Solitary fibrous tumor of the thyroid gland

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ABSTRACT

A solitary fibrous tumor is a mesenchymal neoplasm originally described in the pleura. Subsequently, it was found to exist in many extra-pleural sites including the thyroid gland. Herein, we report a case of solitary fibrous tumor of the thyroid gland associated with symptoms of hoarseness of voice in a 45-year-old man. In this report we discuss and illustrate various aspects of this rare tumor including, the gross macroscopic appearance, the histological findings, the immunohistochemical staining properties, the differential diagnosis, and the outcome of our experience regarding fine needle aspiration technique in this particular tumor.

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Klemperer and Rabin[1] first reported a solitary fibrous tumor (SFT) as an entity in 1931. For many years it was thought that this spindle mesenchymal tumor was confined to the pleura, but it has now been recognized in a variety of sites.[2] The first case of SFT of the thyroid gland was described in a 43-year-old woman with a multinodular goitre and documented by Cameselle-Teijeiro et al[3] in 1994. To our knowledge only 13 cases have been reported in the literature up to this date.[4-8] In one report of 7 cases, the patients' ages ranged from 43-64 years (mean 52 years), and tumor sizes varied from 2-6 cm.[4] There was no marked sex predilection. Although SFT of the thyroid is a rare tumor, it should be included in the differential diagnosis of other thyroid tumors that may show spindle cell-morphology, such as, anaplastic carcinoma, spindle-cell medullary carcinoma, and, several types of other mesenchymal tumors, in addition to Riedel's thyroiditis and fibromatosis. All reported cases of SFT of the thyroid run a benign course, and no local recurrences or metastases have been documented.[4]

Case Report. A 45-year-old, non-smoking, male patient was admitted to the hospital complaining of mild hoarseness of voice for 2 months duration and left neck swelling for more than one year. Ultrasound and computerized tomography revealed a deep seated, single and solid thyroid nodule measuring 5 cm in diameter. The nodule was compressing the trachea, but there was no lymph node enlargement. Serum triiodothyronine, thyroxine, and thyroid-stimulating hormone were normal. Laryngoscopic examination showed normal and mobile vocal cords. Two attempts at fine needle aspiration (FNA) were performed; smears showed only a few scattered spindle cells and scant colloid. A final conclusion was not reached, but excision was advised. The patient underwent surgery (left hemithyroidectomy). The post operative course went smoothly; his voice came back to normal and he was discharged 5 days after the date of surgery. The pathology specimen (hemithyroidectomy) was fixed in 10% buffered formalin and the cut surface showed a well defined, non-encapsulated, white, and firm nodule, measuring 5 cm in diameter, and surrounded by a rim of normal thyroid tissue **(Figure 1)**. Sections obtained from paraffin embedded material were cut in 4-micron thickness and stained with hematoxylin and eosin. Immunohistochemical stains were

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Figure 1 - Hemithyroidectomy specimen.

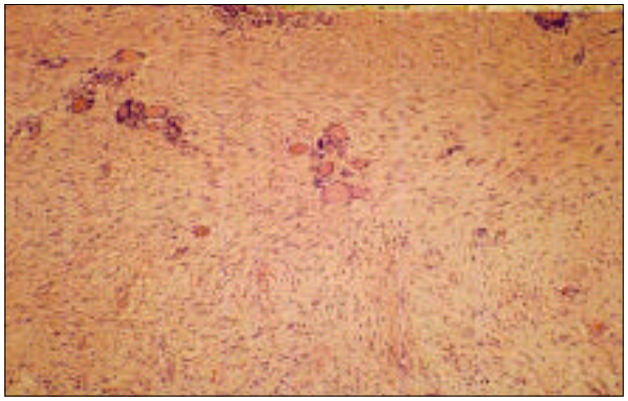

Figure 2 - Microscopic examination of solitary fibrous tumor (Hematoxylin and Eosin x 200).

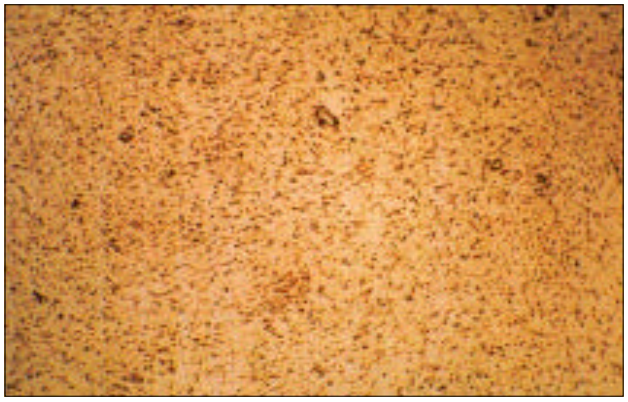

Figure 3 - Immunostaining shows strong reactivity of tumor spindle cells for vimentin (Vimentin x 200).

performed using the avidin-biotin immunoperoxidase technique. The following antibodies (immunostains) were applied on formalin fixed and paraffin embedded tissue sections, against different cellular antigens including pancytokeratin, thyroglobulin, calcitonin, vimentin, desmin, smooth muscle actin, CD99, CD34, bcl-2 oncoprotein, synaptophysin, chromogranin-A, neuron specific enolase, Factor-VIII, S-100 protein, and HMB-45. Microscopic examination revealed a haphazard arrangement of benign looking spindle cells with entrapped thyroid follicles **(Figure 2)**. There were no mitoses, necrosis or cellular atypia. Immunohistochemical studies showed strong reactivity of tumor cells for vimentin **(Figure 3)** and focal reactivity for CD34, CD99, and bcl-2 oncoprotein. All other immunostains were non-reactive.

Discussion. The correct diagnosis of SFT of the thyroid gland can only be made after excluding other thyroid tumors, which exhibit spindle-cell morphology. Despite the absence of cellular atypia, mitoses, and foci of necrosis, we had to rule out anaplastic carcinoma and spindle cell medullary carcinoma. The negative immunostaining for pancytokeratin and calcitonin in spindle cells ruled out the previously mentioned tumors. In the same way the negative reactivity of spindle cells for S-100 protein, neuron specific enolase, chromogranin-A, synaptophysin, and HMB-45 has led us to exclude tumors of nerve sheath, neuro-endocrine origin, and spindle-cell variant of malignant melanoma. The only other differential was that a tumor of mesenchymal origin. The negative reactivity for smooth muscle actin, desmin, and factor-VIII has ruled out a leiomyoma, leiomyosarcoma, rhabdomyosarcoma, and tumors of vascular origin. Riedel's thyroiditis and fibromatosis were also excluded, because both lesions have a different clinical presentation, and their histological examination, unlike our case, shows a diffuse infiltrative pattern. The reactivity of tumor cells for vimentin, CD34, CD99 and bcl-2 oncoprotein made us confident to issue the diagnosis of SFT. Reviewing the literature our findings were identical to those documented in various reports[4] and textbooks,[9] further reinforcing our confidence in diagnosis.

As previously mentioned, the outcome of SFT of the thyroid gland is good and the clinical behavior of the accumulative data of 13 cases reported in the literature suggests a benign clinical course.[4] The histogenesis of SFT is still debated, but the most likely interpretation is that it arises from uncommitted connective tissue mesenchymal cells that are widely distributed.[10]

Finally, the diagnosis of SFT should be considered in the differential diagnosis when faced

with any thyroid tumor that exhibits spindle-cell morphology. We would also like to point out the role of fine needle aspiration, and in particular to think of SFT when smears reveal spindle cells and scant or absent colloid. Reaching the correct diagnosis is mandatory in choosing the appropriate clinical approach for these patients.

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