ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 6, Issue – 3, May - 2023, Page No. : 23 - 27

Inhumed Papillary Thyroid Carcinoma with Follicular Adenoma: A Concomitant Entity

[1]Ayushi Singh, Department of Pathology, Sri Aurobindo Medical College and Post Graduate Institute, Indore, India.

[2]Samarth Shukla, Professor, Department of Pathology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, Maharashtra, India.

[3]Sourya Acharya, Professor, Department of Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, Maharashtra, India.

[4]Sunita Vagha, HOD and Professor, Department of Pathology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, Maharashtra, India.

[5]Divya Rathod, Junior Resident, Department of Pathology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, Maharashtra, India.

Corresponding Author: Ayushi Singh, Department of Pathology, Sri Aurobindo Medical College and Post Graduate Institute, Indore, India.

How to citation this article: Ayushi Singh, Samarth Shukla, Sourya Acharya, Sunita Vagha, Divya Rathod, "Inhumed Papillary Thyroid Carcinoma with Follicular Adenoma: A Concomitant Entity", IJMACR- May - 2023, Volume – 6, Issue - 3, P. No. 23 – 27.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Thyroid malignant tumors are rarely associated with follicular adenomas. The incidence of this coincidence is highly variable. Here, we report a unique case report of papillary thyroid carcinoma associated with follicular adenoma. A 35 year old male presented with an asymmetrical mobile neck swelling, more on right side with no clinical features of hyper or hypothyroidism. Thyroid function test was normal with free T3 levels 0.3 ng/dl, free T4 levels 1.8 ng/dl and TSH was 2.8 mIU/mL. Ultrasonography of neck showed the features of background hyperplastic nodule. Right lobe contained 2.9 cm × 1.5 cm × 1 cm nodule with well circumscribed margins and no calcification. Under ultrasound guide fine needle aspiration cytology showed hypercellularity along with fire flares with no definitive diagnosis. After an arduous follow up and inconclusive result right sided hemithyroidectomy was done and the result of histopathological examination confirmed papillary thyroid carcinoma along with follicular adenoma. Patient was advised for close follow up in every6 months. Various literatures have reviewed malignant thyroid tumor and its papillary variants. Nevertheless, cases presented as benign tumor turned out to be malignant is

rare. This concludes us to examine the benign and clinically insignificant thyroid nodule with care and rigorous examination.

Keywords: Papillary Thyroid Carcinoma, Follicular Adenoma, Hyperplastic Thyroid Nodule.

Introduction

Worldwide, thyroid carcinoma is a relatively rare neoplasm; however, it is the commonest endocrine gland malignancy [1]. In 2019, an estimated 567,000 incident thyroid cancer cases were registered, ranking ninth among all cancer incidence with 130,889 males and 436,344 females. About 41,000 thyroid cancer deaths were estimated to occur worldwide, out of which 15,557 males and 25,514 females [2]. In India, the thyroid cancer incidence rate in women is increased from 2.4 to 3.9 [3]. Increased incidence of thyroid malignancy is attributed to environmental risk factors, including a deficit or excess of iodine intake, medical radiation, and nutrition-related factors [4]. The advent and availability of advanced diagnostic techniques, imaging modalities, imagingguided aspiration cytology, histopathology, and newer biochemical markers have led to the early identification of malignant thyroid nodules.The estimated prevalence of these thyroid nodules in an adult population is 10–41% by ultrasound (US) scanning [5, 6]. The overall malignancy risk is < 10%, and even smaller nodules (< 1 cm) may harbor cancer. Cases of thyroid carcinoma have been reported in patients with benign solid nodules likedyshormonogeneticgoiter, but the number of well documented cases is very low. Most have been follicular carcinomas, and others have been incidental papillary microcarcinomas. The reported follicular tumors include adenomas and carcinomas [7].Here, we report a rare case of papillary thyroid carcinoma existing along with follicular adenoma that was evaluated using ultrasonography, and frozen section was performed because of the possibility of malignancy. This case underwent a right hemithyroidectomy and was sent for histopathology examination. This is a rare case report which provides awareness of possible considerations when encountering a complex solid nodule during histopathological examination. Also, thorough sampling of the thyroid should be carried out to rule out microfoci of malignancy in the thyroid gland [8].

Patient And Observation

Patient information: A 35 year old male presented with an asymmetrical neck swelling more on the right side measuring 2.8 × 1.5 cm for 1 year.

Clinical findings: The swelling was non-tender, mobile, with negative translumination test. General and systemic examination was negative for any sign of metastasis with no cervical lymphadenopathy, negative hyper or hypothyroidism symptoms and negative for any past medical, past surgical and family history.

Diagnostic assessment: Complete blood count was within normal limits. Thyroid function test was normal with free T3 levels 0.3 ng/dl, free T4 levels 1.8 ng/dl and TSH was 2.8 mIU/mL.The patient was euthyroid and hadno clinical symptoms except for the thyroid mass. Thymoglobulin was normal. Thyroid antibodies were negative. Ultrasonography (USG) findings revealed a hypoechoic lesion in the right lobe measuring 2.9 cm × 1.5 cm × 1 cm with well-defined margins and no microcalcifications. No any evidence of lymph node metastasis was seen. Under USG guided, fine-needle biopsy was performedshowing moderately cellular smear with abundant thick colloid with fire flares in backgroundsuggesting features of hyperplastic nodule.A repeat fine needle biopsy done 6 months later showed

similar cytological features.As fine needle biopsy findings were suspicious of malignancy, intraoperative frozen section was performed which suggested the features of follicular adenomawith one of the foci showing true papillae with fibrovascular core extending only upto right lobe of thyroid sparing the left lobe of thyroid. And one of the foci showed features suggestive of papillary thyroid carcinoma. However, nuclear feature were not particular of that of malignancy taking the limitations of frozen section. Right hemithyroidectomy was performed and specimen was sent to histopathology section.

Gross Examination: The cut section of the gross specimenmeasuring 4.2 x 4 x 1.5 cm (right hemithyroidectomy specimen) showed a well-encapsulated greyish solid lesion along with few whitish areas.The normal thyroid was compressed at the periphery. The isthmus was completely unremarkable(Figure 1). Extensive sectioning was done and the tissue was processed.

Microscopic Examination: Histopathological examination revealed encapsulated mass with at places cells arranged in papillary pattern. There were multiple foci showing cells with nuclear features of papillary thyroid carcinoma (crowding, ground glass chromatin, and nuclear grooves), without any evidence of capsular or vascular invasion along with adjacent areas with histological features corresponding to follicular adenoma (Figure 2).

After confirmation of papillary thyroid carcinoma a CT of the head and neck region was done to rule out extension or metastasis to lymph nodes; therefore, total thyroidectomy or radio-iodine therapy was not advised and the patient was kept on close follow-up.

Follow-up and outcome: On follow-up, the patient was healthy and no new complaints or lesion was noticed.

Patient's perspective: Patient was completely healthy and satisfied with the given treatment.

Informed Consent: Informed consent was taken from the patient.

Discussion

The neoplasms of the thyroid gland are classified on the basis of the cells from which they originate and arise most commonly from the follicular cells followed by C cells. Papillary thyroid carcinoma represents around 90% of all diagnosed thyroid cancers. As of 2018, new diagnoses of thyroid cancer only included 4·4% follicular carcinomas, 1·5% Hürthle cell carcinomas, 1·5% medullary carcinomas, and less than 1% anaplastic carcinomas.Benign thyroid lesions like benign thyroid nodules, adenoma, and goiter have been associated consistently with thyroid cancer risk in epidemiologic studies. The relative risk are ~30% for benign thyroid nodules and adenoma and 5% for goiter, in comparisons of individuals with and without each condition. Common mutations found in thyroid cancer are point mutation of *BRAF* and *RAS* genes, *RET/PTC* and *PAX8/PPARγ* chro mosomal rearrangements which could transform even the benign lesions into malignant [9]. In our case, the presence of nuclear features of PTC in the cells arranged in papillary pattern was seen focally admixed with areas of benign follicular adenoma and made it difficult for us to diagnose it as PTC. The diagnosis of PTC by FNAC is difficult and unreliable with low sensitivity and due to paucity of nuclear features of PTC can be misdiagnosed as hyperplastic nodule [10]. Likewise, in our case, the lesion was missed on cytology due to the absence of nuclear features and abundant colloid in the background. Selective use of frozen section complements fine needle

aspiration cytology findings of suspicious lesions especially in the subset with papillary carcinoma. The diagnostic difficulties arise in permanent sections also when the tumor is without typical nuclear features of PTC or features are present only focally within the lesion and also since majority of the tumors arise within a background of nodular goiter resembling an adenoma and are encapsulated without vascular or capsular invasion.

Similarly, since there was no evidence of invasion in our case, the patient was advised a close follow-up without the need for total thyroidectomy or radioactive iodine therapy. In our case, we present multifocal areas of PTC arising with follicular adenoma, which on review of literature have been found to be very rare, and only few cases have been reported so far [10].

Conclusion

Papillary thyroid carcinoma arising with a follicular adenoma is a rare entity and can be easily missed both in cytology and permanent sections. The absence of capsular and vascular invasion adds to the difficulty. Cytopathology and frozen section can also miss the papillary carcinomas especially when present in small foci without vascular invasion. Therefore, a careful examination for the atypical nuclear features should always be done in an adenoma to rule out a malignancy.

Author's contribution

Patient management: Samarth Shukla and Ayushi Singh; data collection: Samarth Shukla and Ayushi Singh; manuscript drafting: Samarth Shukla and Ayushi Singh; manuscript revision: Sourya Acharya, Sunita Vagha, and Divya Rathod. All authors have read and agreed to the final manuscript and equally contributed to its content.

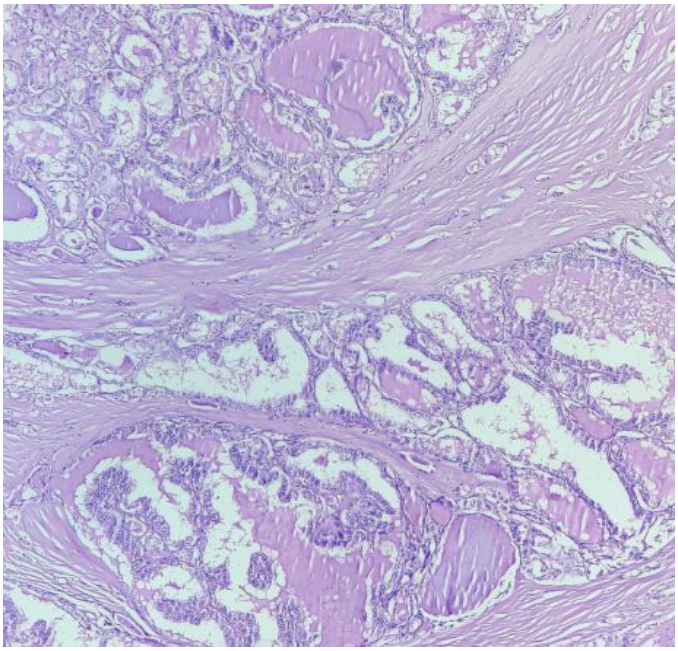

Figure 1: Gross specimen of thyroid with a well-encapsulated greyish solid lesion along with few whitish areas. The normal thyroid was compressed at the periphery. The isthmus was completely unremarkable

Figure 2: Microscopic features with multiple foci showing cells with nuclear features of papillary thyroid carcinoma (crowding, ground glass chromatin, and nuclear grooves), without any evidence of capsular or vascular invasion along with adjacent areas with histological features corresponding to follicular adenoma.

References

1. Kilfoy BA, Devesa SS, Ward MH. Gender is an agespecific effect modifier for papillary cancers of the thyroid gland. Cancer Epidemiol Biomarkers Prev. 2009;18:1092-100.
2. Bray F, Ferlay J, Soerjomataram I. Global cancer statistics 2018: global estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68:394-424.
3. Veedu JS, Wang K, Lei F, Chen Q, Huang B, Mathew A. Trends in thyroid cancer incidence in India. J Clin Oncol. 2018;e18095.
4. Dal Maso L, Bosetti C, La Vecchia C, Franceschi S. Risk factors for thyroid cancer: an epidemiological review focused on nutritional factors. Cancer Causes Control. 2009;20.1:75-86.
5. Banks ND, Kowalski J, Tsai HL, Somervell H, Tufano R, Dackiw AP, et al. A diagnostic predictor model for indeterminate or suspicious thyroid FNA samples. Thyroid. 2008 Sep;18(9):933–41.
6. Frates MC, Benson CB, Doubilet PM, Kunreuther E, Contreras M, Cibas ES, et al. Prevalence and distribution of carcinoma in patients with solitary and multiple thyroid nodules on sonography. J Clin Endocrinol Metab. 2006 Sep;91(9):3411–7.
7. Ghossein RA, Rosai J, Heffes C. Dysharmonogeneticgoiter: a clinicopathological study of 56 cases. EndocrPathol. 1997;(4):283-292.
8. Shukla S, Acharya S. Cervical lymph nodes harbinger of benign inclusions as well as metastatic deposits of thyroid malignancy. Int. J. Appl. Basic med. Res. 2017; (7) 210-212.
9. Baloch ZW, LiVolsi VA. Follicular-patterned lesions of the thyroid the bane of the pathologist. Am J Clin Pathol. 2002; 117:143–150
10. Kim YJ, Hong HS, Jeong SH, Lee EH, Kwak JJ. Papillary thyroid carcinoma arising within a follicular adenoma: a case report, ultrasound features, and considerations. Ultrasound Q. 2017;33(1):62-65.