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Case Report

A Case of Metastatic Papillary Carcinoma with Occult Papillary Thyroid Carcinoma in a Young Male

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Abstract

Papillary thyroid carcinoma (PTC) accounts for about 80% of all thyroid malignancies. It tends to have a female preponderance and usually present in the 3rd to the 5th decades of life as a slow growing midline swelling. Cervical metastases are common, blood borne being rare. This case was a 25 year-old male who presented with cervical lymphadenopathy and was diagnosed initially by FNAC (Fine Needle Aspiration Cytology) as metastatic papillary carcinoma of cervical lymph node that was secondary to an occult papillary carcinoma of the thyroid. The patient underwent total thyroidectomy with bilateral neck node dissection and the specimen was sent for histopathology. Histopathologic diagnosis corresponded to that of the FNAC.

Keywords: Papillary thyroid carcinoma (PTC), Fine needle aspiration cytology (FNAC), Occult papillary carcinoma of thyroid, metastatic papillary carcinoma

Introduction

Papillary thyroid carcinoma (PTC) is the most common endocrine malignant neoplasm worldwide with an increasing record number of new cases every year. It represents the 8th most diagnosed cancer worldwide.[1,2] In Bangladesh thyroid cancer incidence is 1,492, the death rate being 483.[3] Papillary carcinomas are considered well-differentiated and are responsible for between 80-85% of all thyroid malignancies. The median age at presentation for papillary carcinoma is 50 years.[4] The incidence of PTC is on the rise.[5] The reasons are unclear but may reflect improvements of factors that contribute to earlier detection of the cancer.[6] It is usually detected in the 3rd to the 5th decades of the patients' life, with the mean age of 40 years. The incidence of PTC increases with age, and women are more frequently affected than men, in ratios of 2:1 to 4:1.[7] The only well-established environmental factor that is related to PTC development is a previous history of radiation exposure.[8] Other suggested risk factors include pre-existing benign thyroid disease or having a family history of PTC.[9] Fine needle aspiration cytology (FNAC) is the method of choice in the diagnosis of PTC.[10] Preoperative diagnosis by FNAC is mainly based on recognition of papillary structures and typical nuclear characteristics, such as Orphan Annie nuclei, intranuclear pseudoinclusions (due to cytoplasmic invaginations) and nuclear grooves (folds in the nuclear membrane) in the aspiration smear.[7] The accuracy of diagnosis with FNAC is about 90% when correlated with the postoperative diagnosis of surgical specimens.[11] Ultrasonography is usually carried out to improve the diagnostic yield of FNAC. The confirmatory diagnosis is made by histopathology and/or immunohistochemistry. Definitive treatment includes surgical intervention with total thyroidectomy or lobectomy followed by radiation therapy.[4]

This case report describes a 25 year-old male patient with two anterolateral neck swellings for two years who was diagnosed by FNAC with metastatic papillary carcinoma of right cervical lymph nodes with occult papillary carcinoma of thyroid in the Department of Histopathology, Diabetic Association Medical College (DAMC), Faridpur.

Case Presentation

A male student of 25 years, normotensive, non-diabetic, non-smoker, hailing from Madaripur, Faridpur, came as an outpatient in the department of Histopathology, Diabetic Association Medical College Hospital on 18 June 2022 for FNAC of two swellings on his neck. He presented with two lymph node swellings on right antero-lateral side of neck for two years. Clinically he was diagnosed as cervical lymphadenopathy and was advised for ultrasonogram (USG) and FNAC. USG report revealed a small solid nodule with calcifications, measuring about 2×1cm in thyroid gland with enlarged two lymph nodes in right side of neck at the level of C3 and C6. FNAC was done twice from the thyroid gland and both the swellings on the neck with proper aseptic measures. On aspiration blood mixed material was collected each time. Twelve slides were prepared, stained properly with Pap stain and observed

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dunder light microscope. Smears from the thyroid showed few clusters of atypical thyroid follicular cells with papillary fragments and smears from the lymph nodes displayed papillary clusters of malignant cells with nuclear and cellular pleomorphism with increased nuclear cytoplasmic ratio, hyperchromatism, inconspicuous nucleoli and moderate cytoplasm. Nuclear changes were evident which included presence of nuclear grooving and intranuclear pseudoinclusions. Diagnosis was given as PTC with metastatic papillary carcinoma of the right cervical lymph nodes. The patient was asymptomatic and did not bother to take treatment options earlier. The swellings did not increase in size much during this period. He had no history of fever, weight loss, dyspnea, dysphagia or hoarseness of voice, hypothyroid or hyperthyroid symptoms or significant radiation exposure to the neck. The family had no history of thyroidal illness.

After the initial diagnosis, patient went back to Madaripur and was admitted to City hospital for removal of thyroid gland and the lymph nodes. The preoperative laboratory investigations were done which revealed Hb% 15.4g/dl, ESR 10 mm/1st hour, total WBC count 7,830/cmm, platelet count 285,000/cmm, blood group O^{+}, RBS 5.55 mmol/L, S. Creatinine 1.04 mg/dl, HbsAg- negative, chest X-rays and echocardiography yielded normal findings. His TSH, T_3 and T_4 levels were within normal limits. His weight was 52 kg. Total thyroidectomy with bilateral neck dissection was done six days after the initial diagnosis and the patient was discharged on day five without any complications. The resected specimens consisted of both lobes of thyroid gland and 11 cervical lymph nodes and were sent to Department of Pathology, BSMMU for histopathology. There was a single solid mass in the right lobe of thyroid measuring about 2.3 × 2 cm with calcification. Histopathology report came back as PTC with lymph node metastasis and the pTNM staging was T2N3Mx. After final diagnosis, the patient was referred to the Institute of Nuclear Medicine and Allied Sciences, Dhaka, to receive radioiodine therapy. His 50th POD investigations included S. TSH >60mlU/L, S. thyroglobulin 56.64 ng/ml, Anti TG ab 1.2 IU/ml, S. parathormone 17.1 pg/ml, S. calcium 6.9 mg/dl, S. albumin 5 gm/dl, vitamin D3 24.48 ng/ml and thyroid scan: small area of focal radiotracer uptake in the upper midneck. He was advised to follow up after four weeks of his 1st dose of radioiodine therapy. The patient claims to be healthy and is back to his normal active life.

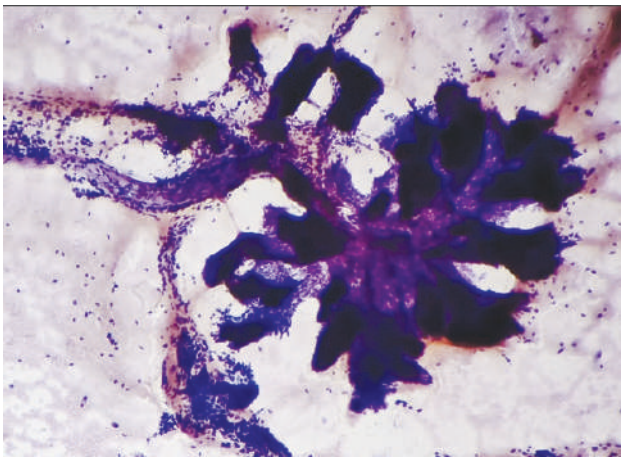

Fig. 1: Photomicrograph of Papillary carcinoma thyroid showing papillary fragments; pap stain, ×100

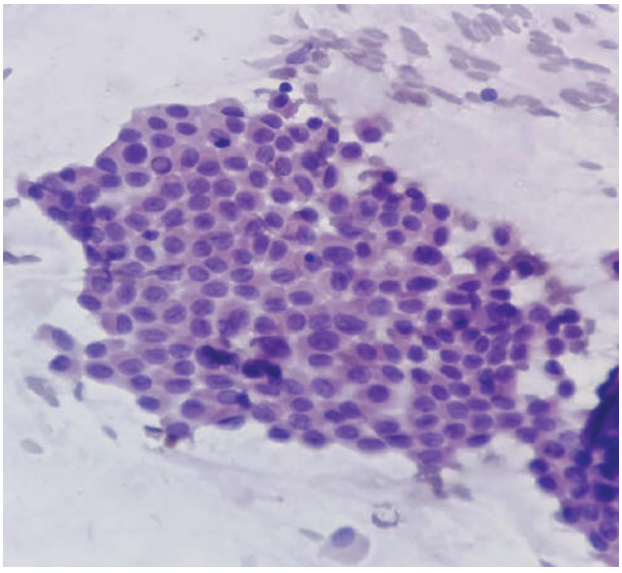

Fig. 2: Photomicrograph of Metastatic Papillary carcinoma showing nuclear changes; pap stain, ×100

Discussion

PTC is the one of the commonest endocrine malignancies, most of which is well differentiated with excellent prognosis.[12] Radiation exposure increases risk of thyroid malignancy, particularly papillary carcinoma.[13] Pre-existing multinodular goitre may turn into follicular thyroid cancer.[14] A family history of thyroid cancer is a risk factor for both papillary and non-papillary thyroid cancers. Cowden syndrome, familial adenomatous polyposis, Werner's syndrome, Carney complex type 1 and McCune Albright syndrome all are associated with non-medullary thyroid cancers. This case had no such history and showed no symptoms regarding the thyroid lesion. PTC is much more common in women (between 2:1 and 4:1) and has a median age at presentation of 50 years.[15,16] The present case report describes a unique presentation of PTC due to the

less than ordinary demographics of the patient. The patient described was an otherwise healthy male who presented with antero lateral neck swellings at the age of 25 years. A case report of a patient showed a cervical swelling of 5 cm for 15 months and who suffered from dysphagia and dysphonia.[17] It appears therefore that size and duration of the mass alone do not essentially correspond to its debilitating potential.

In a series of seven cases of solitary lateral neck mass due to occult underlying thyroid carcinoma, the mean time of mass presence was 5.1 months with a maximum of 12 months[18], which is far less than the two years of slow growth this patient had experienced.

Grossly the lesions are often 2-3 cm in size although they may be varying in size. They are solid, white, show calcification and may even be cystic and thereby confound the diagnosis.[19] Microscopically, the neoplastic papillae have a central core of fibrovascular tissues. Psammoma bodies are seen in 50% cases, Orphan Annie eye nuclei and intracytoplasmic inclusions and nuclear pseudoinclusions are also seen. About 50% cases may have regional lymph node metastases at the time of presentation. It may also present as a cervical lymph node without any obvious thyroid swelling. Distant metastases are uncommon.[20] Clinically the lesion may be a firm or hard, thyroid swelling, without any signs of compression usually. Lymph node metastasis first involves pre and paratracheal lymph nodes, followed by paraglandular, deep upper cervical, deep lower and lateral cervical and submandibular nodes.[21] Diagnosis is made on FNAC, cold nodule on radioisotope scan, high TSH level in blood, USG neck for both thyroid and lymph node status. CT scan of neck is indicated only in specific circumstances and not routinely. Features of greatest prognostic value include patient's age at presentation, small tumour size, total encapsulation, extra thyroid extension, multicentricity and presence of distant metastases.[22] Treatment is near total or total thyroidectomy with central node compartment dissection. Depending on involvement of cervical lymph nodes, lateral cervical or modified radical neck dissection is done.[23] Total thyroidectomy has the advantage that it allows monitoring of post-operative thyroglobulin levels, post-operative radioiodine can be used to detect residual disease, residual normal tissue and local or distant metastases.[24]

Conclusion

Among most common thyroid malignancies, PTC may present as cervical lymphadenopathy without significant thyroid enlargement. Benign conditions, such as branchial cysts, non-specific lymphadenitis, and tuberculosis constitute the underlying causes in the majority of patients with cervical masses. Nonetheless, malignant conditions such as occult papillary thyroid carcinoma must be taken into consideration. This case report emphasizes that a strong clinical suspicion is essential in the work-up of neck masses despite an apparently benign course even with no apparent history or risk factors of malignant disease. Also, both FNAC and imaging should be performed in all patients with cervical masses and allow for adequate surgical planning.

Conflict of interest: No

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