The Journal of Laryngology and Otology
March 1996, Vol. **110,** pp. 294–296

Schwannoma of the larynx: a case report

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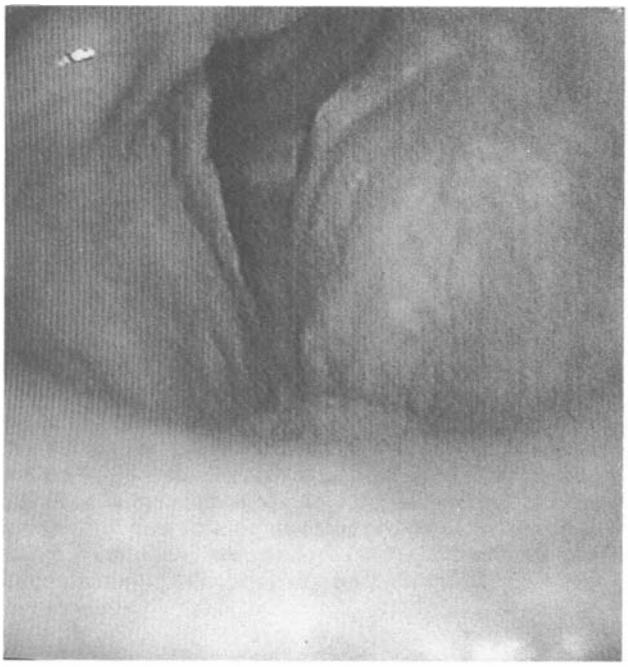
Abstract
A case of schwannoma of the larynx is presented. Clinical findings are presented together with magnetic resonance images. The literature is reviewed. The surgical technique is discussed and the histology is described.

Key words: Laryngeal neoplasms, schwannoma

Introduction

A schwannoma is a benign encapsulated tumour that originates from the Schwann cells sheathing all nerve fibres outside the central nervous system. The tumour contains two types of histologically different areas which are classified as Antoni types. The Antoni-A area, or type Vérocay, consists of compacted and bipolar parallel cells with nuclei arranged in palisade form. The Antoni-B area, or reticular type, has fewer cells which are loosely organized, with spindle-shaped nuclei (Vanhoudenarde *et al.*, 1987). Additional characteristics of Antoni-B type are xanthic and myxoid degeneration, blood vessel hyalinization, and perivascular haemosiderin deposition (Stanley *et al.*, 1987). The head and neck region is frequently involved, e.g. acoustic neuroma, but a schwannoma of the larynx is rare (Takumida *et al.*, 1986).



R L

FIG. 1a

Videostroboscopic picture of the larynx with a tumour of the left vestibular fold (false cord).

Case report

A 59-year-old man consulted the ENT-department with progressive hoarseness. He had never smoked and there was no history of airway infection. Indirect laryngoscopy revealed a swelling of the left vestibular fold (false cord), covered with an intact mucosa. Videostroboscopy showed

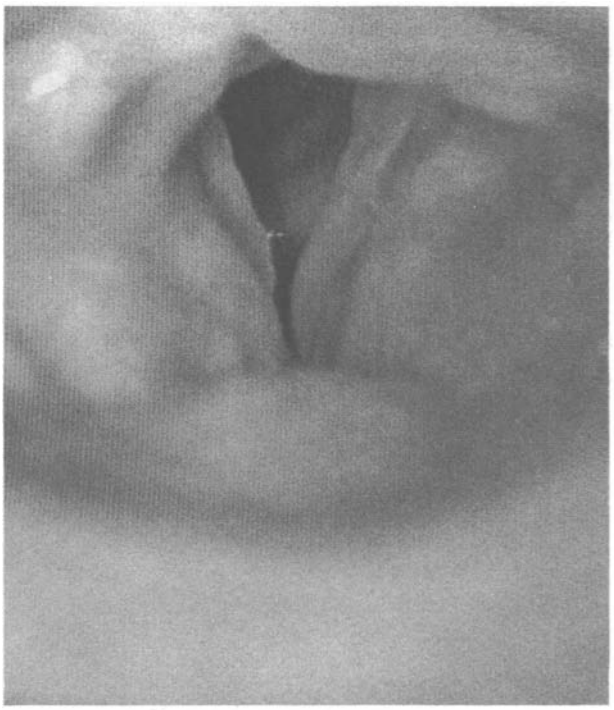


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FIG. 1b

Post-operative view of the larynx. The mass disappeared and on dynamic images the vibration as well as the mucosal wave pattern reappeared.

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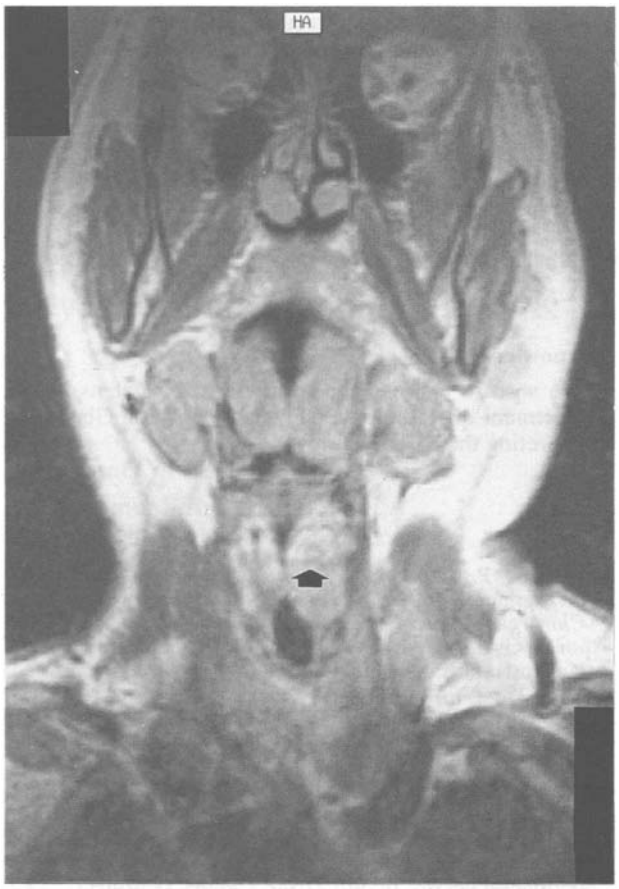
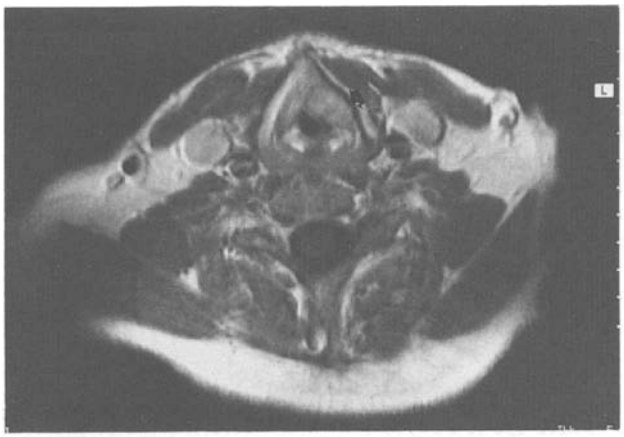
Accepted for publication: 18 November 1995.



(a)



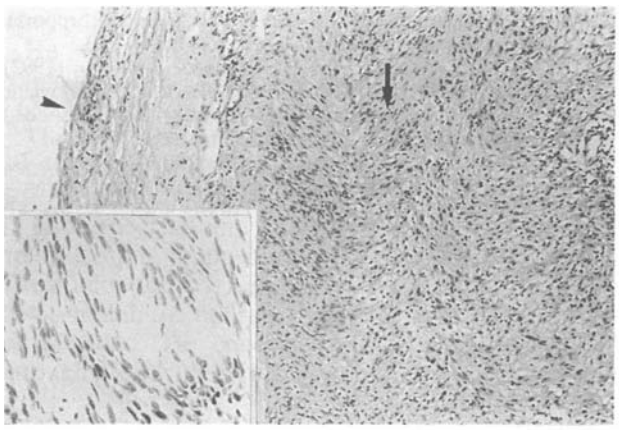
(b)

FIG. 2

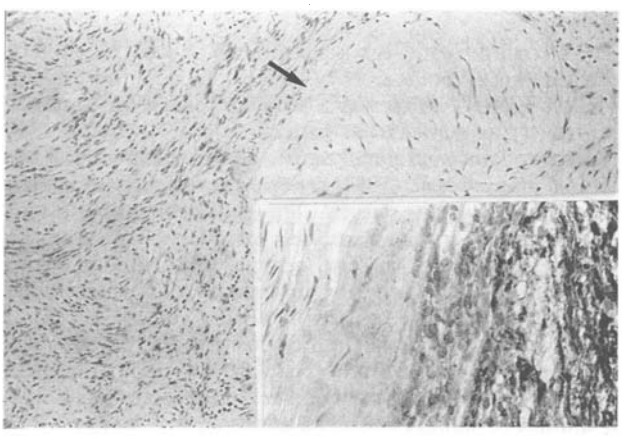
Magnetic resonance imaging, T1-weighted after Gd-DOTA. A well-defined capsulated (arrow) tumour of the left ventricular fold (false cord).
a: Coronal view;
b: Axial view.

normal symmetrical glottal movements, but an absent mucosal wave pattern and deficient glottal closure (Figure 1a). A biopsy was taken under general anaesthesia and displayed normal pseudostratified ciliated glandular and squamous epithelium. The lamina propria was infiltrated by lymphocytes. Magnetic resonance imaging (MRI) (Figure 2) showed a capsulated tumour in the left supraglottic region, that seemed not to invade the underlying soft tissues. On T1-weighted images a mass of homogenous density was seen that enhanced well after gadolinium injection.

By means of a thyrotomy an encapsulated tumour that was situated in the submucosa of the left vestibular fold was removed. The nodule measured 1.7 × 1.6 cm. On histological examination, the nodule was well encapsulated, and consisted of spindle-cells. In some areas, the



(a)



(b)

FIG. 3

Light microscopic image.

a: Antoni A: Proliferation of spindle-cells with indistinct cytoplasmic borders. The nuclei are twisted and are focally arranged in a palisade (arrow). The tumour is surrounded by a fibrous capsule (arrowhead) (H & E; × 100). Insert shows the palisaded nuclei at higher magnification (H & E; × 400).

b: Antoni B: Proliferation of spindle-cells amongst a myxoid oedematous matrix (H & E; × 100). The inset shows the strong staining for S-100 by immunohistochemistry in all tumour cells. The cells of the fibrous capsule are negative (Immunohistochemistry × 250).

https://doi.org/10.1017/S002221510013347X Published online by Cambridge University Press

spindle-cells had indistinct cytoplasmic borders. The nuclei were twisted and arranged in palisades (Figure 3a). Other areas were far less cellular with nuclei arranged haphazardly. The matrix was microcystic (Figure 3b). Some blood vessels had a hyalinized wall. Since there were no mitotic figures, no nuclear pleomorphism, and there was an intact capsule, the lesion was considered benign. Immunohistochemical staining for S-100 was positive in all spindle-cells (Figure 3b, inset).

Four weeks later the quality of the voice was considerably improved. Videostroboscopy showed repaired laryngeal structures (Figure 1b).

Discussion

There are few reports in the literature on schwannoma of the larynx. It was first described in 1908 by Vérocay (as cited by Cummings *et al.*, 1969), who introduced the term neuroma. Neurilemmoma and perineural fibroblastoma are alternative synonyms. The latter is a misnomer since it implies a mesodermal origin for the cells. Most authors, however, describe the tumour derived from the ectoderm (Aponte and Vicéns, 1955; Cummings *et al.*, 1969). It is usually a solitary lesion, but may be multiple and may even be associated with von Recklinghausen's disease, which can be considered as disseminated neurofibromatosis (Aponte and Vicéns, 1955). Confusion sometimes exists between neuroma, that may be seen in amputated limbs, and neurofibroma. The neurofibroma is not specifically encapsulated and is characterized by the proliferation of sheath cells and nerve fibres. Sarcomatous degeneration occurs very infrequently (Cummings *et al.*, 1969). Immunocytochemical stain for S-100 protein is used to identify tumours of Schwann cell origin (Stanley *et al.*, 1987; Hippel and Chmielewski, 1989). According to Enzinger (Enzinger and Weiss, 1988) the diagnosis of a schwannoma is made by three criteria: 1) the tumour has a capsule; 2) it contains Antoni-A and Antoni-B areas; 3) S-100 reaction is positive.

Scanty data are available concerning MRI-characteristics of schwannomas in the head and neck region. A parapharyngeal schwannoma is described as having a capsule and homogenous density and enhancement that is slightly more than muscle. The difference with carcinomas is the fact that these are less defined due to the lack of a capsule, and they have a less homogenous aspect (Teresi *et al.*, 1992).

We confirm that diagnosis is difficult without excision of the tumour (Aboulker *et al.*, 1966). Indeed the capsule hinders biopsy, which was a possible reason for unrepresentative fragments in our patient.

In a study of neural and neuroendocrine tumours of the larynx, Stanley *et al.* (1987) reported seven cases of benign schwannoma of the larynx. The most common sites of involvement were the vestibular fold (false cord) and the aryepiglottic fold. In our patient the tumour arose probably from the superior laryngeal nerve, which is the nerve that is most frequently involved (Nanson, 1978).

A schwannoma is not radio-sensitive; therefore radiotherapy is not considered (Natali *et al.*, 1980). Surgical excision is the treatment of choice. In this case the tumour could not be eliminated by an endoscopic procedure. The endoscopic technique is a safe procedure for small tumours such as exophytic schwannoma of the vocal fold (Bonkowsky and Hamann, 1988): it is not indicated in tumours that are multiple or extend into the deeper soft tissues. In the external approach, the recurrent nerve is more at risk (Cummings *et al.*, 1969), but there is less chance of recurrence.

A schwannoma of the larynx is a rare tumour and the diagnosis is difficult. Nuclear magnetic resonance imaging can be helpful in differentiating between malignant and benign laryngeal tumours. Immunohistological staining for S-100 protein is used to identify tumours of Schwann cell origin. In this report a well-documented case is presented together with the criteria for diagnosis.

Acknowledgement

We wish to express our gratitude to F. Delens, M.D., Department of Radiology, University Hospital Ghent, for interpreting the MRI-pictures.

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