

Ectopic thyroid tissue in breast: unique and unexpected diagnosis

Tecido tiroideu ectópico na mama: diagnóstico único e inesperado

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Abstract

Thyroid ectopia is a rare congenital disease characterized by presence of thyroid tissue at sites other than its normal location. We report a case of an 85 year-old woman with a palpable nodule in the left breast that pathologic analysis revealed normal thyroid tissue. To our knowledge this is the first unequivocal report of ectopic thyroid located in the breast.

Keywords: Breast; Complex breast cyst; Ectopic thyroid.

INTRODUCTION

The diagnostic approach of a complex cyst of breast is challenging because there is an associated risk of malignancy. Although in most cases it is a benign condition all complex cysts should be evaluated by tissue biopsy. The spectrum of differential diagnosis of complex breast cysts can be very extensive and variable including thyroid ectopia. The ectopic thyroid tissue is a rare condition resulting of an abnormal embryological development and migration of thyroid gland. The authors report a very interesting case in which the diagnosis was unexpected. According to the literature review performed by the authors this is the first description of ectopic thyroid tissue in breast.

CASE REPORT

An 85 year-old woman with surgical history of total thyroidectomy due to retrosternal multinodular goiter 7 years ago. She has been doing hormonal replacement with thyroxine since then. She presented at our Breast Care Unit complaining of a palpable nodule in the left breast that she felt for the first time six months ago. Clinical breast exam revealed a well-defined, regular shaped, soft and mobile nodule with about 4 cm loca-

ted in the lower inner quadrant of the left breast. There were no associated inflammatory signs or skin changes. She performed a mammogram that showed a well circumscribed oval mass compatible with benign findings (BI-RADS® 2). The breast ultrasound scan confirmed a 33.4 x 29.3 x 21.7 mm complex cyst with well-defined regular walls, with solid and cystic components and posterior acoustic enhancement. An ultrasound-guided core needle biopsy was performed and the histological findings showed normal breast parenchyma and thyroid tissue immunoreactive for TTF-1 (Thyroid Transcription Factor 1). The thyroid function tests revealed mild hyperthyroidism: TSH (thyrotropin) 0,037 uUI/ml, free thyroxine (FT4) 1,72 ng/dl, free triiodothyronine (FT3) 2,98 pg/ml and the hormone dose was decreased. Preoperative analytical results showed normal thyroid function.

The patient underwent a surgical excision of the complex breast cyst to clarify the diagnosis and eventual treatment (Figure 1). Macroscopic findings showed a 17g and 38.0 x 30.0 x 25.0mm specimen with a well-defined encapsulated and vitreous nodule with cystic areas of 28mm on cut section (Figure 2). Microscopic evaluation confirmed the presence of thyroid tissue with predominance of macrofollicular structures. The scant surrounding breast parenchyma was normal (Figure 3).

The patient had an uneventful postoperative period and she was discharge home well on the 1st postoperative day. Regarding her surgical history, 3 months after the surgery a cervical ultrasound was requested in order to investigate the possible presence of residual eu-

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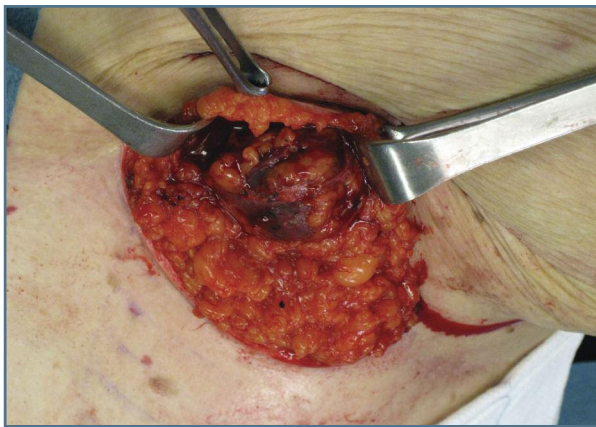


FIGURE 1. Surgical excision of the complex cyst of the left breast

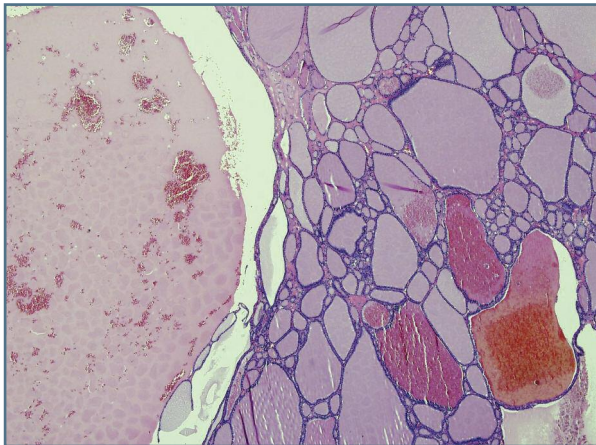


FIGURE 3. Microscopic findings: thyroid tissue with predominance of macrofollicular structures (40x; HE)

topic thyroid and a small nodule measuring 7.6 x 9.9 mm was seen, probably thyroid tissue. After 6 months follow-up she was asymptomatic and the thyroid function results were within normal values.

DISCUSSION

Complex cystic lesions of breast represent an important diagnostic challenge in Breast Care and they are characterized as lesions composed of solid and cystic components. The spectrum of possible etiologies is very broad, including benign, atypical or high risk and malignant lesions, with a relatively high risk of malignancy that ranges from <1 to 23%. A complex breast cyst requires histological investigation for diagnosis and therapeutic orientation usually by a percutaneous



FIGURE 2. Gross findings: a 28 mm encapsulated nodule on cut section (formaldehyde 10% fixation)

ultrasound-guided biopsy^{1,2,3}. This case highlights that the investigation of a complex breast cyst can result in an unexpected diagnosis, such as thyroid ectopia.

Ectopic thyroid is a rare condition, first described by Hickman in 1869, that is defined as thyroid tissue found anywhere other than the usual anatomic location of thyroid gland in anterior-lateral neck region between the second and fourth tracheal cartilages⁴⁻⁶. Ectopic thyroid tissue results from abnormal development at early stages of thyroid gland embryogenesis, during its migration from the floor of the primitive foregut to its final pre-tracheal position^{7,8}. The etiology of this abnormality is not fully understood but genetic factors and some mutations in regulatory genes expressed in the developing thyroid have been implicated in human thyroid ectopy^{5,7}. The exact incidence of thyroid ectopia is unknown due to asymptomatic nature of some ectopic thyroid tissue^{4,7}. However, it is estimated to occur in approximately 1:100.000-300.000 normal individuals and 1:4.000-8.000 patients with thyroid disease^{5,7,8}. Ectopic thyroid is usually located along the normal path of thyroid gland descent, most commonly in the lingual region (90% of reported cases), but rarely can be found in mediastinum and subdiaphragmatic areas, such as heart, lungs, esophagus, gallbladder, duodenum, ovary or uterus^{4,5,8}. The case presented introduces another extremely rare site to consider that is the breast. Ectopic thyroid is often detected when an increased demand for thyroid hormones is present causing the enlargement of ectopic tissue and making it clinically apparent⁵ as in our patient that underwent a total thyroidectomy.

In this case both ectopic and eutopic tissues coexisted, but it is known that a normal thyroid gland is absent in around 70% of cases⁹. Ectopic thyroid tissue could be affected by the same pathological changes as

the ectopic thyroid gland, including malignancy and may be symptomatic or not^{6,7,10}. The main symptom presented by the patient was related to the ectopic tissue size, but it is not possible to know if the tissue was functioning because the patient did not suspend hormonal therapy. It remains undetermined whether the mild hyperthyroid status was an iatrogenic hyperthyroidism, a result of functioning ectopic tissue or due to a probable functioning residual ectopic tissue.

The treatment of ectopic thyroid tissue depends on factors such as mass size, symptoms, age of the patient, thyroid functional status and histological findings^{6,7}. Surgical excision is often the treatment of choice, mainly in symptomatic cases, but suppressive hormonal therapy and radioactive iodine 131 are other options^{5,8}.

It is not possible to make an analysis of similar cases because no other cases of thyroid ectopic tissue in breast were found in literature.

The authors would like to emphasize the importance of this report because according to the literature review this represents the first unequivocal description of ectopic thyroid tissue in breast.

PATIENT CONSENT

An informed consent form was signed by the patient.

CONFLICT OF INTERESTS

The authors declare no conflict of interest.

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