

Prikazi bolesnika/  
*Case reports*

PRIMARY ANAPLASTIC OSTEOCLAST-LIKE  
CARCINOMA OF THE ECTOPIC THYROID  
GLAND

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PRIMARNI ANAPLASTIČNI  
OSTEKLASTOIDNI KARCINOM EKTUPIČNE  
ŠTITASTE ŽLEZDE

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*Ključne reči*

anaplastični karcinom štitaste žlezde,  
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*Key words*

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*Apstrakt*

Maligni tumor štitaste žlezde morfološki sličan "giant cell" tumoru kostiju je veoma redak tip anaplastičnog karcinoma štitaste žlezde. Prikazujemo slučaj žene stare 56 godina koja od tegoba navodi disfagiju, dispneju, hemoptiziju i žsuvo grlož. CT grudnog koša otkrio je nodularne senke u oba plućna krila suspektne na metastatske promene i solidnu tumorsku masu promera 39x33x42mm koja komprimuje i infiltruje traheju šireći se u gornji medijastinum i bazu vrata. Biopsijom uvećanog submandibularnog limfnog čvora nađeno je tkivo štitaste žlezde većim delom zamenjeno nediferentovanim tumorskim tkivom građenim od vretenastih ćelija, džinovskih ćelija i višejedarnih žsteoclast-like džinovskih ćelija koje su otkrivene i u citologiji sputuma. Na osnovu histoloških i citoloških karakteristika tumora postavljena je dijagnoza primarnog anaplastičnog žsteoclast-like karcinoma ektopične štitaste žlezde sa širenjem u gornji medijastinum i bazu vrata i infiltracijom zida traheje.

*INTRODUCTION*

For many years, all giant and/or spindle cell tumors of the thyroid were considered to be sarcomas. Ewing<sup>1</sup> in the 1928 edition of his textbook, expressed doubt that these lesions were truly sarcomatous, and two years later, Smith<sup>(2)</sup> studied 18 cases and he was able to find transitions from low cuboidal epithelium to bizzare giant and spindle cells in every case. Since then, this hypothesis of an epitheloid origin has been supported by many investigators and by ultrastructural studies. Step by step, most authors have accepted the concept that the giant and spindle cell tumor is a type of anaplastic carcinoma of the thyroid seen predominantly as a rapidly growing mass in older patients. The usual giant cell carcinoma of the thyroid is an extremely anaplastic tumor characterized by the presence of numerous monstrous cells containing from one to five large, hyperchromatic, bizarre nuclei and associated with an extremely poor prognosis. Much rarer is a giant cell tumor in which the characteristic cells have a histologic appearance of the osteoclastoma (giant cell tumor of the bone), but histologic findings of specimens in these tumors showed no evidence of osteoid or bone formation. So, osteoclastoma-like giant cell tumor of the thyroid appears to be a variant of giant cell carcinoma of

the thyroid rather than a distinct entity, but the nature of the osteoclastic giant cells in these tumors remains debated. This tumor is an aggressive neoplasm of high-grade malignancy usually resulting in death within one year of diagnosis, with exception of a patient reported by Silverberg and DeGiorgi who was alive 6 years following radiotherapy.<sup>(3)</sup> The rapid course is mainly due to compression and invasion of vital structures of the neck. The peak incidence is in late adulthood, with a slight predilection for females as in other thyroid carcinomas, and it is frequently associated with a pre-existing goiter.<sup>(4)</sup> We present a case of osteoclastoma-like giant cell tumor of the ectopic thyroid gland previously misdiagnosed as a poor differentiated inoperabile tracheal neoplasm.

*CASE REPORT*

A 56-year-old woman with no history of smoking was referred to our hospital for investigation and therapy of abnormal nodular shadows located in the both lungs suspected for metastasis discovered by a computed tomography (CT) scan of the thorax and for revision of diagnosis made in regional health center. A few months before this hospitalization the diagnosis of poor differentiated inoperabile carci-

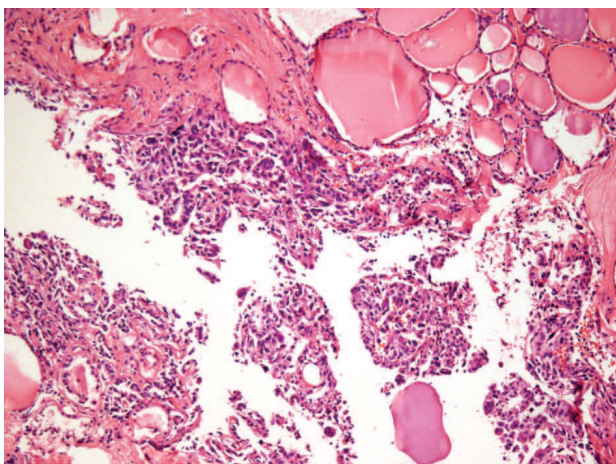


Figure 1. The biopsy of the ectopic thyroid gland: undifferentiated (anaplastic) carcinoma, HEx100.

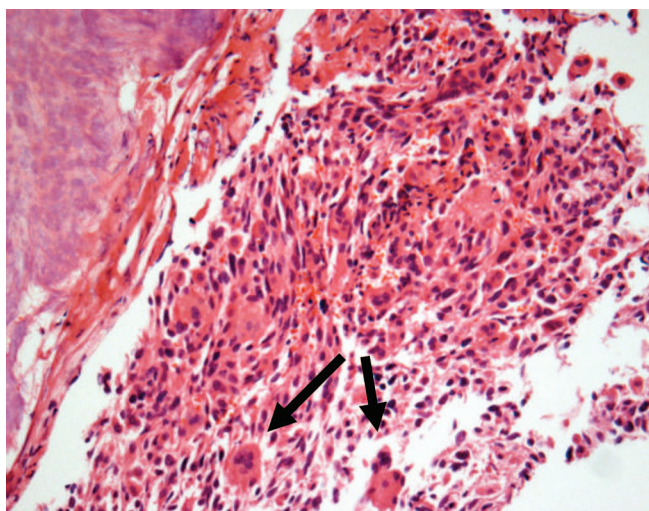


Figure 2. Note the osteoclast-like multinucleated giant cells in biopsy specimen of the ectopic thyroid gland. Polygonal, pleomorphic cells and spindle-shaped cells are present too, HEx200.

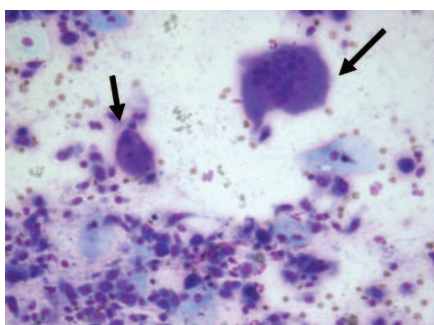


Figure 3. Anaplastic carcinoma- the osteoclast-like multinucleated giant cells in sputum cytology. MGGx400.

noma infiltrating into the trachea was established. The patient was suffering from dysphagia, dyspnea, hemoptyses and "sore throat".

A computed tomography (CT) scan of the thorax revealed ovoid, well-circumscribed and homogeneous, hyperdense masses, about 2 cm in greatest dimensions in both lungs and solid tumor mass 39x33x42 mm in diameter which constrict and infiltrate trachea, spreading into the upper mediastinum and base of the neck. No enlarged hilar or mediastinal lymph nodes were identified. Thyroid function tests were normal and there was no evidence of thyroid gland disease. The flexible bronchoscopic evaluation revealed an irregular tumor mass infiltrating into the trachea.

On histological examination finding was negative for tumor tissue, and after this bronchoscopy two more was performed but without specimens with tumor cells. The patient also presented with a right cervical mass up to 3 cm in its greatest diameter in upper part of the neck, which has been assumed to be the submandibular lymph node. The biopsy of the node was performed, and histological finding showed tissue of thyroid gland mostly replaced with undifferentiated tumor composed of a polymorphous cell population which included spindle cells, giant cells and multinucleated osteoclast-like giant cells. The spindle cells were arranged in parallel bundles and whorls, they contained fusiform, large pleomorphic and hyperchromatic nuclei in scant cytoplasm. The giant cells contained irregular huge and folded dark nuclei. The stroma of the tumor was deficient and fibrovascular. Numerous osteoclast-like giant multinucleated cells was situated between these cells. (Figure 1.) The cytology of sputum also indicated a osteoclast-like large multinucleated cells and atypical spindle-shaped and giant cells. (Figure 2.) Because inadequate tissue sample (decalcination), immunohistochemical studies of the described tumor were unsuccessful, so according to histological and cytological appearance of the tumor the diagnosis of primary anaplastic osteoclast-like carcinoma of the ectopic thyroid gland with spreading into the upper mediastinum and base of the neck and infiltrating tracheal wall was established.

## DISCUSSION

Anaplastic carcinoma of the thyroid gland is a highly malignant tumor comprising 5%-10% of all thyroid malignancies and is associated with a very poor prognosis. In contrast to papillary and follicular thyroid carcinoma, anaplastic carcinoma is one of the most aggressive neoplasms affecting humans.<sup>(5)</sup> Most patients die within 6 to 12 months after primary diagnosis. The mean age of the patients ranges from 60 to 65 years with a female predominance.<sup>(6)</sup>

The microscopic appearance of this neoplasm varies considerably. These tumors are histologically composed of an admixture of spindle cells, pleomorphic giant cells and epitheloid cells.<sup>(7)</sup> Unusual variant of the giant cell carcinoma is the so-called osteoclastic type. The association of this tumor with multinucleated osteoclast-like giant cells is very rare with only a few immunohistochemical and cytological well documented cases in the newer literature.<sup>(8,9)</sup> This lesion, which resembles similar tumors that occur in the pancreas and breast<sup>(10, 11)</sup>, is believed by most authors to represent a variant of carcinoma.

Although the multinucleated giant cells are indistinguishable from osteoclast functionally and immunohistochemically, their biological function in anaplastic thyroid carcinomas remains unclear.<sup>(12)</sup> Several theories have been formulated to explain the origin of osteoclast-like giant cells. The close association of multinucleated giant cells with vascular channels has prompted some researchers to propose an endothelial source for these cells.<sup>(13, 14)</sup> Some authors consider them benign reactive cells of histiocytic origin. Hashimoto et al. described high levels of acid phosphatase activity and phagocytic capacity in these cells.<sup>(15)</sup> Furthermore, there is evidence that these cells are reactive cells derived from the mononuclear phagocytic system,

because these cells immunohistochemically demonstrate a monocytic phenotype.<sup>(16)</sup> However, others Rosai et al. and Kobayashi et al. believe the giant cells are epithelial and malignant since they can be found in blood vessels near the tumor and are present in metastatic sites, and also that these cells are formed by the fusion of carcinoma cells. <sup>(6, 17)</sup> An immunohistochemical study of the tumor tissue showed that most of the osteoclast-like multinucleated giant cells expressed CD68 and cathepsin K and colocalization of cathepsin B and its endogenous inhibitor cystatin C. <sup>(8, 18)</sup>

The differential diagnosis of ATC includes sarcoma, malignant lymphoma, solid variant of papillary carcinoma, medullary carcinoma, insular carcinoma and metastasis.<sup>(8)</sup> Immunocytochemical research indicate that immunocytochemical study can assist in differentiating anaplastic thyroid carcinoma from other neoplasm with which they can be confused such as various types of sarcomas, melanomas and some anaplastic large cell lymphomas. The fact that cytokeratin reactivity was present in 47%-100% of the tested tumors, indicates that cytokeratin is very useful epithelial marker for the diagnosis of anaplastic carcinoma. Thyroid tumors are CK7 positive and CK20 negative. Compared

with thyroglobulin (TG), TTF-1 is a more sensitive marker for poorly differentiated carcinomas and metastasis. In most cases, its nuclear pattern of immunoreactivity facilitates interpretation. The panel of antibodies for TG, TTF-1, CK7, and CK20 is useful when the thyroid origin of a metastatic tumor is a consideration. Although early studies indicated that vimentin was a marker for mesenchymal differentiation, this concept is no longer tenable. Expression of vimentin has been reported in 50%-100% anaplastic carcinomas of the thyroid gland. EMA was positive in 33%-55% cases. Also, some immunocytochemical studies have indicated that a large percentage of anaplastic tumors of the thyroid are medullary carcinomas, but the lack of immunoreactivity for calcitonin in these tumors does not support that observation. <sup>(7, 19, 20)</sup>

To establish an accurate diagnosis, the clinical finding should completely conform to histological, immunohistochemical and cytological ones.

### *Abstract*

An unusual malignant thyroid neoplasm with a morphologic resemblance to giant cell tumor of the bone is a very rare type of anaplastic thyroid carcinoma. We presented a case of 56-year-old woman with dysphagia, dyspnea, hemoptyses and "sore throat". A computed tomography scan of the thorax revealed abnormal nodular shadows located in the both lungs suspected for metastasis and solid tumor mass 39x33x42mm in diameter, which constricted and infiltrated trachea, spreading into the upper mediastinum and base of the neck. The biopsy of the enlarged submandibular lymph node showed tissue of thyroid gland mostly replaced with undifferentiated tumor composed of spindle cells, giant cells and multinucleated osteoclast-like giant cells. Cytology of sputum also discovered these characteristic cells, too. According to histological and cytological appearance of the tumor the diagnosis of primary anaplastic osteoclast-like carcinoma of the ectopic thyroid gland with spreading into the upper mediastinum and base of the neck and infiltrating tracheal wall was established.



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