CASE REPORT

Neck nodular lesions mimicking thyroid tumors

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Abstract

OBJECTIVE: Neck nodular lesions may derive from several different tissues, often mimicking thyroid tumor in the preoperative examination.
METHODS: We described three patients admitted in 2012 to the Department of Endocrine Surgery in Wrocław with nodular lesion in the neck area mimicking tumor of the thyroid gland.
RESULTS: In the first patient with a tumor in projection on the isthmus and the left thyroid lobe, neurilemmoma was discovered in the histopathological exams. In the second one with the suspicion of papillary thyroid carcinoma, adenoid cyst carcinoma was identified in the pathological examination. In the third case, suspected to being a recurrent or split goiter, non-specific, chronic lymphonodulitis was recognized in the final histology.
CONCLUSIONS: Appropriate and careful diagnostics of a nodular lesion in the neck before surgery has crucial significance for choosing optimal method of surgical treatment which has great influence on mortality rate and reducing complications.

INTRODUCTION

The etiology of nodular lesions of the neck is diverse. The lesions may be childhood developmental defects such as bronchial cleft cyst, vascular changes and also tumors originating from different tissues – glandular as well as nervous. The most common pathology of the neck in adults are tumors of salivary glands, thyroid and lymph nodes (Donatini *et al.* 2009).

Although neck lesion may originate from different tissues, it often mimics thyroid tumor in the physical examination and also in the preoperative diagnostics. In this paper, we report three cases of the patients that underwent surgical treatment in our Department with the preliminary suspicion of thyroid tumor.

CASES REPORTS

Medical records of patients of the Department of General, Gastroenterological and Endocrine Surgery, Wroclaw Medical University operated in 2012 were retrospectively analyzed.

Case 1: K.K., female, 39 years old, with nodular lesion diagnosed 15 years ago, growing for six months, painless, without any other significant

clinical signs. In the physical examination the lesion was stiff, weakly movable, projecting on the left thyroid lobe, pushing the trachea towards right side and with visible increased blood flow in the superficial neck veins.

Ultrasound (US) reported lesion adhered to the left lobe of thyroid gland that appeared solid, hypoechogenic, heterogeneous, size 3.4 cm × 4.1 cm × 5.4 cm with a 0.3 cm calcifications, a small liquid space of 0.4 cm and visible increased vascularization. Lymph nodes were not enlarged. In order to exclude the thyroid as the origin of the lesion, iodine scintigraphy was performed, which revealed normal marker uptake by the right thyroid lobe and evident external pressure on the left lobe and also lack of radioactive iodine uptake by the lesion. Magnetic resonance revealed (Figure 1) large 3.5 cm x 4 cm x 6 cm, solid tumor on the left side of the neck, just below sternocleidomastoid muscle. Tumor had lobular structure and showed contrast enhancement. Liquid was present between lobules and underneath capsule of the tumor. Lesion was pressing the thyroid gland, pushing the trachea towards right side, not ingrown into mediastinum. The tumor was pressing and pushing large neck vessels aside. Fine needle aspiration biopsy (FNAB) of the pathologic lesion revealed no malignant cells. Surgical exploration of the neck was performed – intraoperatively large neck vessels were found pushed towards trachea. Carotid artery and jugular vein ran over the surface of the stiff, solid tumor that was coming out the left prevertebral area behind sternocleidomastoid muscle. Nerves and vessels of the anterior surface of the tumor were dissected and isolated, and then between them tumor was extracted – solid, stiff, clearly capsulated, was adhering closely and pushing towards back the unaffected left thyroid lobe and the trachea towards left side.

The postoperative histological finding was: *Neurilemmoma*. Immunohistochemistry results: Vimentin, S-100, D56, PGP 9.5: (+++), Ki-67 (+) in <1% of cells, SMA, SA, AM, Desmin, CD 57, Synaptophysin (–). Postoperative period was without complications except discreet symptoms of Bernard-Horner syndrome, especially left eyelid fall; these symptoms totally resolved in the postoperative week 8.

Case 2: A.G., female, 35 years old, admitted to surgical department for thyroid surgery due to papillary carcinoma suspicion. In the physical examination: visible tumor, projecting on the right thyroid lobe and isthmus, solid, stiff, weakly movable. The lesion was noticed about a year earlier. Additionally hoarseness (without vocal chords palsy), altered voice tone, persistent infections of upper respiratory tract and laryngitis in anamnesis. The US of the thyroid gland reported highly enlarged right lobe (V=19.32 cm^3) that contained hypoechogenic lesion in most of its part, with microcalcifications, increased vascularization and without sharp borders. Size of the lesion was 4.2 cm × 2.4 cm × 2.9 cm. These findings gave the general image of disease that was suspected for neoplastic process. No lesions were found in the left thyroid lobe. Enlarged lymph nodes were not present. Decreased marker uptake was noticed in the lower pole of the right thyroid lobe in the scinthigraphy with technetium. In the FNAB multiple groups of cells with papillary structure pattern were found. Additionally in the singular cells intranuclear inclusions were present. Cytological findings were ambiguous with suspicion of neoplastic process. The patient underwent total thyroidectomy with removal of level VI lymph nodes of the central compartment.

Large, hard in consistency, tumor of the right thyroid lobe was found intraoperatively and was infiltrating trachea, larynx and recurrent laryngeal nerve. Consistency of the tumor was not typical for papillary carcinoma of the thyroid gland; the tumor was whitish without visible borders. Right recurrent laryngeal nerve was dissected and isolated from the neoplastic infiltration using neuromonitoring device, although radical removal of the lesion was impossible due to intensive infiltration on the trachea and larynx. Macroscopically the left thyroid lobe showed no pathologies, although it was removed totally with level VI lymph nodes of central compartment. Postoperative complications were not observed.

Histopathological examination revealed that the origin of the neoplasm was not a thyroid gland but a diffused glandular tissue surrounding the trachea and larynx. The results of histopathological examination: *infiltratio carcinomatosa glandulae thyroideae*; neoplas-

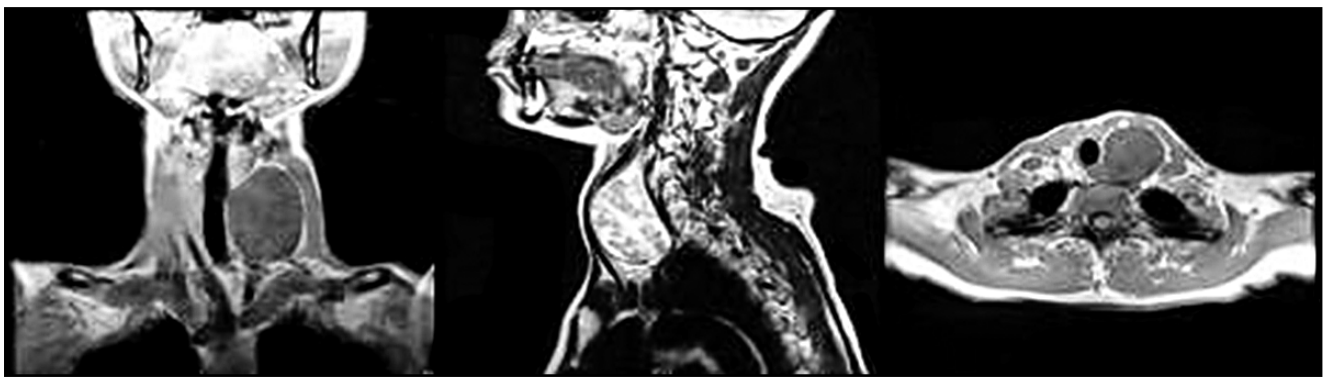

Fig. 1. Magnetic resonance image of the tumor on the left side of the neck.

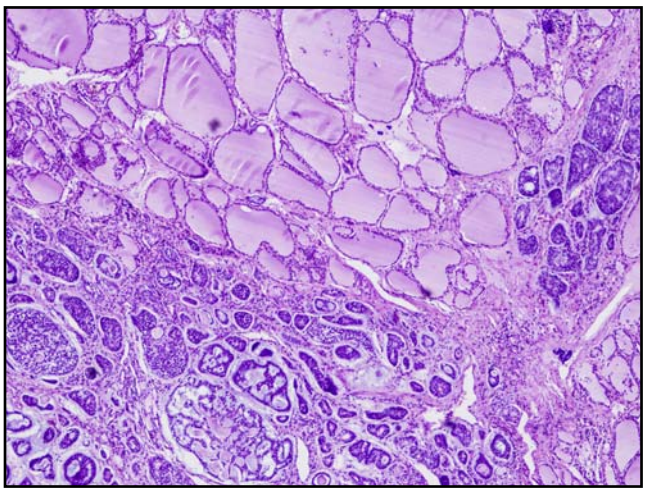

Fig. 2. Diffuse infiltration of thyroid by typical cribriform adenoid cystic carcinomas, the cells are small and darkly staining. HE stain, magnification ×40.

tic infiltration corresponds with: adenoid cyst carcinoma (ACC); lesion was not removed totally and it is not a primary neoplasm of the thyroid gland; *lymphonodulitis chronica non specifica*; immunohistochemistry: Ck7, EMA(+++), Ck20, CDX, TTF, thyroglobulin (–), Ki-67 (+) in 10% of all cells; histochemistry: PAS, mucus (+) (Figure 2).

Case 3: Z.M., female, 65 years old, after subtotal thyroidectomy 30 years ago, admitted to our Department with the diagnosis of suspected recurrent or split goiter. In the physical examination the lesion was localized on the left side of the neck, below the angle of mandible with a size of a fist. It was also solid, painless and well movable, not enlarging for 10 years, not presenting any significant clinical symptoms.

The US of the thyroid gland revealed a pathology, 4 cm diameter, localized between upper pole of the left thyroid lobe and submandibular salivary gland, with similar echogeneicity to thyroid tissue. That pathology seemed to be connected with the left thyroid lobe and could be recognized as the recurrent thyroid tissue. In the course of large cervical blood vessels no enlarged lymph nodes were found. Iodine scintigraphy of the thyroid revealed highly enlarged left lobe of the retrosternal thyroid gland. In the localization of palpable tumor there was no uptake of iodine 131-I. CT scans of the neck reported 4.0 cm × 6.6 cm × 6.0 cm heterogenous tumor with heterogenous contrast enhancement and signs of decay in the central part. Additionally multiple calcifications of various sizes were found. The tumor was pressing sternocleidomastoid muscle and pushing the left submandibular salivary gland towards front. Bilaterally, large number of round, up to 1 cm in diameter, cervical lymph nodes from group IIB, III, IV were observed. Several repeated FNABs were not diagnostic, with a blood only in the smears.

Because of uncertain character of the lesion, the patient was treated surgically. Intraoperative examination revealed fairly soft, tumorous pathological change below left submandibular salivary gland. The lesion was infiltrating towards the other structures of the neck and had excessive vascularization. An attempt was made to dissect the lesion entirely, although due to excessive vascularization of the lesion and its surrounding, as well as the lack of evident border of the pathological change, the procedure was limited to taking a specimen for further histopathological examination. Histopathological examination: non-specific, chronic *lymphonodulitis*.

DISCUSSION

Tumorous pathological changes in the neck can imitate tumors of the thyroid gland, such a reports can be found in the literature (Mikosch *et al.* 1997; Sherman *et al.* 2001, Badawi & Scott-Combes 2002; Leonardis *et al.* 2003; Aron *et al.* 2005; De Paoli *et al.* 2005). Mostly that cases are observed and treated in the endocrine surgery departments, in our Department it concerned 0.58% of all cases that underwent surgical treatment in 2012 due to thyroid diseases. Donatini *et al.* (2009) reports that patients treated in University of Pisa in 2006 with diseases mimicking thyroid tumors were the 0.15% of all cases.

Proper diagnostics of the neck tumors has a key value to obtain the correct decisions regarding the method and range of the surgical approach. It also allows to avoid or minimize the number of postoperative complications (e.g. assessment of the infiltration on the surrounding tissues, nerves). In the diagnostic process of thyroid tumors the most valuable imaging test is the ultrasound examination, although in case of hard, weakly movable tumors and in case of suspected neoplastic process the MRI of the neck should be performed, which in our experience is more useful test than a CT in assessing the pathological changes in the neck. The MRI gives us the possibility to evaluate the actual infiltration on the trachea, esophagus and other neighboring structures. Iodine scintigraphy, despite some of its limitations is a good test to confirm or exclude the origin of the thyroid lesion. Despite the high value of FNAB in the preoperative diagnostics of the neck lesions, in the case of two of our patients despite many attempts it failed to obtain any diagnostic results, and in one case of suspected papillary thyroid cancer in FNAB, it was not confirmed in the final histopathology. This demonstrates the large difficulties in the interpretation of the FNAB smears and confirms the need of evaluation of such lesions by at least two experienced pathologists (Jarząb *et al.* 2010; Wierzbicka-Chmiel *et al.* 2012; Wojtczak *et al.* 2012). In the literature the most common descriptions of neck tumors that simulate thyroid lesions concerns tumors originating from the nervous tissue: *schwannomas* (*neurilemmomas*) and *neurofibromas* that derive from

Schwann cells of nerve sheath. That kind of tumors are growing slowly for many years, usually benign and can be localized in any region of body. In the head and neck they are most commonly found in V and VII cranial nerves and in the oral cavity (Das Gupta *et al.* 1969; Sagar & Izrael 2001). Mikosch *et al.* (1997) in 1997 was the first to describe schwannoma that mimics tumor of thyroid gland, afterwards Aron *et al.* (2005) reported 3 other cases. Ganglioneuroma is the next benign, highly differentiated tumor that origins from neuroectodermal tissue, which can be localized in the neck and imitate thyroid tumor (Leonardis *et al.* 2003).

ACC is a rare type of neoplasm which can be localized in multiple different regions, but the most common localization is head and neck. It is usually a small salivary gland but the lungs, lacrimal glands, trachea, paranasal sinuses or Bartholin's gland can be the origin (Spizarny *et al.* 1986, Xu *et al.* 1987). Treatment of choice is the radical removal of the lesion with the wide margin of healthy tissue, although it is not always possible. Radiotherapy is applied as an adjuvant or palliative therapy, in case of metastases chemotherapy may be considered (Nuwal *et al.* 2010).

In the literature we find a few descriptions of rare cases of malignant ACC tumors that origins from small salivary glands localized within the region of larynx. Idowu *et al.* (2004) reported 2 cases and Nuwal *et al.* (2010) one case of ACC originating from the region of trachea, which was infiltrating and mimicking the tumor of the thyroid gland. In two among three of the described cases, suspicion for papillary carcinoma was reported in the preoperative FNAB. ACC for a long period may not present any symptoms or the symptoms can be unspecific: hoarseness, shortness of breath; such a patients are often treated for a months with a diagnosis of chronic laryngitis or asthma (Nuwal *et al.* 2010; Idowu *et al.* 2004). The patient described in this paragraph was also presenting the symptoms of chronic infection of upper respiratory tract before the final diagnosis and the thorough examination of the thyroid was ordered by a laryngologist when the first signs of hoarseness appeared.

In the differential diagnosis of the thyroid tumor we have to consider rare congenital lesions such as lymphangioma, dermatoid cyst, inflammatory diseases that causes enlargement of the lymph nodes, sarcoidosis, EBV infections, as well as oncological diseases: Hodgkin disease, lymphomas, sarcomas and neoplastic metastases to the thyroid gland. In the literature description of Castelman disease that simulate thyroid pathology can be found (Denenberg & Levine 1984).

Although the most common cause of the neck tumor is the pathology of the thyroid gland, we have to keep in mind the other possible origins of the lesions and also perform a proper diagnostics in order to prepare the best surgical approach.

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