

Case Report

Primary thyroid spindle cell tumors: spindle cell variant of papillary thyroid carcinoma?

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Abstract: Primary thyroid spindle cell tumors or spindle cell component in the thyroid tumors are very rare. The spindle tumor cells were positive for thyroid papillary carcinoma markers. So these tumors were diagnosed as spindle cell variant of papillary thyroid carcinoma (PTC). To further delineate clinico-pathological features of primary thyroid spindle cell tumors and discuss differential diagnosis, we reported a 67-year-old man with a mass in the right thyroid without clinical symptom. Microscopy revealed that an encapsulated tumor with lot criss spindle cells arranged in bundles. Nuclear grooves were easy to see and rare displayed pseudoinclusions. Immunohistochemical studied showed that the spindle cells were all strong positive for TTF-1, Pax-8, thyroglobulin. Rare follicular were seen in the periphery of the tumor near the thyroid tissue. The cells formed follicular but the spindle tumor cells were positive for pan-keratins. The pathological diagnosis was primary thyroid spindle cell tumors, suspected spindle cell variant of PTC. Primary thyroid spindle cell tumors were presence and without the unified name. The further reports and more discussion were need about these tumors.

Keywords: Spindle cells, thyroid, tumor

Introduction

Spindle cell lesions of the thyroid gland (T-SCL) are not common in the thyroid pathology [1]. Spindle cell component in the papillary thyroid carcinoma (PTC) is very rare [2-6]. Here we report a peculiar case of T-SCL characterized by a prominent abundance of spindle cellular proliferation with rare follicular.

Case report

Clinical summary

A 67-year-old man was admitted to the hospital with a mass in the neck 2 years with foreign body sensation and without symptoms of thyroid hormone abnormalities caused. Ultrasound showed solid nodules in the right thyroid. The patient had thyroidectomy of the right thyroid.

Histopathological findings

The specimen showed a solid, clear boundary, white-yellow nodular measured 25 mm in the thyroid (**Figure 1**). Microscopy revealed that an

encapsulated tumor with lot criss spindle cells arranged in bundles with dense area and the loose (**Figure 2**) without papillary structure. The nuclei of the spindle cells were clear, large and oval. Nuclear grooves were easy to see (**Figure 3**) and rare displayed pseudoinclusions. Follicular were rare in it located in the periphery of the tumor near the thyroid tissue (**Figure 4**). All the cells in the tumor were minimal atypical, with no mitotic figures, necrosis or evidence of capsular or vascular or envelope invasion.

Immunohistochemical studied showed that the spindle cells and the follicular cells were all strong positive for TTF-1 (**Figure 5**), Pax-8, thyroglobulin (**Figure 6**), vimentin and bcl-2. The cells formed follicular and a small amount cells did not form follicular but surrounding the follicular were positive for pan-keratins (**Figure 7**), CAM5.2 but the spindle cells. All the spindle cells and the follicular cells were negative for CD34, CD99, CK7, CK19, ER, PR, calcitonin, chromogranin A, synaptophysin, S-100, CD21, CD23, CD35, SMA, HMB45, P63, P40 or P53. The proliferation index Ki67 was 3%.

Primary thyroid spindle cell tumors

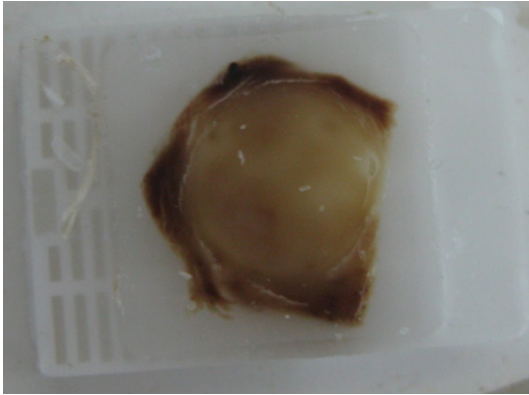


Figure 1. Paraffin-embedded tissues show a white-yellow solid nodular with clear boundary in the thyroid.

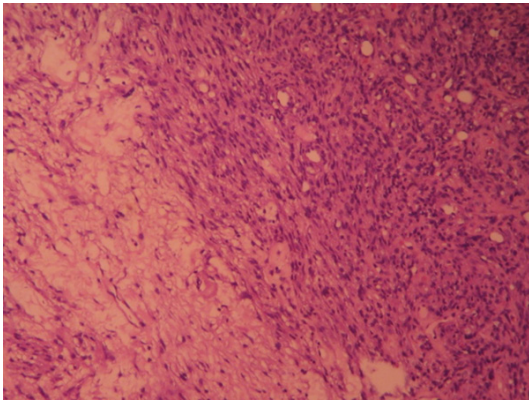


Figure 2. The overwhelming abundance spindle tumor cells arranged in bundles having a mesenchymal-like appearance formed into dense area and the loose like schwannoma (Hematoxylin and eosin; original magnification $\times 100$).

The pathological diagnosis was primary thyroid spindle cell tumors, spindle cell variant of PTC? The patient had no history of thyroid surgery or puncture. Patients did not receive any treatment after surgery but still disease-free survival 6 months.

Discussion

Spindle cell component in the thyroid tumor was rare. In 2004, Woenckhaus et al [2] reported a case of PTC characterized by an overwhelming abundance of spindle cellular proliferation. The spindle cell and follicular cell components were positive for thyroglobulin, AE1/AE3, CAM5.2, vimentin, and bcl-2, and negative for calcitonin, chromogranin A, synaptophysin, smooth muscle actin, HHF35, CD34, HMB-45,

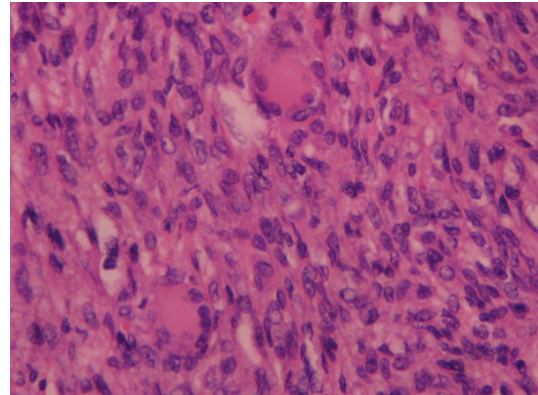


Figure 3. There were rare follicular in the spindle tumor cells. There were nuclear grooves in the spindle cells. All the tumor cells were minimal atypia (Hematoxylin and eosin; original magnification $\times 400$).

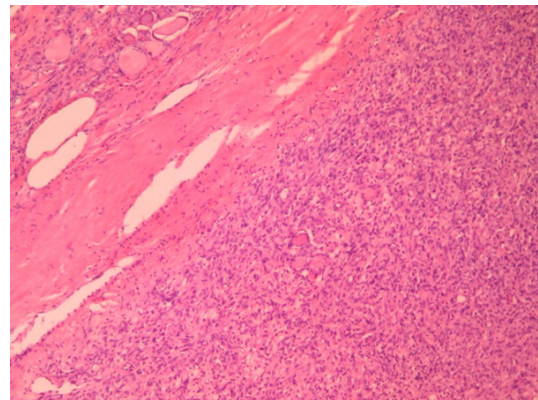


Figure 4. All the follicular were located in the tumor near the periphery (Hematoxylin and eosin; original magnification $\times 40$).

and p53. It was designated as spindle cell variant of PTC.

Hutter et al [3] described spindle and giant cell metaplasia arising in PTC.

Matoso A et al [4] described adenomatous nodule with macrofollicular architecture. The extensive degenerative changes that included fibrosis and sclerosis along with florid spindle cell foci with infiltrative borders, and areas of eosinophilic interstitial deposits had an amorphous appearance simulating amyloid. The spindle cells were strongly positive for TTF-1 and thyroglobulin. On the basis of these features, a diagnosis of adenomatous nodule with spindle cell foci consistent with spindle cell metaplasia of follicular cells was rendered. He also emphasized the potential for confusion of spindle cell

Primary thyroid spindle cell tumors

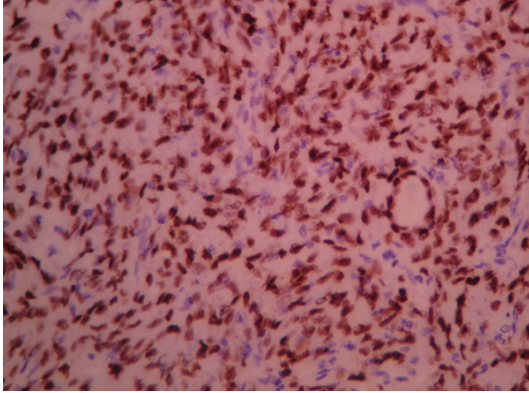


Figure 5. All the spindle tumor cells and the follicular cells were strong positive for TTF-1 (Hematoxylin and eosin; original magnification $\times 400$).

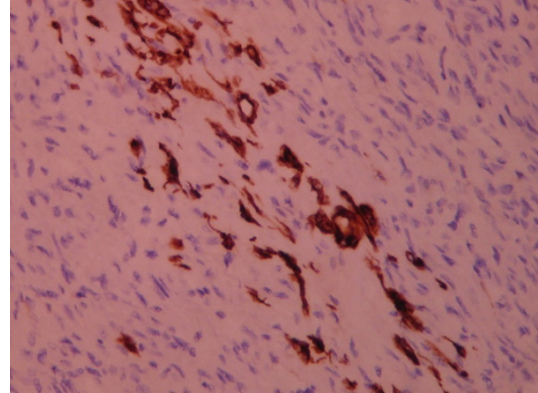


Figure 7. The follicular tumor cells and a small amount cells did not form follicular but surrounding the follicular were positive for pan-keratins (Hematoxylin and eosin; original magnification $\times 400$).

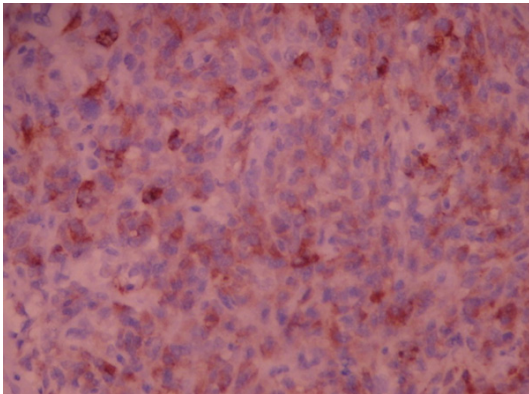


Figure 6. All the spindle tumor cells and the follicular cells were positive for thyroglobulin (Hematoxylin and eosin; original magnification $\times 400$).

foci of the thyroid with medullary thyroid carcinoma. The atypical nuclei were interpreted as being consistent with “endocrine atypia”.

Carcangiu et al [5] reported the case of characteristics of the follicular variant of PTC, but also spindle mesenchymal-like areas. The spindle cell component of the tumor was arranged in fascicles and resembled mesenchymal cells were positive for thyroglobulin and cytokeratin, suggesting mesenchymal-like metaplasia of thyrocytes. Carcangiu 134 designated this entity, which behaved in a favorable manner, as papillary carcinoma, follicular variant, with spindle mesenchymal-like areas.

Vergilio et al [6] described 10 cases of spindle cell proliferations of the thyroid arising in association with papillary carcinoma (7 cases) or follicular adenoma (3 cases). The spindle cells,

constituting 1% to 95% of the tumor, grew with a diffuse or nodular pattern and had eosinophilic cytoplasm with indistinct cellular borders and thin, elongated or plump, suggested that these spindle cell proliferations may represent metaplastic transformation of thyroid follicular epithelium. It suggested that these might represent anaplastic transformation of primary PTC.

Greenburg and Hay [7] found that the highly differentiated epithelium that expressed cytokeratin changed into a vimentin cytoskeleton and lost thyroglobulin expression during epithelial-mesenchymal transformation in normal thyroid epithelium in rat thyroid cells grown in type I collagen matrix.

Herrmann and Trevor [8] showed that cells isolated from papillary carcinoma and follicular adenoma undergo an epithelial mesenchymal transition, assuming fibroblastoid morphologic features and exhibiting reactivity with antibodies to cytokeratin, thyroglobulin, and vimentin.

Spindle cell proliferations of the thyroid were rare. It was very important to differentiate them because of the different treatment method and the prognosis.

In this case, the negative for CD34, CD99, SMA, S-100, CD21, CD23, CD35, calcitonin, chromogranin A, synaptophysin, and HMB45 could rule out solitary fibrous tumor, leiomyoma, peripheral nerve sheath tumor, follicular dendritic cell tumor, medullary carcinoma and melanoma. The patient had no history of thyroid surgery or

puncture. The histopathology coupled with immunohistochemical results, the post-fine-needle aspiration spindle cell nodule was ruled out. Moreover, the CK7 and CK19 was negative could rule out the synovial sarcoma. Spindle epithelial tumor with thymus like differentiation was ruled out because of TTF-1 positive for the spindle cells and the follicular cells. The lack of significant atypia, mitotic figure, pleomorphism, necrosis and invasiveness argue against the undifferentiated carcinoma or anaplastic carcinoma. There was no clear papillary figure in all the tumor ruled out the thyroid papillary carcinoma.

Although lymphocytic thyroiditis around the tumor, it did not meet the pathological diagnosis of Riedel thyroiditis. Squamous cell carcinoma was ruled out because of P63 and P40 negative. There was no the structures of high epithelial cells surround a thin fibrous capsule or form a trabecular growth pattern. This could rule out hyalinizing trabecular tumor of thyroid.

We do not know the thyroid follicular component located in the spindle tumor cells were the tumor component or normal thyroid follicular wrapped into the tumor tissue.

There was no follow-up data in the literature. So we do not know the exact biological behavior and prognosis of this tumor.

The authors hope that this report will encourage others to consider primary thyroid spindle cell tumors as a differential diagnosis or the subtypes of some thyroid tumor. With further reports and greater awareness and more discussion can be prompted of the tumor.

In a short, we report a case of T-SCL characterized by a prominent abundance of spindle cellular proliferation with rare follicular. Immunohistochemical studied showed that the spindle cells were all strong positive for TTF-1, thyroglobulin. The cells formed follicular but the spindle tumor cells were positive for pan-keratins. The pathological diagnosis was primary thyroid spindle cell tumors, spindle cell variant of PTC? The authors hope that this report will encourage others to consider primary thyroid spindle cell tumors' diagnosis with further reports and greater awareness and more discussion can be prompted of the tumor.

Disclosure of conflict of interest

None.

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