Case Report / Olgu Sunumu

Concurrent medullary and papillary carcinoma of thyroid

Tiroidin eşzamanlı medüller ve papiller karsinomu

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ABSTRACT

Simultaneous occurrence of papillary thyroid carcinoma (PTC) and medullary thyroid carcinoma (MTC) in the same thyroid gland is a rare condition. These tumors derive from different cells; PTC originates from follicular cells whereas MTC originates from parafollicular cells. Because of this, the treatment of these tumors also differs. This article describes two rare cases of the simultaneous occurrence of MTC and PTC in the thyroid gland.

Keywords: Cancer; concurrent; medullary; papillary; thyroid.

ÖZ

Papiller tiroid karsinomu (PTK) ve medüller tiroid karsinomunun (MTK) aynı tiroid bezinde simültane oluşumu nadir bir durumdur. Bu tümörler farklı hücrelerden köken alır; PTC foliküler hücrelerden kaynaklanırken MTC parafoliküler hücrelerden kaynaklanır. Bu nedenle, bu tümörlerin tedavisi de farklıdır. Bu yazıda tiroid bezinde MTK ve PTK'nın simültane oluşumuna dair iki nadir olgu tanımlandı.

Anahtar Sözcükler: Kanser; eşzamanlı; medüller; papiller; tiroid.

Concurrent occurrence of papillary thyroid carcinoma which is derived from follicular cells and medullary thyroid carcinoma which is derived from C cells is a known phenomenon. The co-occurrence of these two carcinomas which have completely different embryologic origins was first reported in 1981 by Lamberg et al.[1] and Biscolla et al.,[2] who has written various papers on this type of associations, reported the presence of separate foci of papillary carcinoma in 27 of his 196 patients (13.8%) with medullary carcinoma. This percentage is notably higher than that of the association of multinodular goiter with papillary carcinoma (3-7%).

In this paper we report two patients in whose thyroidectomy specimens we detected foci of medullary and papillary carcinoma.

CASE REPORT

Case 1– A 59-year-old female patient was referred to the otolaryngology clinic of Şişli Etfal Training and Research Hospital for treatment of tumors detected in her thyroidectomy specimen. The patient was operated on by a surgeon

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practicing at another center, with a diagnosis of multinodular goiter approximately three months before. Both papillary and medullary carcinomas were observed in the subtotal thyroidectomy specimen and the patient was referred to a training hospital. Besides papillary and medullary foci of carcinoma, C-cell hyperplasia was also detected in the thyroid gland on consultation with the Pathology Department of Şişli Etfal Training and Research Hospital.

In the original report the size of focus of the papillary carcinoma was not indicated, and it likewise was not possible to determine the size of the papillary tumor in the paraffin blocks brought for consultation. Magnetic resonance (MR) exam of the upper abdomen and computed tomography (CT) exam of the thorax revealed no distant metastasis. Preoperative basal calcitonin measurement could not be done because of technical problems in the Laboratory Department. Neck ultrasound showed residual thyroid tissue and a decision for completion thyroidectomy, anterior compartment dissection (levels 6, 7) and bilateral elective modified neck dissections (levels 2-5) was made by the Thyroid Board of Şişli Etfal Training and Research Hospital, and performed by the Otolaryngology Clinic of Şişli Etfal Training and Research Hospital.

Foci of papillary and medullary carcinoma in the thyroidectomy specimen and a focus of medullary carcinoma in one lymph node in the anterior compartment specimen were detected. No metastatic node was detected in the lateral neck. On follow-up of the patient a lump of about 13 mm was detected in level 6 and reported to be medullary carcinoma on needle biopsy. The lump was extirpated about one year after the first operation and was confirmed to be metastasis of medullary carcinoma.

The patient has received radioactive iodine treatment and is still being followed on the 24th postoperative month without any indication of papillary or medullary cancer recurrence. The level of serum basal calcitonin was 27.2 pg/mL on last visit.

Case 2– A 52-year-old female patient was referred to the otolaryngology clinic of Maltepe University Medical Faculty with complaints of pain and swelling in the neck and an occasional feeling of dysphagia. Lumps were palpated in the left thyroid lobe and left neck levels 4 and 5. In another center a fine needle biopsy of thyroid nodules was performed and diagnosis of Hurthle cell tumor was reported. Magnetic resonance images revealed a 4 cm mass in the left thyroid lobe and large lymph nodes adjacent to the carotid artery. Thoracic CT exam was normal. A total thyroidectomy and anterior compartment dissection (levels 6, 7) and a modified left cervical dissection (levels 2-5) were performed in the otolaryngology clinic of Maltepe University Medical Faculty. Preoperative basal calcitonin level measurement was >2000 pg/mL. Therefore the initial diagnosis was metastatic thyroid medullary carcinoma. No complication arose during the operation, and the vocal cords were mobile on postoperative examination. On pathological investigation, a focus of papillary carcinoma with a diameter of 12 mm in the right lobe and focus of medullary carcinoma with a size of 40x35x30 mm in the left lobe were detected (Figures 1, 2). Both tumors had not invaded the thyroid capsule, and C-cell hyperplasia was not detected in the non-tumorous thyroid tissue. There was lymphovascular invasion in the focus of medullary carcinoma. No metastatic lymph node was detected in the anterior compartment dissection material, however medullary carcinoma metastasis was detected in seven of the 24 lymph nodes in the lateral neck dissection specimen. The diameter of the largest metastatic lymph node was 5 cm, and extracapsular spread was positive. The patient was evaluated by the Thyroid Board of Şişli Etfal Training and Research Hospital for adjuvant treatment, and it was decided to give her radioactive iodine treatment for papillary carcinoma and radiotherapy to the neck for the medullary carcinoma metastasis with extra-capsular extension. The patient completed the radioactive iodine treatment and external radiotherapy, and is being followed in the 18th postoperative month as disease-free for both tumors. The level of serum basal calcitonin was 2.04 pg/mL, thyroglobulin <0.1 ng/mL, and anti-thyroglobulin antibodies (Anti-TgAb) <15 U/mL.

DISCUSSION

The thyroid gland is made up of two different groups of cells of different embryological origins and that have different functions.

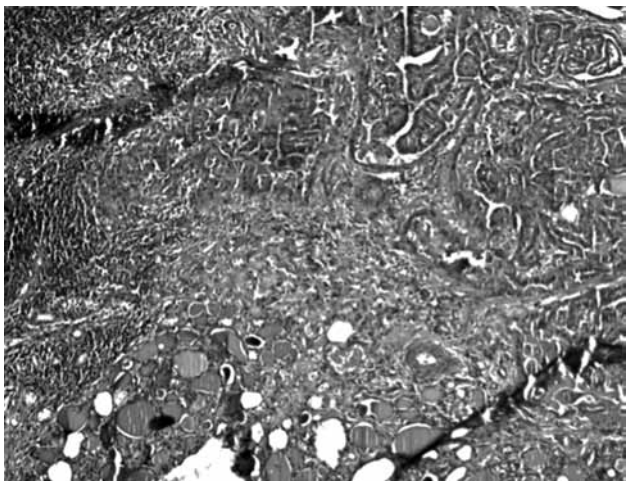

Figure 1. *Focus of papillary carcinoma in the right lobe in the specimen of the second case (H-E x 40).*

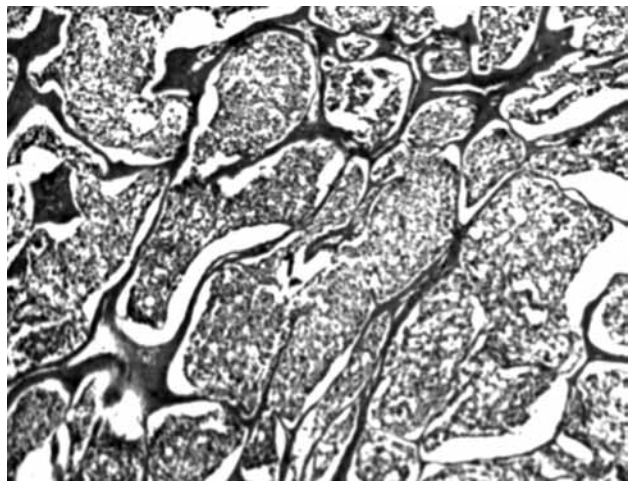

Figure 2. *Focus of medullary carcinoma in the left lobe in the specimen of the second case (H-E x 100).*

When considered together with the parathyroid glands that are sometimes attached to or even inside its capsule, this gland located in the anterior part of the neck can be accepted as accommodating three different endocrine organs. Papillary and follicular carcinoma of the thyroid gland deriving from thyrocytes are prevalently named as differentiated thyroid carcinoma, and in addition to surgery, radioactive iodine treatment is also sometimes used as a supplement for their treatment. This treatment developed based on the fact that tumor cells are also hungry for iodine like the thyrocytes they derive from. Medullary carcinoma that is more aggressive when compared to differentiated carcinomas does not benefit from radioactive iodine treatment or thyrotropin suppression therapy due to its different cell origin.[3] The detection of foci of differentiated thyroid carcinoma in the thyroid of a patient with medullary carcinoma may require the addition of radioactive iodine treatment to his/her treatment scheme depending on the size and spread of differentiated tumor.

Papillary carcinoma, the most prevalent amongst thyroid tumors, can even be detected in people that died of other causes in some autopsy series, and it is said to have been detected with an incidence rate of as much as 7% in patients with multinodular goiter. But this rate is quite low when compared to 13.8% which is the incidence rate of detecting second primary thyroid papillary carcinoma in patients with thyroid medullary carcinoma in Biscolla's series.[2] Later in another paper Machens and Dralle[4] reported the incidence of papillary carcinoma in thyroids with medullary carcinoma to be 3.6%. The RET proto-oncogene mutation is detected in hereditary medullary carcinoma cases. The presence of this oncogene mutation in some of the papillary carcinoma cases may form the opinion that the simultaneous occurrence of these two tumors is associated with RET proto-oncogene mutation.[5] Gul et al.[6] detected papillary thyroid carcinoma in one of the four familial medullary carcinoma cases of siblings and attributed this co-occurrence to RET mutation. However, in only five of the patients was RET mutation detected in Machens and Dralle[4] 26-case series of simultaneous medullary and papillary carcinoma. Kim et al.[7] also described the detection of concurrent papillary thyroid carcinoma in 10 of his 53 patients with medullary thyroid carcinoma as a simple manifestation of incidental papillary carcinoma and did not indicate a common etiological factor for these two tumors.

In conclusion, the presence of papillary carcinoma foci in thyroidectomy specimens of two of six patients (33%) with medullary carcinoma in the common series of the otolaryngology departments of Şişli Etfal Training and Research Hospital and Maltepe University Medical Faculty led us to search the cause and the incidence of this phenomenon in the medical literature.

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