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Ectopic Parathyroid in an Ectopic Cervical Thymus in a Patient with Parathyroid Adenoma

Paratiroid Adenomu Bir Hastada Ektopik Servikal ile Thymus Ektopik Paratiroid

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Abstract

Cervical embryology is complex. Developmental abnormalities, especially aberrant migration might occur along the entire path of any native tissue descent, which can result in ectopic displacement as ectopic thymus or parathyroid. Ectopic cervical thymus as well as ectopic parathyroid tissue is rare event, separately. Herein, we report a rare case of incidental finding of an ectopic parathyroid in an ectopic cervical thymic tissue in a patient who underwent surgery for parathyroid adenoma. *Turk Jem 2014; 2: 61-63*

Key words: Ectopic Parathyroid, parathyroid adenoma, ectopic thymus

Özet

Servikal embriyoloji karmaşıktır. Gelişimsel anormallikler, özellikle aberan migrasyon, nativ dokunun inişi sırasında saptanabilir ve bu durum ektopik timus veya paratiroid dokusu ile sonuçlanabilir. Ektopik servikal timus da ektopik paratiroid dokusu gibi nadir bir durumdur. Burada, paratiroid adenomu nedeni ile opere olan bir hastada insidental olarak saptanan ektopik servikal timus yerleşimli ektopik paratiroid olgusunu bildiriyoruz. *Turk Jem 2014; 2: 61-63*

Key words: Ektopik paratiroid, paratiroid adenomu, ektopik timus

Introduction

The development of the thymus is linked to that of the parathyroid glands, which are small endocrine glands in the neck and produce parathyroid hormone which is responsible for calcium homeostasis (1). The thymus is a lymphoepithelial organ derived embryologically from the third and fourth pharyngeal pouches, which descend to the anterior mediastinum by the sixth week of gestation (2). Because the parathyroid glands are derived from the dorsal wing of the third pharyngeal pouch and descend with the thymus, an ectopic thymus-parathyroid complex, mechanistically suggests aberrant migration (3). Inthis paper, we report these rare concomitant events and discuss the other literature, briefly.

Case Report

A 33-year-old male was referred to our hospital with weakness, polyuria and polydypsia for the last one month. He suffered from generalized bone pain and constipation, as well. Examination revealed a palpable mobile nodule in the neck, more prominent at the left lower pole of the thyroid gland. No other finding was detected on physical exam. All laboratory data were within normal range with exception of calcium and PTH elevation. Preoperative maximum calcium and serum PTH levels were 14 mg/dl and 110.9 pg/ml, respectively. Serum phosphorus level was 3.3 mg/dl. He was euthyroid. The ultrasound examination revealed a 3 cm mixed-echoic well-defined mass in the lower part of the neck on the left side. Unfortunately, parathyroid scan was not available in our center, but the patient had a report of parathyroid scan performed outside the center which suggested parathyroid adenoma. With clinical impression of parathyroid adenoma, the patient underwent surgery for mass excision. A lobulated fragment measuring 3x2x0.6 cm in size, designated as parathyroid adenoma, was received by our department for intraoperative consultation. Histological evaluation of frozen and permanent sections revealed fatty tissue, lymphoid aggregate and Hassall's corpuscles in the thymus (Figure 1). One microscopic focus of the parathyroid tissue (ectopic parathyroid) in the ectopic thymus was identified, as well (Figure 2). With this frozen diagnosis, surgery was continued and an encapsulated

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mass, measuring 4x3x1.5 cm in size, attached to the left thyroid lobe, was excised. Frozen and serially submitted sections of latter mass showed parathyroid adenoma (Figure 3). Left thyroid lobectomy was done. No significant pathologic finding was seen in the thyroid.

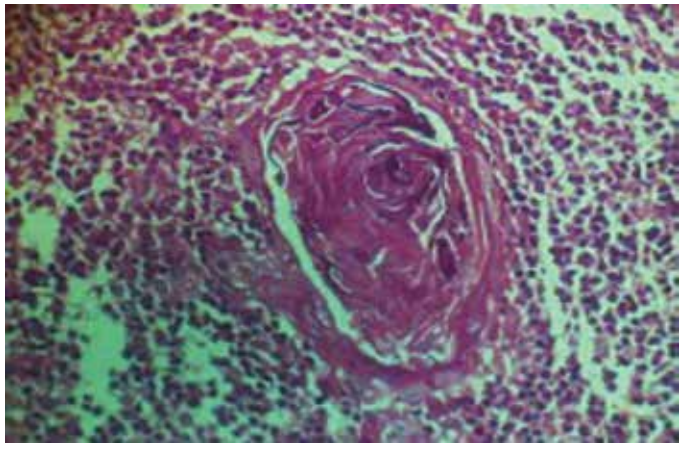

Figure 1. Thymic tissue is predominantly composed of small lymphocyts and scattered Hassall corpuscles (H&E, x200)

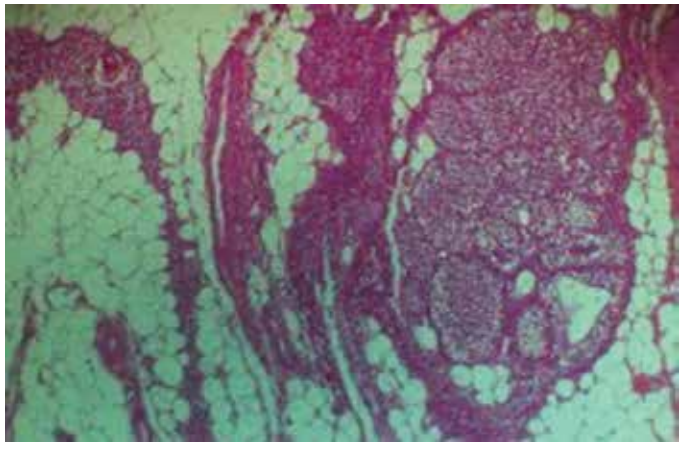

Figure 2. Bland-looking and well-circumscribed small parathyroid tissue surrounded by thymus (H&E, x100)

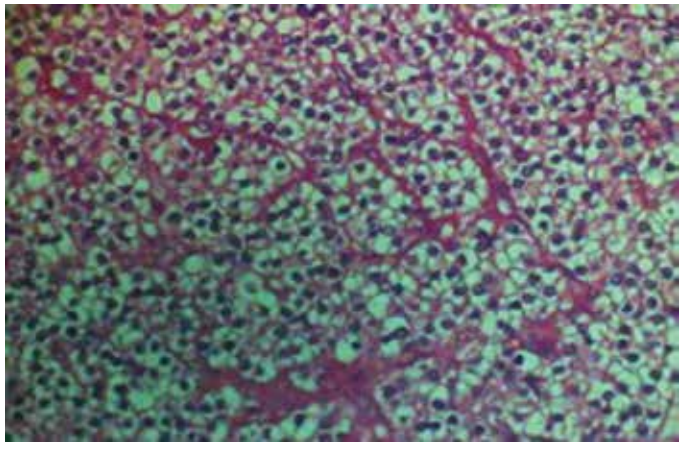

Figure 3. Parathyroid adenoma with hypercellular well-vascularized feature and chief cell dominancy devoid of mitoses (H&E, x400)

Discussion

Developmental anomalies of the branchial apparatus are not uncommon. The endoderm of the pharynx evaginates or outgrows toward the ectoderm to form segmental pouches, which develop in an anterior to posterior sequence and are separated from each other by pharyngeal arches (4). The pharyngeal pouches are transient embryonic structures and give rise to craniofacial organs, including the thymus and parathyroid glands. During the segmentation of the pharynx, endodermal cells of the prospective third pharyngeal pouch receive the signals that provide the initial positional information for thymus and parathyroid development (5,6). The inferior parathyroids separate from the thymic tissue and remain close to lower pole of the thyroid, while the thymus descends into the mediastinum. During thymic migration, small fragments of thymus may separate and attach themselves to any site along this route (7). Ectopic cervical thymus is rarely reported, because thymic vestiges often remain asymptomatic and unrecognized by clinicians. The most reported cases are children. Ectopic thymic tissue in the neck is rarer in patients older than 20 years (3). Ectopic parathyroid glands are unusual, however, may constitute a common etiology of persistent or recurrent hyperparathyroidism, when they are missed at initial diagnosis (8). Existence of concomitant two ectopic tissues, thymus and parathyroid, is extremely rare.

Most cases of cervical ectopic thymus are not diagnosed preoperatively, as they are usually not considered due to its rarity (9). They are usually discovered during surgery for any neck mass. We can see this condition in a case with papillary thyroid carcinoma with a nodular swelling near the thyroid, usually considered as lymph node (10). This condition is so important because it can be confused with lymph node metastasis, consequently, extensive operation such as radical neck dissection may be done.

Rare ectopic thymic tissue or its neoplasm is detected during the process of investigation of some pathological conditions (11,12). Some tumors and even malignancies have been reported in these ectopic tissues. In ectopic thymus, thymoma may be detected which are usually found in mediastinum. Filosso reported a case of an incidentally found giant pleural thymoma and also discussed the differential diagnosis between thymoma and other large neoplasms originating from the pleura (13). In two reported cases, ectopic intrathyroidal thymus tissue presented as a thyroid nodule, both were children four and six years of age (14,15). In these two exceedingly rare events, similar to our reported case, two concomitant ectopic tissues were identified. Lignitz et al. reported a 6-year-old boy who was noted to have a solitary thyroid nodule on ultrasound. Histological findings of hemithyroidectomy revealed that the nodule composed of ectopic intrathyroidal thymus tissue surrounding a well-defined parathyroidal gland (16). Westbrook et al. presented the case of a 21-year-old female with bilateral carotid body paragangliomas who was successfully treated with surgical excision of the symptomatic right-sided tumor, but two rare anatomic variants were identified in her surgical specimen: a carotid sheath parathyroid gland and ectopic thymus tissue (17). This condition is an extremely rare, as in our case who had a parathyroid adenoma and adjacent separate aberrant cervical thymic tissue with ectopic parathyroid gland.

Conclusion

In conclusion, any ectopic tissue and their neoplasms such as thymic or parathyroid, eventhough a very rare condition, should always be considered in the differential diagnosis when a neck mass is evaluated. Exact knowledge about the embryological origin of the neck organs as well as cooperation between clinicians and pathologist would be very useful to diagnose and treat surgical masses. Intra-operative consultation can be useful in such cases. Ectopic cervical thymus may be misdiagnosed as lymph node metastasis and frozen section is helpful to avoid unnecessary invasive procedure such as radical neck dissection.

Conflicts of Interest

There are no conflicts of interest.

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