondylitis.

The disease process in the spine is characterised by ossification of the anterior longitudinal ligament resulting in fusion between at least four motion segments.² The degree of anterior ossification is variable and can be very extensive. Secondary degenerative changes may occur in the posterior longitudinal ligament. The thoracic spine is most frequently affected, with the cervical spine the next most common region. Patients are typically (but not exclusively) male, of heavy build and around the sixth decade of life.³

Radiographically, there are similarities between DISH and ankylosing spondylitis. DISH affects anterolateral structures first and does not affect either the disc space or the posterior elements.⁴ Ankylosing spondylitis is commonly associated with sacroiliac joint dysfunction and systemic features such as eye and bowel symptoms. These are not seen in DISH and there is no association with human leucocyte antigen B27.

DISH may present in a number of ways. DISH lacks the systemic inflammatory manifestations of ankylosing spondylitis. However, some patients complain of neck pain or stiffness in the early phases. Sparing of the cervical discs and accelerated degeneration of the posterior annuli results in prolapse, causing or adding to pre-existing central or foraminal symptoms. Ossification of the posterior longitudinal ligament may also contribute to central canal stenosis. Extensive anterior ossification may result in compression of the pharynx and oesophagus, causing dysphagia and/or dysphonia. In severe cases, patients may present with respiratory symptoms such as recurrent respiratory tract infections or, rarely, with acute respiratory distress.^{5,6}

Fixation of fractures involving both DISH and ankylosing spondylitis present the same biomechanical problems. Ankylosed segments act as long lever arms, often requiring long segment fixation. DISH has less association with poor bone quality. Fracture patterns tend to differ subtly; fractures in ankylosing spondylitis tend to pass through the disc space, as opposed to the vertebral body in DISH.^{7,8}

Established compressive hyperostosis will not improve with conservative measures. This leaves surgical intervention as the only way of improving symptoms. Surgical goals depend on symptoms at presentation. If there is a neurological deficit and decompression is required, the relative preservation of the discs means the compressive lesion can be either bony or discogenic, necessitating both computed tomography (CT) and magnetic resonance imaging for adequate assessment.

If the patient has dysphagia and/or dysphonia, an ear, nose and throat (ENT) opinion should be sought. Dynamic contrast swallow studies are helpful in identifying both the level of compression and the presence or absence of an oesophageal pouch.⁹ Contrast studies also have a role in the management of postoperative dysphagia to look for evidence of iatrogenic oesophageal injury.

Removal of the anterior osteophytes typically requires a more extensive exposure than anterior cervical discectomy and fusion or cervical corpectomy. A long exposure, particularly to access lower cervical segments, risks damage to the recurrent laryngeal nerve, which may already be under considerable tension. Commonly, a right-sided approach is favoured to lessen the risk of iatrogenic recurrent laryngeal nerve injury.

One should be careful to only take the abnormal tissue and not to breach the intact anterior annulus, risking iatrogenic destabilisation. Typically, there is a cleavage plane between the vertebral body and pathological tissue.

Figure 1 Preoperative sagittal computed tomography showing diffuse anterior cervical osteophytes

Figure 2 Preoperative contrast swallow study showing marked oesophageal stenosis

Intraoperative fluoroscopy is helpful in determining the degree of bony resection and so a radiolucent head clamp is an advantage.

Standard spinal haemostatic agents and particularly bone wax are useful in the control of bleeding. The use of a postoperative drain is recommended owing to the significant risk of developing a postoperative haematoma.

Outcomes of surgery are generally very good. Neurological decompression will follow the expected postoperative course with radiculopathy recovering more predictably than established myelopathy. Dysphagia settles very early. Three case series (20 patients) published in the peer reviewed literature with between five and nine years of follow-up all concluded dysphagia settled within one month postoperatively, with one patient requiring revision anterior decompressive surgery for recurrent osteophyte formation.^{10–12}

Anecdotal use of postoperative radiotherapy, indomethacin or non-steroidal anti-inflammatories to reduce the risk of recurrence is not supported in the literature.

We present a case of anterior cervical hyperostosis and its management.

Case report

A 62-year-old college lecturer presented with a 2-year history of worsening dysphagia and dysphonia secondary to anterior cervical hyperostosis. He had no significant past medical history and was not taking any regular medications. There was no history of weight loss. He presented initially to the ENT surgeons, who requested contrast

enhanced CT of the neck region. This showed extensive bridging osteophytes from C3 to T1 (Fig 1). No other pathology was identified. A dynamic contrast swallow study was performed, which confirmed the level of occlusion and a small pharyngeal pouch was identified (Fig 2). He was referred to the orthopaedic spinal service for further evaluation. He denied any history of pre-existing neck pain and had no abnormal neurology in either his upper or lower limbs on examination.

The patient underwent anterior cervical osteophyte removal. Owing to the extensive nature of the disease and the pre-existing recurrent laryngeal nerve dysfunction, a consultant ENT surgeon was asked to assist. A right-sided paracarotid approach was used extending from the mandible to the sternal notch. The right recurrent laryngeal nerve was identified and preserved.

The patient was placed in a radiolucent head clamp to allow intraoperative fluoroscopy so the adequacy of the decompression could be assessed. The cleavage plane was found and bony resection was undertaken with osteotomes to reduce the risk of bone dust from a burr causing recurrence. The bone surface and surrounding tissues were washed carefully to remove any bone fragments (Fig 3).

Haemostasis was achieved with bipolar cautery, Floseal® (Baxter, Hayward, CA, US) and bone wax. A postoperative, subfascial drain was used and removed at 24 hours after surgery. No pre or postoperative medications were given to reduce recurrent osteophyte formation. No postoperative collar was used.

The patient reported an immediate improvement in symptoms and was discharged on day 3. He was seen at a

Figure 3 Intraoperative fluoroscopy confirming correct degree of resection down to anterior aspect of vertebral body

Figure 4 Postoperative plain lateral cervical radiography

routine follow-up appointment at six weeks and had a complete resolution of symptoms. Plain lateral dynamic cervical radiography showed no evidence of iatrogenic instability at six weeks. Further films taken at six months showed no evidence of recurrence (Fig 4).

Surgery for anterior cervical hyperostosis is a safe and effective method of treating patients. Rates of recurrent osteophyte formation requiring revision procedures seem to be low.

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