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CASE REPORT

Thyroid collision tumor: a case report of three histological types in the same patient

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Abstract

Concomitant occurrence of two different carcinomas in the same organ is rare. Also, it is quite uncommon in thyroid. In this case, three histological types were diagnosed in the same specimen. A 57-year-old patient with a thyroid nodule history, diagnosed 2 years ago. After a suspicious fine needle aspiration cytological result, total thyroidectomy was performed and the histopathological analysis presented three divergent thyroid tumors. There are few thyroid collision tumors cases described, no one with three different histologic types. The lack of clinical information about it, compelled a judicious management, that guided to a satisfatory outcome.

Keywords: case reports; pathology; surgical; thyroid cancer; papillary; thyroid gland.

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Introduction

Concomitant occurrence of Medullary thyroid carcinoma (MTC) and Papillary thyroid thyroid carcioma (PTC) is rare. It can occur as a mixed tumor or as a collison tumor[1]. The former corresponds to a dual differentiation single neoplasm focus, while the latter, called "Collision tumor", refers to two or more histological types coexisting lesions wich are morphologically independent of each other, located in the same organ whereas separated by normal tissue[1,2]. They are quite uncommon in thyroid[3] with few cases reported[3,4]. Among them, "Collision" between MTC and PTC are frequent, while concomitant PTC and Folicular thyroid carcinoma (FTC) are scarce[5]. Usually one of histological components is known preoperatively and the other is incidentally diagnosed. In the present case, three histological types were diagnosed in the same total thyroidectomy surgical specimen.

The following case report was approved by a institutional ethics committee (number 33032820.4.0000.5550).

Case report

A 57-year-old female patient with a cervical nodule, whose only complaint was aesthetic discomfort. There was no previous cancer history. On physical

examination, a hard, painless and mobile nodule was noted in thyroid right lobe, with no suspicious cervical lymph nodes. Ultrasound revealed two nodules in the right lobe, measuring 2.3 × 1.5 × 1.2 cm (ACR TI-RADS 4) and 1.1 × 0.9 × 0.6 cm (ACR TI-RADS 3) both in middle third. Thyroid volume was 16.7 cm^3 and no atypical lymphnodes were found. A fine needle aspiration biopsy presented Bethesda V as result. There were no alterations in routine preoperative exams. Patient underwent a total thyroidectomy, which occurred without any intercurrence. Postoperative period was unremarkable.

Right lobe macroscopy showed three firm, white, nodular lesions, focally coinciding in its middle third, named lesions A, B and C. Lesion A measured 1.4 cm, lesion B 1.1 cm and lesion C 1.4 cm. Right lobe microscopy demonstrated the following: Lesion A (Figure 1) a PTC, well-differentiated follicular epithelial neoplasia with capsular infiltration, nuclei with atypia, clearing, nuclear cleavage and pseudoinclusions, areas of oncocytic differentiation and lymphoid stroma, Warthin-like type; Lesion B (Figure 2) a MTC, neoplasm interface with normal thyroid parenchyma, showing solid neoplasm with spindle cells, in an organoid and alveolar pattern, with eosinophilic extracellular matrix areas and a granular and speckled nuclei pattern, "salt and peper" like; Lesion C (Figure 3) a FTC, epithelial neoplasm with follicular differentiation, without papillary cytological changes, with capsular invasion foci. There was no lymphovascular or perineural invasion, nor extrathyroidal extension. Resection margins were clear.

Afterwards, patient received information on histopathological result and clinical referral for research on RET proto-oncogene's germline mutation. Calcitonin,

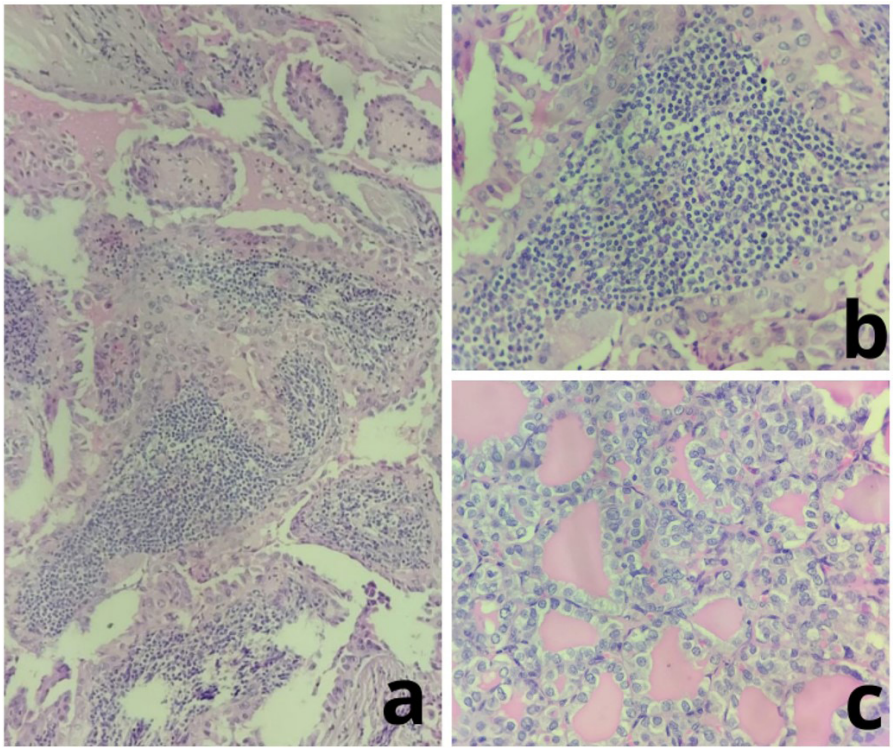

Figure 1. Papillary thyroid carcinoma, Hematoxylin stain. **a -** 100X. **b -** 400x. **c -** 400x.

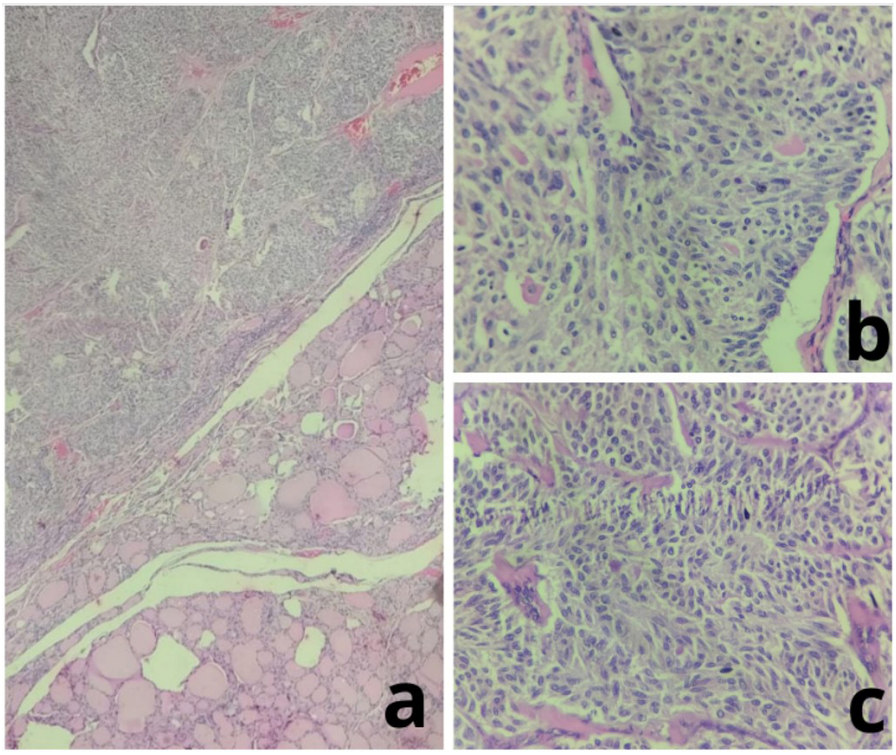

Figure 2. Medullary thyroid carcinoma, Hematoxylin stain. **a -** 100X. **b -** 400x. **c -** 400x.

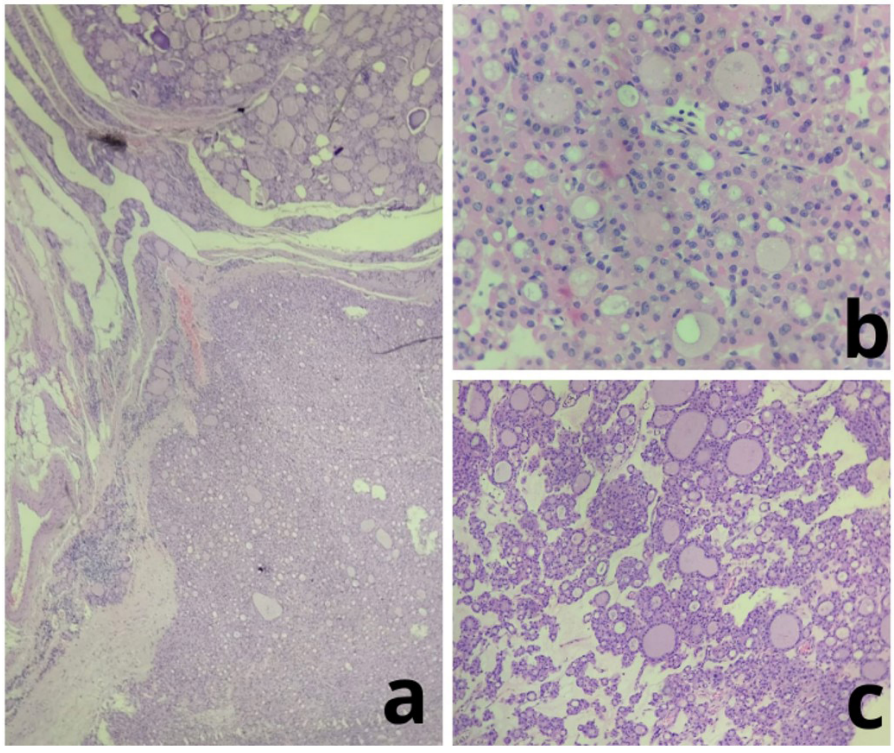

Figure 3. Follicular thyroid carcinoma, Hematoxylin stain. **a -** 100X. **b -** 400x. **c -** 400x.

carcinoembryonic antigen (CEA) and thyroglobulin were undetectable in serum, while cervical ultrasound and chest contrasted tomography were both within normal parameters. By now, she is in the 7th month of follow-up and free of disease.

Discussion

There are less than 50 thyroid collision tumors cases described[3,4], no one with three different histological types in a single patient. The present case shows PTC, MTC and FTC in the same specimen. This tumor is usually described as PTC plus MTC or PTC plus FTC[2]. Among the main theories about thyroid collision tumors development[2,3,5], the authors decided to favor the one that assumes a independente origin for each tumor, perceiving their occurrence as a mere chance, by *de novo* local genesis.

Considering the lack of clinical information about collision tumors, managing decisions were based on individual staging to each histological type. All three tumors were staged by AJCC 8th edition, pT1bN0M0, stage I. For PTC and FTC, histological parameters and patient dynamic risk stratification at low risk, lead the authors to consider that surgical treatment alone was satisfactory. For MTC, serum calcitonin and carcinoambryonic antigen (CEA) assessment and an image study were performed. As no evidence of residual disease was detected, clinical follow-up was recommended. Bearing in mind that most MTC are sporadic and the absence of family history, it is presumed that present patient is a sporadic case of MTC. In case of RET proto-oncogene germline mutation, a family investigation would be suitable. That´s why refering to genetic counseling is important in such situations.

There are no studies that safely demonstrate these patients' prognosis. However, individualized, multimodal treatment directed to the highest stage tumor is recommended[3,4], therefore, further laboratory or image investigations are essential. The outcomes also rely directly on tumor biological aggressiveness, completion of resection and surgical margins.

References

1. Dikbas O, Duman AA, Guvendi GF. Medullary thyroid carcinoma and papillary thyroid carcinoma in the same patient as a collision tumour. Case Rep Endocrinol. 2019;2019:4038628. **http://dx.doi.org/10.1155/2019/4038628**. PMid:30993022.

2. Brandwein-Gensler M, Urken M, Wang B. Collision tumor of the thyroid: a case report of metastatic liposarcoma plus papillary thyroid carcinoma. Head Neck. 2004;26(7):637-41. **http://dx.doi.org/10.1002/hed.20024**. PMid:15229907.

3. Thomas A, Mittal N, Rane SU, Bal M, Patil A, Ankathi SK, Vaish R. Papillary and medullary thyroid carcinomas presenting as collision tumors: a case series of 21 cases at a tertiary care cancer center. Head Neck Pathol. 2021;15(4):1137-46. **http://dx.doi.org/10.1007/s12105-021-01323-7**. PMid:33840044.

4. Abdullah AM, Qaradakhy AJ, Ahmed MM, Salih AM, Omar SS, Kakamad FH, Rahim HM, Abdulla BA, Mohammed SH, Ahmed SF, Baba HO, Ishaac RH. Thyroid collision tumors: a case series with literature review. Ann Med Surg. 2022;76:103444. **http://dx.doi.org/10.1016/j.amsu.2022.103444**. PMid:35299940.

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5. Thomas V, George R. Collision tumors of the thyroid: Review of literature and report of a case of papillary–Follicular collision tumor. Thyroid Res Pract. 2018;15(2):60. **http://dx.doi.org/10.4103/trp.trp_6_18**.