Clinical history

A 67-year-old man presented with hoarseness and dysphagia since 6 months. Clinical neurological examination revealed a sore voice. Clinical examination of the other cranial nerves was normal. Laryngoscopy confirmed a left unilateral vocal cord paralysis. CT scan of the chest was performed to exclude a space-occupying lesion in the mediastinum (Fig. 1). MRI of the cervical spine was performed to visualize the course of the recurrent laryngeal nerve from the base of the skull to the superior thoracic aperture (Fig. 2). No tumoral mass or extrinsic compression of the recurrent laryngeal nerve could be visualized at the level of the neck.

Imaging findings

Figure 1: CT scan of the upper chest region, axial section at the level of the second and third thoracic vertebra.
Fig. 1a: Soft tissue window setting.
Fig. 1b: Bone window setting.
The images reveal a large thoracic osteophyte with an antero-posterior diameter of 1.8 cm and latero-lateral diameter of 1.9 cm at the left anterior border of the second and third thoracic vertebra with mass effect on the left tracheo-oesophageal groove and deviation of the esophagus to the right, presumably compressing the recurrent laryngeal nerve on its course through this groove.

Figure 2: MRI of the upper thoracic spine, sagittal T2-weighted image.
Again the huge osteophytes left at the level of the second and third thoracic vertebra are shown.

Figure 3: Schematic drawing of the mediastinum at the level of the third thoracic vertebra.

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The diagnosis of **left recurrent laryngeal nerve compression by a large osteophyte of the second and third thoracic vertebra** was made by exclusion.

**Comment**

Unilateral vocal fold paralysis (UVFP) occurs from a dysfunction of the recurrent laryngeal or vagus nerve innervating the larynx. Although most patients are asymptomatic, the most common symptoms are hoarseness and dysphonia. Associated dysphagia is frequent.

The vagus and recurrent laryngeal nerve can be compromised anywhere along its course. Because direct visualization on CT is not possible, knowing the course is essential in the assessment. The left vagus nerve, containing the recurrent laryngeal nerve, exits the skull base through the jugular foramen and descends along the neck within the carotid sheath posterolateral to the internal and common carotid artery. At the level of the aortic arch, the left recurrent laryngeal nerve branches off, and it passes below the arch through the aortopulmonary window posterior to the ligamentum arteriosum. Then the nerve ascends vertically through the superior mediastinum to reach the tracheo-esophageal groove (Fig. 4) where it finally provides motor fibres to the intrinsic laryngeal muscles with the exception of the cricothyroid muscle.

The most common causes of unilateral vocal fold paralysis are neoplasm, trauma, degenerative neural disorders and idiopathic. Primary nerve tumors are rare, but neoplastic invasion and/or compression of the vagus and recurrent laryngeal nerve by malignancy of the skull base, neck, or thorax is common. Traumatic or iatrogenic injury includes most often aortic dissection, post-operative status after thyroidectomy, carotid endarterectomy and anterior cervical spine fusion.

A number of inflammatory, infectious, and vascular conditions can result in paralytic neuropathy. Laryngoscopy is done to evaluate vocal cord mobility. Laryngeal stroboscopy is done to exclude intrinsic laryngeal causes. If negative, CT or MRI from the skull base to the upper mediastinum is done to reveal a tumor or other extrinsic causes of compression.

Only two cases of vocal fold paralysis due to cervical osteophytes are reported in the literature. In the presented case, signs of neuropathy of the recurrent laryngeal nerve could not be visualised on MRI. Despite this fact, we concluded that the large osteophyte of the second and third thoracic vertebra was the cause of the recurrent laryngeal nerve compression in the left tracheo-esophageal groove. Although a rare cause, CT evaluation of vocal cord paralysis should include detailed analysis of the bony structures of the cervical and thoracic spine to exclude nerve compression by an osteophyte.

**Key words**

Hoarseness - vocal cord paralysis - vertebrae, thoracic, osteophytes

**References**


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