Anterior cervical disc herniation

Case report

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A 39-year-old man with an extrinsic esophageal lesion was found to have an anterior herniation of a soft degenerated cervical disc. Only two cases of symptomatic anterior cervical disc herniation have been reported previously. Dysphagia produced by anterior cervical osteophytes is more common and is a recognized clinical entity. Asymptomatic anterior cervical disc herniation may play a key role in the pathogenesis of anterior cervical osteophytes.

KEY WORDS • cervical spine • ruptured intervertebral disc • dysphagia • cervical osteophyte

Posterior and posterolateral herniations of cervical intervertebral discs cause several well-known clinical syndromes. These neurological symptoms often bring the patient to the attention of the neurosurgeon. Anterior cervical disc herniations are considerably less common, and when they are symptomatic the diagnosis is often not established correctly prior to surgery.10 Dysphagia caused by hypertrophic anterior cervical osteophytes is now a well-recognized clinical entity and has recently been reviewed extensively.13,17 This report describes a case of anterior cervical disc herniation presenting as a "paraesophageal mass." The possible relationship between anterior cervical disc herniation and subsequent hypertrophic osteophyte formation is discussed.

Case Report

This 39-year-old man was admitted to the cardiothoracic surgery service with a chief complaint of feeling "odd sensations" in the anterior aspect of his neck for several months. The sensations were described as a "quivering" at the level of the thyroid cartilage, most pronounced with head turning to the right and with bending at the waist. He specifically denied dysphagia, nausea, vomiting, hematemesis, neck pain, or weight loss. Fifteen months prior to admission, he had noted transient radicular pain and paresthesias in the right C-7 root distribution with a diminished right triceps jerk; a clinical diagnosis of presumed nerve root compression by "herniated disc" at the C6-7 level was made at that time. These complaints responded to conservative therapy.

Examination. On admission, general physical examination and neurological examination were unremarkable. A computerized tomography scan of the neck and upper thorax revealed a paraesophageal lesion at the lower cervical level displacing the esophagus to the left (Fig. 1). A barium swallow demonstrated right posterolateral esophageal compression by the mass lesion (Fig. 2). A chest x-ray film, fiberoptic bronchoscopy, and esophagoscopy were normal. The diagnosis of leiomyoma of the esophagus was entertained.

Operation. The patient underwent anterior neck exploration for planned excision of the cervical paraesophageal mass. A longitudinal incision was made along the anterior border of the right sternocleidomastoid muscle and the platysma was divided. The carotid sheath was identified, freed, and retracted laterally. The tracheo-esophageal groove was entered with blunt dissection, taking care to avoid injury to the recurrent laryngeal nerve. A Foley catheter was passed through the mouth and into the esophagus, and inflated in order to facilitate manipulation and examination of the
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FIG. 1. Computerized tomography scan of the neck and upper thorax at the C7-T1 level demonstrating leftward displacement of the contrast-filled esophageal lumen (open arrow) by an anterior paraspinal soft-tissue mass (closed arrow). L indicates the patient’s left.

FIG. 2. Anteroposterior (A) and left posterior oblique (B) views of the barium swallow test showing the right posterolateral paraesophageal mass lesion (arrows) displacing the barium column at the C7-T1 level.

esophagus. No abnormality of the esophagus was found, but a soft spongy mass was identified projecting anteriorly from the interspace at C7–T1. Neurosurgical consultation was then obtained.

The prevertebral fascia overlying the C7–T1 interspace was incised, as was the anterior spinal ligament. As soon as the ligament was divided, whitish spongy tissue appeared from beneath the incision. The leaves of the anterior spinal ligament were then dissected away from the underlying spongy tissue, which proceeded to extrude spontaneously from the interspace. The material was degenerated disc which was verified by pathological examination. The remaining degenerated disc material was removed using small pituitary forceps and a nerve hook. Once the degenerated material had been removed, the anterior surface of the anulus and the adjacent bone margins were inspected and found to be smooth. The anulus and cartilaginous plates in the interspace were not removed. The anterior spinal ligament was sutured.

Postoperative Course. With the exception of some persistent hoarseness, the patient’s postoperative course was uneventful. At follow-up examination 1 week after surgery, he was doing well without recurrence of his preoperative complaints, and the hoarseness had resolved. He remained symptom-free 5 months following surgery.

Discussion

While more than 60 cases of anterior cervical osteophytes causing dysphagia have been reported,5 symptoms caused by anterior herniation of a soft cervical disc have rarely been described. Anterior cervical disc herniation of a soft cervical disc has been reported at least twice.4,11 In the first case,4 a 20-year-old woman presented with a 2-week history of neck pain with movement, and dysphagia and regurgitation on taking solid food. Preoperative plain films and a barium swallow revealed a “fluffy radiodensity” between the C-7 and T-1 vertebrae which extended anteriorly “as if there had been anterior herniation of this (partially) calcified material.” At operation, partially calcified degenerated disc material, which had ruptured through the anulus and anterior longitudinal ligament at C7–T1 and dissected anteriorly and cephalad under the prevertebral fascia, was identified and excised. In the second case,10 which was treated at our institution, a 60-year-old man presented with a 15-month history of intermittent dysphagia on taking solid food. A barium swallow revealed a smooth, rounded, extrinsic defect of the right posterolateral esophageal wall at the C7–T1 level. Esophagoscopy documented the extrinsic nature of the lesion, approximately 10 cm distal to the cricopharyngeus muscle. As in the present case, a leiomyoma was thought to be the most likely diagnosis. At surgery, the esophagus was normal but an anteriorly herniated disc at the C7–T1 level was identified and excised. No calcium was present in that specimen. A postoperative barium swallow was unremarkable.

The patients from the two previous cases of documented anterior cervical disc herniation did well after surgery, as did the patient in the present case. Preoperative complaints resolved completely after removal of the disc in all three cases. The patient presented in this report suffered transient hoarseness that resolved in the early postoperative period. Injury to the recurrent laryngeal nerve is a significant risk with an anterior...
operative approach to the lower cervical and upper thoracic region.6

The mechanism by which anterior cervical disc herniation takes place is unknown; no clear history of previous trauma was obtained from either of the two patients treated at our institution. The fact that all three of the reported cases of anterior cervical disc herniation occurred at the C7–T1 level may or may not be significant. Anterior herniation may occur at higher cervical levels but go unrecognized because it may not cause significant symptoms. On the other hand, the C7–T1 junction might be particularly vulnerable to anterior disc herniation, perhaps due to the relatively "fixed" nature of T-1 with respect to the first ribs compared to the more "mobile" C-7. Such a mechanism, however, is purely speculative.

Several theories have been proposed regarding the mechanism of anterior vertebral osteophyte formation.8,12,13 One possibility is that herniated anterior cervical discs undergo degenerative changes and eventual ossification. This theory appears to be supported by experimental intervertebral disc degeneration, produced in rabbits by ventral nuclear herniation, which reliably produces vertebral osteophytes.9 This suggests either a cause and effect relationship, or a continuum between anterior cervical disc rupture and the development of anterior cervical osteophytes. The former mechanism was favored in a case report of osteophytic proliferation occurring in association with anterior thoracic disc herniation,8 and in a postmortem study in which anterior disc herniation was found in 6% of 50 lumbar spines, usually in association with osteophytes.1 The latter mechanism is supported by the previously reported case of a partially calcified herniated anterior cervical disc.4 If such mechanisms account for the formation of anterior cervical osteophytes, it would imply that anterior cervical disc herniation is not uncommon, in spite of the few reports in the literature of this entity. The majority of these lesions at an early stage are probably asymptomatic.

Several authors have described a soft-tissue component associated with anterior cervical osteophytes, generally believed to be inflammatory, producing dysphagia.27,11 Such "inflammatory lesions" have been variably treated with combinations of clear liquids, vitamins, antibiotics, and anti-inflammatory drugs, with at least temporary resolution of symptoms. Conceivably, such lesions might be soft degenerated discs that have herniated anteriorly.

At least two of the three known reported cases of anterior cervical disc herniation were not recognized as such until the time of surgery. Neck pain was not a prominent symptom in either of these cases, and no neurological findings were present. It is therefore not surprising that neither patient was seen by a neurosurgeon preoperatively. The referral to a cardiothoracic surgeon in each case was appropriate, given the complaint of dysphagia in one and "unusual sensations" in the anterior aspect of the neck in the other. Radiographic studies demonstrating extrinsic esophageal compression, considered to be consistent with leiomyoma in each case, contributed to the incorrect preoperative diagnosis. Although other entities causing or simulating extrinsic compression of the lower cervical and upper thoracic esophagus are considerably more common (notably leiomyoma, lipoma, lymphadenopathy, vascular anomalies, hematoma, abscess, thyroid or parathyroid enlargement, and spinal osteophytes), anterior herniation of a cervical disc should be included in the differential diagnosis of these complaints.10

Acknowledgments

The authors would like to thank Dr. Henry G. Schwartz for his critical comments on the manuscript, and Ms. Margo Gross for secretarial assistance.

References


Manuscript received October 5, 1987.
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J. Neurosurg. / Volume 69 / July, 1988