

A Case of Plasmacytoma in Thyroid

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1. Introduction

A 60-year-old male was admitted to hospital because of "thyroid nodules for 20 years, enlargement for half a year, with suffocation and hoarseness, aggravating for 20 days". B ultrasound examination showed "diffuse enlargement of thyroid gland and increased blood flow signals in bilateral thyroid lobes" (Figure 1). Surgical

examination showed that the thyroid gland was grade III large, the right lobe protruded from the skin surface along the sternocleidomastoid muscle and extended to the mastoid level, with the size of 14×7cm; the left lobe was enlarged, with the size of about 7×4cm. There was no tenderness in both lobes. Thyroid function: FT3: 6.2pmol/l, FT4: 29.88, hTSH: 0.59uiu/ml. Thyroid fine needle aspiration was performed.

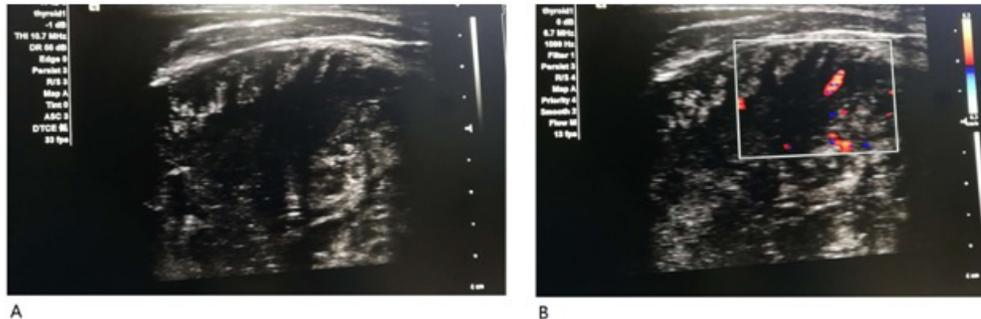


Figure 1: B ultrasound. A. B ultrasound examination showed diffuse enlargement of thyroid gland B. B ultrasound examination showed increased blood flow signals in bilateral thyroid lobes

Under the microscope of Fine Needle Aspiration (FNA) specimen, a few follicular structures were found on the background of lymphocytes and plasma cells, some nuclei were ground glass like, and nuclear groove and suspicious nuclear inclusion bodies could be seen (Figure 2A-B). FNA reported that "Bethesda III: thyroid follicular epithelial cells of unknown significance were found in the background of Hashimoto's thyroiditis". Then, total thyroidectomy and lymph node dissection were performed.

On macroscopic pathological examination, the total volume of right lobe and isthmus was 13cm×6cm×7cm, and the left lobe measured 7cm×4cm×3.5cm, gray-yellow in color, and coarse and tough in consistency. Part of them was soft and the soft area was

nodular, and no obvious capsule was found.

Microscopically, the follicular structure of the thyroid was destroyed. The tumor was multinodular and diffusely infiltrated thyroid tissue. The neoplastic cells were arranged loosely, and some areas seemed to have tubular structure. Under high power microscope, the tumor cells were polygonal or oval, the nucleus was biased, the nuclear membrane was clear, the chromatin was coarse granular, and some of them had obvious nucleolus, and the cytoplasm was bichromatic (Figure 2 C-D).

Immunohistochemistry: CK (-), CD38 (+), CD138 (-), CD79a (+), Pax5 (-), CD20 (-), mum-1 (-), κ (+), λ (-), CEA (-), Calcitonin (-), TTF-1(-) (Figure 2 E-F).

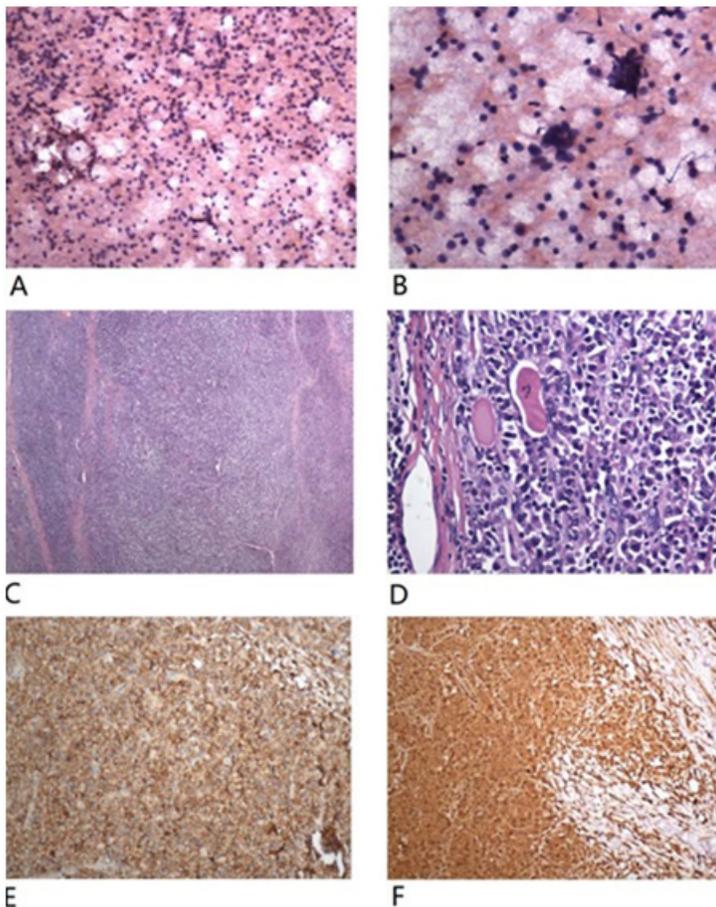


Figure 2: FNA specimen and histological characters of this case (H&E and Immunohistochemistry)

A: In some areas, there were a lot of lymphocytes and plasma cells (200 \times , H&E); B: Microfollicular structure. The green arrow shows nuclear groove (400 \times , H&E) ; C: On thyroidectomy specimen, the follicular structure of the thyroid was destroyed (40 \times , H&E); D: Plasmacytoid cells (400 \times , H&E); E: CD38 positive; F: κ positive.

2. Differential Diagnosis

- 1) Plasmacytoma
- 2) Medullary Carcinoma
- 3) Diffuse Large B-Cell Lymphoma
- 4) Poorly Differentiated Carcinoma

The final diagnosis was (right lobe and isthmus) plasmacytoma. Hashimoto's thyroiditis (left lobe). In addition, plasmacytoma was found in the right paraesophageal lymph node.

3. Discussion

Primary lymphohematopoietic diseases account for about 5% of all thyroid malignancies, and the most common is diffuse large B-cell lymphoma [1]. Extramedullary plasmacytomas are rare, accounting for about 1% of plasmacytomas, and 80% of them are found in the head and neck [2]. However, the plasmacytoma is rare in the thyroid gland, and the incidence rate in women is higher than that in men. The average age of plasmacytomas is 60-70 years old, [3]. Up to now, there are about 100 cases of primary plasma-

cytomas of thyroid reported in the literature [3-5].

Microscopically, the morphology of plasmacytomas is similar to that of multiple myeloma. Tumor cells diffusely infiltrate thyroid tissue, or form flakes or large nodules. The cell morphology can be mature, plasmablastic or pleomorphic. The cells of mature type are similar to normal plasma cells, and the cells are oval, rich in basophilic cytoplasm, the nucleus is biased, the chromatin is "spoke like", there is no nucleolus, and the perinuclear halo can be seen; The cells of plasmablastic type have fine nuclear chromatin, high nucleocytoplasmic ratio and prominent nucleoli. In pleomorphic type, the cells can be multinucleated or multi lobulated, and the cell volume is large. Most cases did not express CD19 and CD20, but expressed CD38, CD79a, CD138 and CD56. Most express both heavy and light chains, and a few only express light chains [2].

In this case, a large number of lymphocytes and plasma cells could be seen in the fine needle aspiration smear, but the follicular epithelial cells had mild atypia, and nuclear grooves could be seen in some cells, so the report was "Bethesda III: thyroid follicular epithelial cells of unknown significance were found in the background of Hashimoto's thyroiditis" (Figure 1). In FNA specimens, plasmacytomas are often misdiagnosed as medullary carcinoma due to poor cell adhesion and nuclear deviation. Plasmacytoid medullary carcinomas are common in fine-needle aspiration specimens. Usually, the nucleus is biased, the cytoplasm of which is rich and eosinophilic or bichromatic. The nucleus can be round, oval or pleomorphic, but the chromatin can show typical "salt and pepper" like. Since amyloidosis can be seen in both, it is often difficult to identify them [6-7]. Clinically, serum Carcinoembryonic Antigen (CEA) and calcitonin were increased in medullary carcinoma. The diagnostic accuracy can be improved by immunohistochemistry with cell block. Medullary carcinoma specimens are usually CEA, calcitonin, syn and CgA positive, TTF-1 can be positive, but Thyroglobulin (TG) is negative.

Histologically, plasmacytoma should also be differentiated from other lymphohematopoietic diseases (mainly diffuse large B-cell lymphoma and extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma), medullary carcinoma and poorly differentiated carcinoma. Diffuse large B-cell lymphoma or MALT showed positive CD45, CD19 and CD20. If accompanied by plasma cell differentiation, CD138 and CD38 could be positive in varying degrees. In this case, CD138 and CD38 were strongly positive, kappa chain was positive, λ Chain negative and CK negative support the diagnosis of plasmacytoma. In this case, CK was negative, which could exclude the diagnosis of poorly differentiated carcinoma.

After the diagnosis of primary plasmacytoma of thyroid, surgical excision or External Beam Radiotherapy (EBRT) is required. Due to the small number of cases, there is no unified standard for adjuvant radiotherapy and chemotherapy. The postoperative indexes of

this case returned to normal without adjuvant treatment. There was no recurrence after 3 years of follow-up.

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