Case Report

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Horner's Syndrome and Thyroid Neoplasms

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Key Words

Thyroid · Cancer · Tumor · Horner's syndrome · Sympathetic nerve system · Neck

Abstract

Although thyroid goiter is a common condition, it rarely results in Horner's syndrome. We report a case of a patient with an intrathoracic multinodular goiter complicated by Horner's syndrome. Benign thyroid disease was confirmed pathologically, and the patient's symptoms improved after surgery. In the literature, the major cause of Horner's syndrome is neoplasia, with malignant lesions being twice as frequent as benign tumors. An extensive review of the literature demonstrates a different repartition for thyroid neoplasia: including our case, 38 cases of Horner's syndrome secondary to a benign thyroid tumor are described, against only 8 cases caused by a thyroid carcinoma. We conclude that contrary to the commonly held opinion, Horner's syndrome is more often due to benign thyroid diseases than to thyroid malignancies.

The syndrome described by Horner [1] is classically characterized by the association of miosis, ptosis, facial anhydrosis and enophthalmus. It results from the paralysis of the ipsilateral sympathetic chain.

The etiologies of Horner's syndrome are diverse, but large series of patients report tumors as the most frequent cause, with an incidence varying between 36% [2] and 13% [3]. Thyroid neoplasms are an unusual cause of Horner's syndrome [2–4].

We report the case of a patient with intrathoracic goiter complicated by Horner's syndrome and review the literature about the association of thyroid neoplasms and Horner's syndrome.

Case Report

A 57-year-old male presented with a neck mass and Horner's syndrome. Seventeen years before presentation he had had a thyroid lobectomy and median sternotomy for the removal of a benign thyroid goiter. No thyroid-suppressive therapy had been initiated. Chest radiography 12 years earlier was reported as normal. A lower neck mass extending to the upper mediastinum had been noted 5 years before presentation. Fine-needle aspiration was compatible with a benign lesion, showing macrofollicular cells and colloid material. The patient was then placed on suppressive thyroid therapy with little response, despite good compliance.

Within the year before presentation, the patient had consulted an ophthalmologist because of a dry and red right eye and had been

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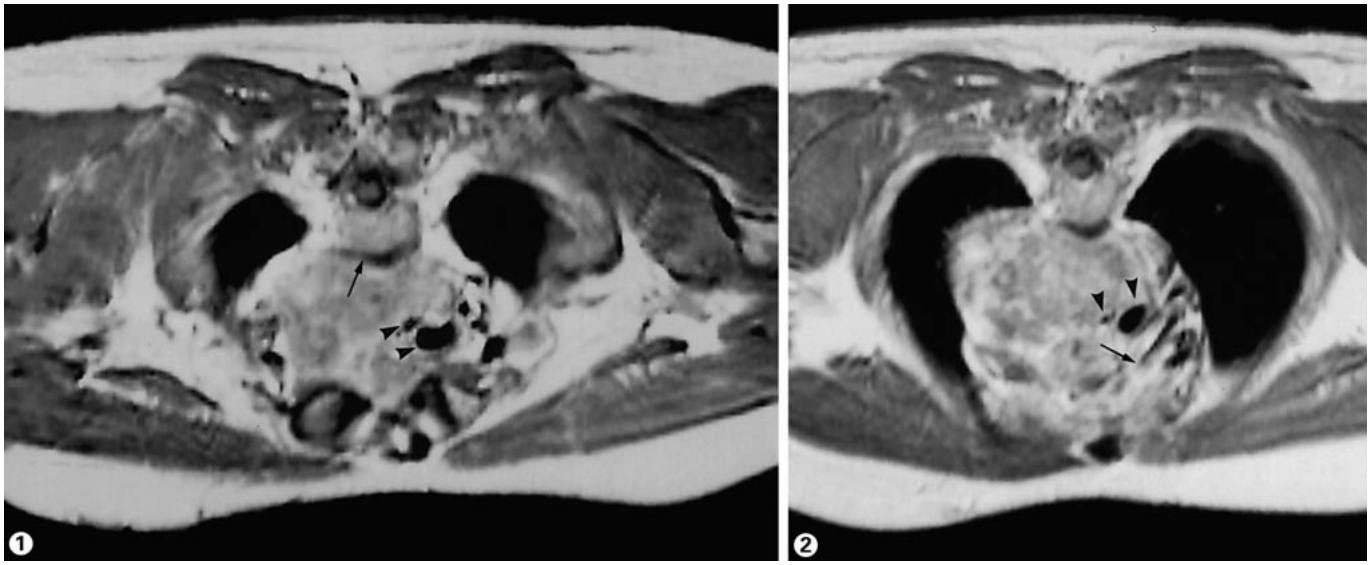

Fig. 1. Contrast-enhanced T_1-weighted spin echo image at the level of the sternoclavicular joints shows a large tumor mass arising from the thyroid gland displacing the trachea and the esophagus to the left (arrowheads). Note extensive invasion of the upper mediastinum as well as posterior tumor spread up to the anterior portion of the thoracic vertebrae (arrow).

Fig. 2. Contrast-enhanced T_1-weighted spin echo image at a lower level shows widespread mediastinal involvement with encasement of the trachea and esophagus (arrowheads) as well as the brachiocephalic vein (arrow). Note again extensive posterior tumor spread up to the anterior portion of a lower thoracic vertebra.

Table 1. Etiology of Horner's syndrome by localization

	Giles and Henderson [2] (1958)		Grimson and Thompson [6] (1979)		Keane [5] (1979)		Maloney et al. [3] (1980)		Wilhelm et al. [4] (1992)	
	n	%	n	%	n	%	n	%	n	%
Central	19	9	4	3	63	63	34	8	0	0
Preganglionic	144	67	49	41	21	21	120	27	33	37
Postganglionic	1	0	41	34	13	13	116	26	20	22
Congenital	0	0	12	10	0	0	0	0	6	7
Undetermined	52	24	14	12	3	3	180	40	31	34
Total	216		120		100		450		90	

treated symptomatically. He was later admitted for the investigation of anisocoria. A history of dry right facial skin was present. He had dyspnea on exertion associated with a mild stridor and was therefore referred for otolaryngological evaluation.

The patient enjoyed otherwise good health. He had had a transurethral prostatic resection a year previously for benign prostatic hypertrophy. He had a history of penicillin allergy. The only medication was levothyroxin at 0.1 mg p.o. daily. There was no family history of thyroid disease.

On physical examination, a right Horner's syndrome was present with miosis, palpebral narrowing (upper eyelid ptosis and lower eyelid elevation) and facial anhydrosis. No enophthalmus was detected. The extraocular eye movements and visual acuity were normal. A firm lower neck mass of 5 × 3 cm was found. The mass extended down to the thoracic inlet. Vocal cord mobility was intact. The remaining physical examination was unremarkable.

The patient was euthyroid. A chest radiograph and MRI (fig. 1, 2) demonstrated a mostly intrathoracic goiter arising from the right thyroid lobe, displacing the trachea to the left and extending to the level of the carina.

A total thyroidectomy and median sternotomy were performed. The recurrent nerves were identified and preserved bilaterally. A transient hypocalcemia that did not require calcium replacement was present postoperatively. The final pathology showed a multinodular goiter. The Horner's syndrome improved over the following 6 months.

Table 2. Causes of Horner's syndrome

Authors	Reported cases of Horner's syndrome associated with thyroid disease	Type of thyroid disease		Other symptoms
		benign	malignant	
Leuchter et al. (this study)	1 case	1 intrathoracic goiter confirmed by pathology		tracheal deviation, Horner's syndrome improved after surgery
Freeman et al. [19] (1997)	1 case		1 thyroid carcinoma	tracheal deviation
Kezachian et al. [18] (1993)	1 case	1 benign toxic multinodular goiter confirmed by pathology		tracheal deviation, Horner's syndrome improved after surgery
Wilhelm et al. [4] (1992)	90 cases of Horner's syndrome; 59 with known etiology	7 cases of benign goiter		
Rabano et al. [17] (1991)	1 case		1 papillary carcinoma confirmed by pathology	right Pancoast's syndrome, esophageal deviation
Cengiz et al. [16] (1990)	1 case	1 intrathoracic goiter, no pathology		hyperthyroidism, tracheal and esophageal compression, superior vena cava syndrome, patient died during surgery
Oravec and Moravec [15] (1988)	65 cases of thyroid enlargement with compression syndromes	5 cases of multinodular goiter		
Lowry et al. [14] (1988)	1 case	1 multinodular goiter confirmed by pathology		tracheal deviation
Robinson [13] (1987)	1 case	1 multinodular goiter, no pathology		tracheal deviation
Levin et al. [12] (1986)	1 case	1 multinodular goiter, no pathology		bilateral Horner's syndrome, tracheal deviation
Billie et al. [11] (1982)	1 case		1 thyroid lymphoma confirmed by pathology	right vocal cord paralysis, tracheal deviation
Maloney et al. [3] (1980)	450 cases of Horner's syndrome; 270 with known etiology	6 cases of thyroid adenoma	2 cases of thyroid carcinoma	
Ijaiya and Grychtolik [10] (1972)	1 case	1 benign goiter, no pathology		tracheal deviation
Giles and Henderson [2] (1958)	216 cases of Horner's syndrome; 164 with known etiology	12 cases of thyroid adenoma	2 cases of thyroid carcinoma	
Jaffe [9] (1950)	4 cases reported	1 substernal thyroid adenoma		dyspnea, Horner's syndrome improved after surgery
Herbut and Watson [8] (1946)	1 case		1 thyroid carcinoma	left Pancoast's syndrome, dysphagia, hoarseness
Total		38	8	

Discussion

Etiologies of Horner's syndrome are classically divided according to the neuron involved. The frequency of various etiologies and localizations of the defect varies considerably in each report and depends on the referring patterns of the reporting physicians [5]. Central neuron lesions are the least frequent cause of Horner's syndrome, ranging from 0% [4] to 9% [2], except for Keane [5], who reports 63% [5]. The combined incidence in the 5 reports reviewed [2–6] is 17% (table 1). The central sympathetic pathway is in close relation with the cerebellum and the brainstem, and therefore central sympathetic lesions are often associated with other neurological defects [7]. Preganglionic lesions are the most frequent cause of Horner's syndrome: from 21% according to Keane [5] to 67%

according to Giles and Henderson [2]; the combined incidence in the 5 reports is 40% (table 1). Neoplasms of the apex of the lung are the most common entity, other causes being intrathoracic and cervical aneurysms, tumors of the upper aerodigestive tract, iatrogenic or accidental trauma, infections, thyroid diseases and cervical adenitis. Postganglionic lesions are also a common cause of Horner's syndrome: 19% as a combined frequency in the 5 series (table 1). The various etiologies are vascular (cluster headache, internal carotid artery aneurysm), traumatic (iatrogenic, accidental), infectious (otitis media, sinusitis, petrositis) and Raeder's syndrome. The etiology remains undetermined in a large portion of Horner's syndrome: 23% in the 5 reports (table 1).

According to most reports, thoracic and cervical tumors are the most frequent cause of Horner's syndrome, representing from 13% [3] to 36% [2]; malignant tumors are more often found than benign ones: 62 versus 38% according to Maloney et al. [3] and 75 versus 25% according to Giles and Henderson [2]. The most common neoplasm causing Horner's syndrome is the bronchogenic carcinoma usually of the apex of the lung. When Horner's syndrome is associated with arm and hand pain due to brachial plexus invasion, it takes the eponym of Pancoast syndrome.

Thyroid neoplasms, benign or malignant, are an unusual cause of Horner's syndrome and represent from 1.8% [3] to 7.8% [4] of cases. In a series of 216 cases of Horner's syndrome, Giles and Henderson [2] report 12 cases due to a benign thyroid neoplasm and 2 due to a thyroid carcinoma. In their report of 450 patients, Maloney et al. [3] have noted 6 cases of Horner's syndrome caused by a benign thyroid adenoma and 2 by a thyroid carcinoma. Wilhelm et al. [4] report 7 benign goiters and no malignant thyroid disease. An extensive review of the literature [2–4, 8–19] revealed 38 benign thyroid diseases and 8 thyroid carcinomas as causes of Horner's syndrome (table 2). The most frequent pathology is a multinodular goiter with a large intrathoracic extension.

We conclude that contrary to the commonly held opinion, Horner's syndrome is more often due to benign thyroid diseases. The association of Horner's syndrome and a thyroid mass should not lead to the conclusion that the thyroid lesion is malignant.

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