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## Solitary cystic lymph neck node metastasis of occult thyroid papillary carcinoma

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### Abstract

The appearance of a solitary lateral cervical cystic mass as the only initial presenting symptom of occult thyroid carcinoma is uncommon. Its presence is often misdiagnosed due to the more frequent branchial cyst in young people. Although oronasopharyngeal squamous cell carcinoma has been reported as the main cause of lymph neck node metastasis, thyroid papillary carcinoma may be responsible for solitary cervical cystic masses as the initial manifestation of the disease. This situation has been rarely reported, although solid masses are much more frequent. In most of these cases all such lesions may initially be considered as metastatic foci from a primary thyroid lesion. However, an alternative explanation by means of which ectopic thyroid tissue is associated with a branchial cyst has to be considered, especially if no primary tumour is observed in the histological examination of the thyroid gland. We present a rare case of solitary cystic lymph node metastasis of occult papillary carcinoma of the thyroid. We also discuss possible etiology for thyroid papillary carcinoma in lateral neck cysts.

**Key words:** *Thyroid papillary carcinoma, branchial cyst, lateral cervical cyst.*

### Introduction

Branchial cysts have been referred as the main cause of cystic masses in the lateral aspect of the neck in young adults (1). This condition may induce the surgeon to misdiagnose cervical cysts containing carcinoma. Although cervical metastasis from oronasopharyngeal squamous cell carcinoma has been reported as the main cause, occult papillary carcinoma may be responsible for solitary cystic masses as the initial manifestation of the disease. This situation has been rarely reported (2), although solid masses are much more frequent.

Differential diagnosis between a branchial cyst and a solitary cystic lymph node metastasis from occult thyroid papillary carcinoma may be difficult, despite the use

of computed tomography (CT) or magnetic resonance imaging (MRI) and fine needle aspiration (FNA) of the cystic mass. A more unexpected situation may be present if no primary tumour is identified within the thyroid gland following thyroidectomy and cervical lymphadenectomy in ulterior histological analysis. In this situation, histological confirmation of papillary carcinoma arising within a true branchial cyst may be only explained by the presence of ectopic thyroid tissue.

### Case Report

A 29 year-old male patient was referred to our department for evaluation of a lesion in the left side of the neck. The patient indicated that he had noticed a round left cervical

mass for approximately 3 weeks. No other symptoms were referred by the patient. Physical examination showed a 3x3-cm painless mass located in the mid jugular region, below the sternocleidomastoid muscle. Neither skin ulceration nor adherence to deep tissue was present. No other physical alteration was observed within the head and neck examination. Fine needle aspiration (FNA) was performed with the result of a dark-browened cystic lesion with abundant macrophages, neutrophils and lymphoplasmacytic cells with no support for malignant degeneration.

A CT was performed. It demonstrated a cystic mass measuring 30 mm in transverse diameter located in the left jugular chain and the fat pad of the posterior cervical triangle. It showed a low radiological density corresponding to a predominant cystic nature crossed by septi and limited by hyper-density solid poles. Neither intra-thyroid nodes nor pharyngeal nor laryngeal nodes or masses were observed. With the initial diagnosis of branchial cyst, the patient underwent excisional biopsy by means of lateral cervicotomy. Several dark-brown cystic nodes were extirpated along the jugular chain (fig.1). Macroscopically, it was noted to be a cystic mass with a viscose liquid content.

Solid regions with a nodular appearance were observed. The main diagnosis was thyroid papillary carcinoma within a lateral cervical cyst. A valid diagnosis option was cervical cystic node metastasis from papillary carcinoma of the thyroid. At this point, an alternative diagnosis was established upon papillary carcinoma arising in ectopic thyroid tissue lying within a branchial cyst.

Following recovery, 99mTc-Perthechnate Gammagraphy was performed. Homogeneous capture of the radiotracer was observed within the whole thyroid gland. No glandular abnormalities were detected. Cervical MRI was subsequently performed. A high-density 34x25x18-mm left supraclavicular oval lesion was observed in T1 and T2 sequences. No vascular structures were noted following administration of para-magnetic contrast. No inflammatory changes were either observed. Due to T1 and T2-high density images, proteic or haematic content was suggested. No lesions were observed in the thyroid gland (fig.2).

At this point, total thyroidectomy together with modified type 3 radical neck dissection was performed. Histological examination of the thyroid gland showed a 0.6-cm fibrous area with cellular proliferation within the left lobe corres-



Fig. 1. Intraoperative view of the lesion.



Fig. 2. MRI showing left supraclavicular and jugular oval lesions.

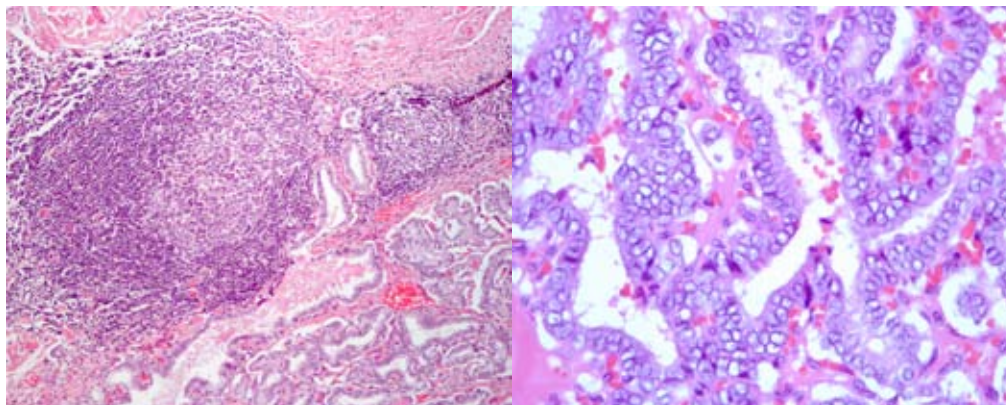


Fig. 3. Histological examination. Hematoxylin-eosin staining. A. Note cells corresponding to thyroid papillary carcinoma, cystic cavity and lymphoid tissue. B. (40x). Thyroid papillary carcinoma cells.

ponding to papillary carcinoma. Serial sectioning of the embedded thyroid showed several microscopic foci of carcinoma within the left lobe. The postoperative course was uneventful. Two lymph nodes located in paratracheal and jugulo-digastric region were infiltrated by papillary carcinoma. A cystic lymph node infiltrated with papillary carcinoma was observed within the left upper jugular chain. Peripheral lymphoid stroma was noted (fig.3).

## Discussion

Differential diagnosis between branchial cyst and cystic degeneration within a lymph node replaced by metastatic thyroid carcinoma has to be properly established because of management considerations. This last condition usually appears as a solid mass in the central or paratracheal compartment as well as at the middle and lower jugular chain. Thus, the appearance of a solitary lateral cervical cystic mass as the only initial presenting symptom of occult thyroid carcinoma is extremely rare, with approximately 40 cases previously reported in the literature (2-6). Seven et al. (2) have reported 11% of thyroid malignancy in patients with primary diagnosis of lateral cervical cyst, thus alerting the surgeon to be aware of metastatic thyroid carcinoma being present in such cervical cystic lymph nodes in young patients.

Controversy exists regarding the origin of cervical lymph nodes containing papillary thyroid carcinoma in those patients in which a primary tumour of the thyroid has not been demonstrated. Due to the possibility of occult (smaller than 1.5 cm) carcinoma of the thyroid, serial sectioning of all the blocks of the totally embedded thyroid should be performed. Traditionally, it has been thought that all of these lesions are metastatic foci from primary thyroid lesions (7). However, new theories hypothesize that ectopic thyroid tissue may be present associated with a branchial cyst (8,9). In relation to it, branchial cysts have been traditionally explained as a consequence of complete congenital obliteration of pharyngeal pouches two to four or, more recently, as epithelial inclusions lying within cervical lymph nodes as triggering a phenomenon of cystic degeneration (10). Both theories may explain the presence of thyroid tissue within a branchial cyst. The "acquired" theory propose that epithelium from the upper aerodigestive tract enters a cervical lymph node via lymphatics and stimulates degeneration into a lateral cervical cyst. Parham (11) reported the existence of epithelium positively stained for thyroglobulin in typical branchial cysts. Since the contribution of branchial pouches 4/5 to thyroid development is being given increasing embryological importance, the presence of persistent remnants which had failed to fuse with descending thyroid may explain its location within a branchial cyst. This theory is also supported by the presence of cysts in patients older than the third decade, the presence of cysts lying outside the upper one third of the sternocleidomastoid muscle and the rarity of finding

a tract connecting a cyst to the pharynx (2). Another possibility for papillary thyroid carcinoma in lateral neck cysts has been established in relation to benign metastases to cervical lymph nodes from the thyroid gland that undergoes ulterior malignization (12). Nevertheless, the surgeon must be aware of other possible origin for carcinoma of the thyroid tissue, such as the rare case reported by Pérez et al. (13), in which a papillary carcinoma located in ectopic lingual thyroid tissue was demonstrated. Other authors (14) have reported the appearance of thyroid carcinoma mandibular metastasis from follicular variant of thyroid carcinomas.

In summary, two main hypotheses may be established concerning the aetiology of a thyroid papillary carcinoma in a lateral neck cyst in relation to our patient. The first supports the existence of metastases from a primary tumour in the thyroid gland. The latter supports the presence of papillary carcinoma arising in ectopic thyroid tissue lying within a branchial cyst. The absence of primary tumour within the whole thyroid gland despite extensive histological examination (millimetric in size) may favour the latter theory, although it has been traditionally assumed that misdiagnosis in the histological study may be present. The presence of one or more foci of papillary carcinoma within the thyroid gland supports the first diagnostic option. Although metastases from a primary tumour in the thyroid gland was finally demonstrated in our case, head and neck surgeons must be aware of the rare possibility of papillary carcinoma arising in ectopic thyroid tissue lying within a branchial cyst.

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