



Primary Plasmacytoma of Thyroid Gland Diagnosed by FNA Cytology: A Case Report

Massood Hosseinzadeh¹ and Sahand Mohammadzadeh^{1,*}

¹Department of Pathology, Shiraz University of Medical Science, Shiraz, Iran

*Corresponding author: Department of Pathology, Shiraz University of Medical Science, Shiraz, Iran. Email: mohammads@sums.ac.ir

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Abstract

Introduction: Extramedullary plasmacytomas (EMPs) can arise from organs other than bones. The majority of EMPs occur in the upper respiratory tract. The thyroid gland is a rare site for EMPs.

Case Presentation: We report a case of primary plasmacytoma of the thyroid in a 42-year-old man who referred to the outpatient clinic of Namazi Hospital, a governmental hospital affiliated to the Shiraz University of Medical Sciences, Shiraz, Iran, in January 2018. The diagnosis of plasmacytoma was made by fine-needle aspiration of thyroid.

Conclusions: Primary plasmacytoma of the thyroid is a rare disease and its diagnosis can be made by cytology or pathology after ruling out benign conditions like Hashimoto thyroiditis by an appropriate workup. The prognosis of this disease is favorable, but the clinical follow-up of patients is mandatory because it can progress to multiple myeloma in some cases.

Keywords: Plasmacytoma, Thyroid, Fine Needle Aspiration

1. Introduction

There are many benign and malignant neoplasms in the thyroid, most of which are primary. One of the most common malignant tumors of the thyroid is papillary thyroid carcinoma, which more frequently affects women between the third and fifth decades of life. Primary lymphoid tumors arising from the thyroid are seen more commonly in elderly women and diffuse large B-cell lymphoma is the most common type (1).

Plasma cell neoplasms are characterized by an increase in the number of monoclonal plasma cells, with an increase in serum levels of immunoglobulin. Plasma cell neoplasms involving tissues other than bone marrow are known as extramedullary plasmacytomas (2). Localized plasmacytomas are classified into two groups: (a) skeletal plasmacytoma, which involves bony parts of the body, and can progress into multiple myeloma; and (b) extramedullary Plasmacytoma (EMP), which is our concern in this review (3).

Extramedullary plasmacytoma represents less than 10% of all plasma cell neoplasms. It affects males three times more than females and typically occurs in the middle ages. The most common site of EMP is the upper respiratory tract and oral cavity although it may involve many

sites of the body (3).

Primary plasmacytoma of the thyroid is more commonly seen in the cases of widespread myeloma, representing as a palpable nodule or dysphagia (4). The thyroid gland is a very rare site for EMP. Only about 50 cases of solitary thyroid plasmacytoma have been reported in the literature and there are very few reports of diagnosing such cases by FNA cytology examination (4).

We report a case of solitary plasmacytoma of the thyroid gland in a man diagnosed by fine-needle aspiration of the thyroid.

2. Case Presentation

A 42-year-old male case of End-Stage Renal Disease (ESRD), hypertension, and diabetes mellitus referred to the outpatient clinic of Namazi Hospital, a governmental hospital affiliated to the Shiraz University of Medical Sciences, Shiraz, Iran, in January 2018. He had a two-month history of a progressively enlarging, painless, neck mass with a pressure effect on airways. The patient did not have any history of weight loss. Clinical examination revealed firm, nodular thyroid swelling with associated cervical lymphadenopathy. There were also multiple lymph nodes bilaterally in the cervical chain.

Neck ultrasonography confirmed the enlargement of the thyroid gland and hypoechoic parenchymal echogenicity. Thyroid Function Test (TFT) showed a high level of Thyroid-Stimulating Hormone (TSH) (6.89 mU/L; normal range 0.27 - 4.2 mU/L), as well as low T4 and T3 levels (1.8 pmol/L and 0.6 pmol/L, respectively).

Fine needle aspiration from the thyroid mass revealed a hypercellular smear composed of malignant-looking plasma cells with eccentrically placed nuclei and perinuclear hof admixed with normal thyroid follicular cells (Figure 1). The histopathological examination of the surgical specimen revealed the irregularly enlarged thyroid gland, bosselated nodule with a rubbery consistency, and an intact capsule. A cut surface of the gland showed many red-brown nodules with glistening surfaces without calcification.

The microscopic examination of histological sections revealed the dense infiltration of the thyroid gland by diffuse sheets of neoplastic plasma cells. The residual thyroid parenchyma showed lymphocytic infiltration and atrophy of follicular cells (Figure 2).

A panel of antibodies was used, including CD138, kappa, and lambda chain. Neoplastic plasma cells showed positive CD138 and Kappa with negative lambda (Figure 3).

3. Discussion

Multiple myeloma is the most common primary malignant neoplasm of the bone. Solitary plasmacytoma is characterized by the clonal proliferation of plasma cells that more frequently involves vertebral bones and the skull (5).

Extramedullary plasmacytoma is a rare plasma cell neoplasm that arises typically in middle-aged adults usually presenting with firm, non-tender, mobile, painless, multinodular, or diffuse thyroid masses without involving cervical lymph nodes. In this disease, there is no evidence of systemic involvement of other organs that are involved in the setting of multiple myeloma and patients usually have normal thyroid function tests (6).

For the diagnosis of EMP of the thyroid, other benign conditions like lymphocytic thyroiditis and Hashimoto thyroiditis should be ruled out by proper investigations. In this setting, the presence of monoclonal plasma cells should be ruled out by immunohistochemistry studies (6, 7).

There are several reports in the literature on primary plasmacytomas in thyroid diagnosed by FNA cytology or light microscopy (Table 1). On gross examination, the thyroid gland with primary plasmacytoma is enlarged and

presents as a mass. On cut surface, in most cases, the thyroid shows a homogenous, ill-defined solid nodule. The size of the tumor may range from a few centimeters to large masses with pressure on adjacent organs, possibly involving extrathyroidal tissues. Occasionally, the lesion may show the areas of hemorrhage or necrosis (8).

Fine needle aspiration can help make the diagnosis of primary plasmacytoma of thyroid. However, it should be confirmed by histological and immunohistochemical studies to rule out other benign conditions like lymphocytic thyroiditis and Hashimoto thyroiditis, which can have a similar morphological appearance in fine-needle aspiration.

The gold standard diagnostic test for solitary thyroid plasmacytoma involves a histological examination (5). On light microscopic evaluation, neoplastic plasma cells have different morphologies varying from mature plasma cells to immature ones. Mature plasma cells have an oval shape, with round eccentric nuclei that show "spoke wheel" chromatin, as well as abundant basophilic cytoplasm and a marked perinuclear hof. Immature plasma cells show fine nuclear chromatin, a high nuclear-to-cytoplasm ratio, and multiple nuclei with prominent nucleoli (8). On the immunohistochemistry evaluation, neoplastic plasma cells show positivity for CD38, CD138, and kappa/lambda light chain immunoglobulins. Most cases of extraosseous plasmacytoma do not express CD19 and CD20 (9).

Before the diagnosis of EMP, it is essential to rule out multiple myeloma. The diagnosis of EMP can be made by normal aspiration of bone marrow, absence of lytic bone lesion, and normal protein electrophoresis (5).

Clinical approach and management of EMP are different from benign conditions like Hashimoto thyroiditis and malignant diseases like multiple myeloma and thyroid carcinomas. Therefore, it is fundamental to conduct fine-needle aspiration for its initial diagnosis (5, 10).

The treatment of EMP remains controversial. All three modalities, including radiotherapy, surgery, and combined approach, are used. The clinical course of EMP is favorable, with a 70% disease-free survival in 10 years (10). Unfortunately, the follow-up of our patient was not available.

3.1. Conclusions

The diagnosis of primary plasmacytoma of the thyroid is made only after ruling out other benign conditions like lymphocytic thyroiditis and Hashimoto thyroiditis and malignant diseases like multiple myeloma by an appropriate workup. The prognosis of this tumor in the

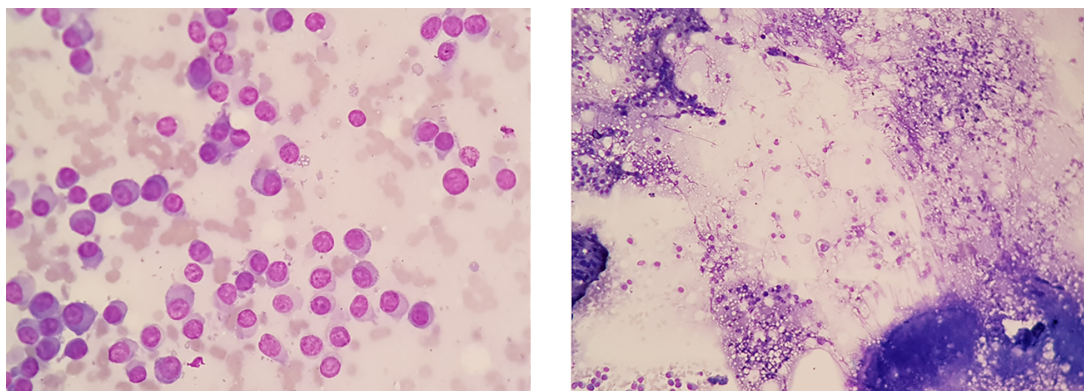


Figure 1. Fine needle aspiration from the thyroid mass revealing a hypercellular smear composed of malignant looking plasma cells

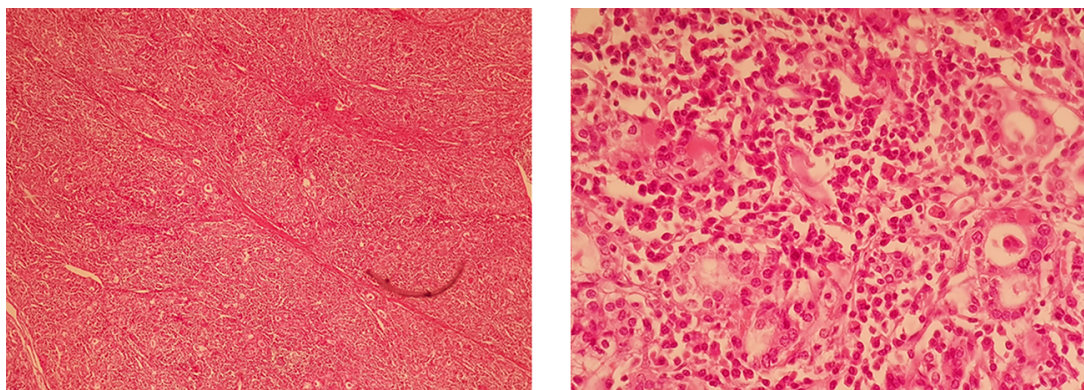


Figure 2. Microscopic examination of histological sections revealing dense infiltration of the thyroid gland by diffuse sheets of neoplastic plasma cells

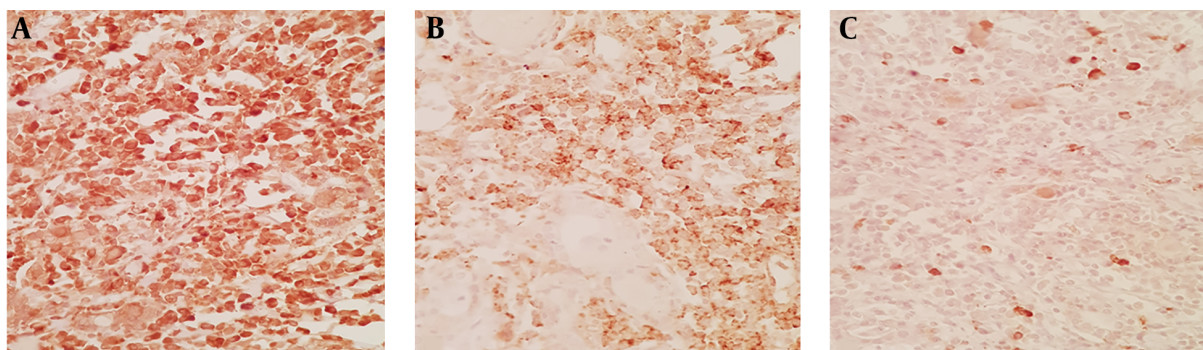


Figure 3. A panel of antibodies used, including; A, CD138; B, kappa; C, and lambda chain. Neoplastic plasma cells showed positive CD138 and Kappa with negative lambda

thyroid is favorable, but regular patient follow-up is recommended, as EMP may progress to multiple myeloma in some cases. A correlation between cytological, histological, and immunohistochemical findings helps resolve diagnostic dilemmas.

Footnotes

Authors' Contribution: Massood Hosseinzadeh and Sahand Mohammadzadeh conducted the study, including patient recruitment, data collection, and analysis. Both au-

Table 1. Different Case Reports of Primary Plasmacytomas in the Literature

Presentation	Site	Sex	Age	Journal	Authors	Year
Swelling	Left side of neck	Male	53	bloodresearch.or.kr	Yusuf Kayar, Nuket Bayram Kayar	2014
Change in voice, dyspnea, and dysphasia	Neck	Male	57	Journal of King Abdulaziz University	Meccawy (4)	2010
Dyspnea and dysphagia	Neck	Male	56	Jornal Brasileiro de Patologia e Medicina Laboratorial	Cambrozzi et al. (3); Salgueiro Molinari	2012
Dysphagia	Left side of neck	Female	57	OGH Reports	Bhattacharjee et al. (9), Kumar Mondal	2017

thors approved the final manuscript.

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Ethical Approval: The study protocol was approved by the Research Institute Committee on Human Research.

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Informed Consent: The patient gave his written informed consent.

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