Clinical and Experimental Health Sciences

Coexistence of Papillary Microcarcinoma and Hurthle Cell Adenoma: A Case of Thyroid Collision Tumor

Halil Ibrahim Tasci[1], Hilal Erinanc[2], Emin Turk[1], Erdal Karagulle[1]

[1] Başkent University, School of Medicine, Department of General Surgery, Ankara, Türkiye.
[2] Başkent University, School of Medicine,Department of Pathology, Ankara, Türkiye.

Correspondence Author: Halil İbrahim Tasci
E-mail: okcu6528@gmail.com
Received: 18.05.2021 **Accepted:** 01.07.2022

ABSTRACT

While thyroid cancers are usually present one type of cancer in the thyroid gland, rarely different thyroid cancers may found in one or two different lobes of the thyroid gland at the same time. A 70-years-old female patient presented with a long-standing neck swelling, especially on the left side, which was more prominent, recently increasing in size and causing shortness of breath. Due to tracheal compression and diagnosis of multi-nodular goiter, total thyroidectomy was performed. Histopathological examination revealed a thyroid collision tumor with papillary microcarcinoma on the right and hurtle cell adenoma on the left side. Due to its rarity, clinicians encountered difficulties in the diagnosis and treatment of thyroid collision tumors. We believe that to be aware of these rare entities by encouraging clinicians to report such cases enable to more solid conclusions to diagnosis and management of collision tumors.

Keywords: collision, hurthle, micropapillary

1. INTRODUCTION

The coexistence of two or more different tumor entities which have different histologic morphologies juxtaposed within the same tissue is termed as collision tumor (1). Both composite and collision tumors involve two morphologically and immunohistochemically different neoplasms coexisting within a single organ. However, collision tumors do not have the histological cellular intermingling seen in composite tumors. (1). Collision tumors may occur in stomach, liver, adrenal gland, lung, ovaries, kidney, and colon (2). Collision tumors within the thyroid gland are extremely rare and constitutes less than 1% of all thyroid malignancies. Most of the reported cases have mixed histologies of follicular or papillary and medullary carcinomas (3).

In this report, we presented a case of thyroid collision tumor including papillary microcarcinoma and Hurthle cell adeonoma.

2. CASE PRESENTATION

A 70-years-old female patient was admitted to hospital with the complaint of swelling in her neck. She had similar symptoms one year ago. Thyroid fine needle aspiration biopsy had been applied and there were no cytologic atypia. In her anamnesis, she also had coronary artery disease and obesity. Thyroid function tests were within normal limits. She was followed up medically. Recently, she admitted to our hospital with complaining her neck swelling has gradually increased, and suffer from shortness of breath.

On physical examination, thyroid gland was palpable, it was about 9x6 cm on the left side and 3x4 cm on the right side, with firm consistency, partially mobile and nodular. The trachea was slightly deviated to the right. There was inspiratory wheezing by auscultation in the lungs. On laboratory examination, thyroid function tests were as follows; free T4: 0,73 ng/dL, free T3:3 pg/ml and thyroid stimulating hormone (TSH) was 1.67 µU/ml. There was tracheal compression to the right side on anterior posterior cervical radiography (Figure 1).

In thyroid ultrasonography, the gland size was increased and the parenchyma was heterogeneous. In the middle-lower zone of the right lobe, an irregularly contoured 21x18 mm solid nodule with punctate calcifications and a 69x50x44 mm size nodule with cystic and solid areas occupying almost the entire lobe in the left lobe was observed. Due to tracheal compression and diagnosis of multi-nodular goiter, surgical excision was planned. After total thyroidectomy, the patient's dyspnea and examination findings improved. The patient

DOI: 10.33808/clinexphealthsci.938698

was discharged on the second postoperative day without any complication.

In the macroscopic examination showed that an 6 mm papillary microcarcinoma in the right lobe and a 5 cm Hurthle cell adenoma on the left lobe. Histopathological evaluation of the specimen showed that adenoma was completely enveloped by thin fibrous capsule and composed of variably sized follicles lined by Hurthle cells (Figure 2). No vascular or capsular invasion was noted. Microscopically, papillary carcinomas share certain features. The neoplastic papillae contain a central core of fibrovascular tissue lined by one or occasionally several layers of cells with crowded oval nuclei. Nuclear grooving or nuclear clearing was seen (Figure 3). Immunohistochemistry showed CK19 (+), HBME-1 (+), Galectin 3 (+) in the papillary carcinoma. , CK19 (-), HBME-1 (-), Galectin 3 (-) in Hurthle cell adenoma.

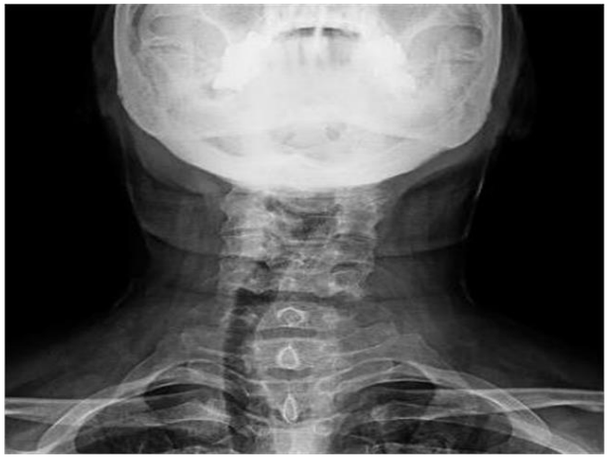

Figure 1. *Tracheal compression to the right side on anterior posterior cervical radiography.*

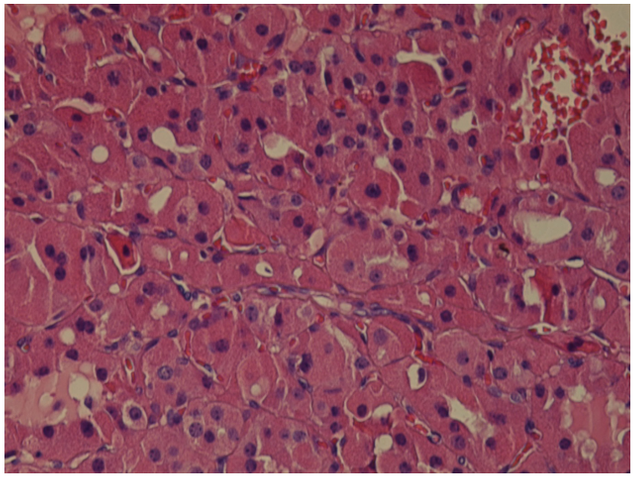

Figure 2. *Shows oncocytic follicular cells which, are characterised by large size, polygonal to square shape, voluminous granular and eosinophilic cytoplasm (HEX20).*

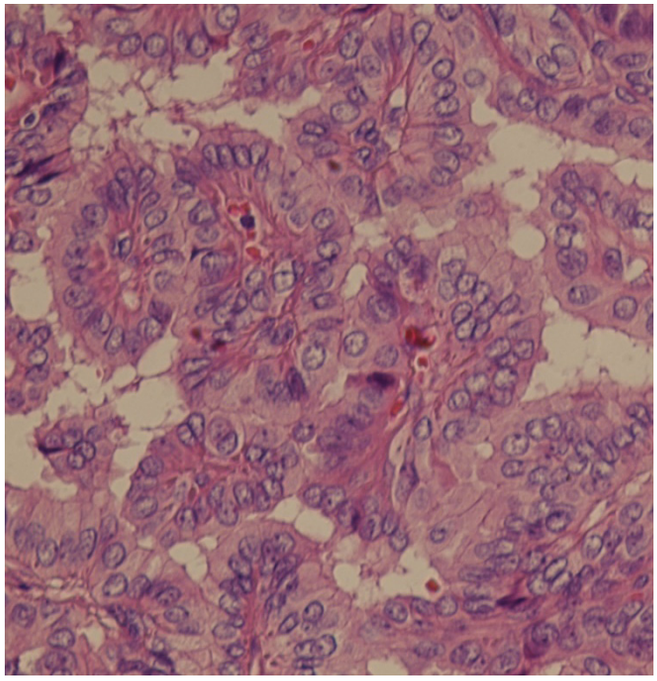

Figure 3. *Shows papillary carcinoma which is composed of multiple papillary architecture with fibrovacular core and covered with follicular cells having nuclear enlargement, nuclear groove and inclusion (HEX40).*

3. DISCUSSION

While thyroid cancers are usually present one type of cancer in the thyroid gland, different thyroid cancers may found in one or two different lobes of the thyroid gland at the same time. Collision tumors were first described by Bilroth and then modified by Warren and Gates (4). Presence of two or more tumor in the same tissue or organ at the same time are categorized into three different conditions, as mixed, composite and collision tumors (4). The term mixed tumor is used if there is a histological mixture of the two tumors in the same organ. It is thought that these tumors arise from a common cell of origin (5). However tumors arise from different cell populations in composite tumors. The term collision tumor is described as the coexistence of two adjacent but histologically and morphologically distinct malignant tumors in the same organ. Unlike the other two, in collision tumors there should be no histological mixture in the tumor mass (4). In a literature review by Ryan et al. 33 thyroid collision tumor cases were found in data from 27 different studies (6). In this case presentation we report a collision tumor case with papillary microcarcinoma and Hurthle cell adenoma, which are rarely seen in the literature.

The formation of collision tumors have been explained with some theories such as “pluripotent cell theory”, “neoplastic coercion theory” and the “chance theory”. “Pluripotent cell theory” explained that tumors with different histological structures originate from a single pluripotent stem cell. “Neoplastic coercion theory” is defined that an initial tumor can promote the development of another tumor by means of

DOI: 10.33808/clinexphealthsci.938698

creating a permissive local environment. The other theory is the "chance theory", which proposes that two tumors come to occupy the same mass purely by chance (6). No single theory can fully explain the pathogenesis of these tumors in all cases and therefore, recently in the development of collision tumors a combination of theories should be considered (2). Although its pathogenesis is not known exactly, it is thought to be a familial predisposition. Some genetic mutations are thought to increase the developing of a collision tumor. Mutations in the RET oncogene, retinoblastoma (RB), p53, and BRAF gene may be associated with collision tumors of the thyroid (7).

Ryan et al reported that collision tumors are more common in women, with an average age of 53.4 (27-84) (6). Most of the patients had complaint of a mass in the neck, and metastasis was detected in the majority of the patients (23 of 33 patients) at the time of the diagnosis. Coexistence of medullary and papillary thyroid cancer was observed in the majority of cases (20 of 33 patients). Among them only 1 patient had been diagnosis with collision tumor by fine needle aspiration biopsy preoperatively (6). Our presented case was a 70-years-old female patient. She had complaint of swelling in the neck lead to shortness of breath. The combination of Hurthle cell adenoma and papillary microcarcinoma is infrequent. The case reported by Rana et al. in 2018, was the first case in the literature (8). Until now, there has been no any report in medical literature of a similar case which is presented by those. As far as we know, our case presentation would be the second one in the literature.

Because of rarity, the diagnosis and management options of collision tumor are important. The vast majority of them are diagnosed postoperatively, during histologic examination of total specimen. Fine needle aspiration biopsy was performed on our patient one year ago, but no cytological findings suggestive of neoplasia were observed. The diagnosis was made by the histopathological examination of the surgical material postoperatively.

Collision tumors are more aggressive than single primary tumors and the risk of recurrence increases (2). Since they are extremely rare tumors, there is no consensus on the treatment of collision tumors. Treatment for these tumors should be perform by implementing a combination of therapies, treating each tumor separately. However some authors advise that the treatment should mainly plan to according the more aggressive tumor type (6,9). In our patient, Hurthle cell adenoma limited to thyroid parenchyma and there were no capsular or vascular invasion. Papillary microcarcinoma was localized in the other lobe and there was no lymph node involvement. Therefore no additional treatment was required except total thyroidectomy in our case.

Due to its rarity, clinicians encountered difficulties in the diagnosis and treatment of thyroid collision tumors. We believe that to be aware of these rare entities by encouraging clinicians to report such cases enable to more solid conclusions to diagnosis and management of collision tumors.

Conflict of Interest Statement:

No potential conflict of interest was reported by the authors at the drafting and publication stages of this study.

Funding:

No financial support was received by the authors at the research and drafting stages of the study.

REFERENCES

[1] Khethmal P, Kumar A. Collision Tumor of Thyroid: A Rare Case Report. JMSCR 2018;06(10):1079-1080.

[2] Pishdad R, Cespedes L, Boutin R, Jaloudi M, Raghuwanshi M. Coexistence of two different thyroid malignancies: A collision phenomenon. Cureus 2020;12(4):e7539.

[3] Plauche V, Dewenter T, Walvekar RR. Follicular and papillary carcinoma: A thyroid collisiontumor. Indian J Otolaryngol Head Neck Surg. 2013;65:182-184.

[4] Thomas VP, George R. Collision tumors of the thyroid: Review of literature and report of a case of papillary–Follicular collision tumor. Thyroid Research and Practice. 2018;15(12):60-64.

[5] Sejben I, Szabó Z, Lukács N, Loránd M, Sükösd F, Cserni G. Papillary renal cell carcinoma embedded in an oncocytoma: Case report of a rare combined tumour of the kidney. Can Urol Assoc J.2013;7(7-8):E513-16.

[6] Ryan N, Walkden G, Lazic D, Tierney P. Collision tumors of the thyroid: A case report and review of the literature. Head Neck 2015;37(10):E125-129.

[7] Alavi MS, Azarpira N. Medullary and papillary carcinoma of the thyroid gland occurring as a collision tumor with lymphnode metastasis: A case report. J Med Case Rep. 2011;5: 590.

[8] Rana C, Kumari N. Hurthle cell adenoma and papillary microcarcinoma in thyroid: Collision tumors. World Journal of Endocrine Surgery 2018;10(2):134-136.

[9] Sekar GP, Easwaran B, Senthilkumaran K, Subha TV, Raja IN: Collision tumour of thyroid gland comprising of papillary carcinoma and medullary carcinoma – a rare presentation. Int J Recent Trends Sci Technol. 2014;13: 163-165.

How to cite this article: Tasci HI, Erinanc H, Turk E, Karagulle E. Coexistence of Papillary Microcarcinoma and Hurthle Cell Adenoma: A Case of Thyroid Collision Tumor. Clin Exp Health Sci 2022; 12: 1046-1048. DOI: 10.33808/clinexphealthsci.938698