



Metastases of breast cancer to the thyroid gland in two patients — a case report

Przerzut raka sutka do tarczycy — prezentacja dwóch przypadków

Elżbieta Skowrońska-Jóźwiak¹, Kinga Krawczyk-Rusiecka¹, Zbigniew Adamczewski¹, Stanisław Sporny², Marek Zadrożny³, Marek Dedecjus⁴, Jan Brzeziński⁴, Andrzej Lewiński¹

¹Department of Endocrinology and Metabolic Diseases, Medical University of Lodz, Polish Mother's Memorial Hospital — Research Institute, Łódź, Poland

²Department of Dental Pathomorphology, Medical University, Łódź, Poland

³Department of Surgical Oncology and Breast Diseases, Polish Mother's Memorial Hospital — Research Institute, Łódź, Poland

⁴Department of General, Oncological, and Endocrine Surgery, Medical University, Łódź, Polish Mother's Memorial Hospital — Research Institute, Łódź, Poland

Abstract

Introduction: Metastatic cancer is rarely found in the thyroid (only 2–3% of malignant tumours found in that gland); primary sources usually including breast, kidney, and lung tumours.

Cases reports: Two cases of advanced breast cancer with thyroid metastases in female patients are presented. The similarities between these two cases included: 1) postmenopausal age; 2) diagnosis based on result of FNAB (numerous groups of cells with epithelial phenotype strongly implying metastatic breast cancer); 3) thyroid function — overt hyperthyroidism in the first woman and subclinical hyperthyroidism in the second one; 4) the presence of nodular goitre in clinical examination, the occurrence of many nodular solid normo-echogenic lesions with calcifications in both thyroid lobes in US; and 5) negative antithyroid antibodies. The main difference was the time of establishing diagnosis; in the first woman — before mastectomy, parallel to diagnostics of breast tumour, and in the second woman four years after mastectomy, during cancer dissemination (with right pleural effusion and lung metastasis). In the first case, mastectomy was followed two weeks later by thyroidectomy. The second patient was disqualified from thyroid surgery due to systemic metastatic disease.

Conclusions:

1. Fine needle aspiration biopsy of the thyroid gland should obligatorily be performed in patients with breast cancer and nodular goitre, even without any clinical data of metastatic disease.
2. The clinical context of cytological findings is of critical value.
3. In patients with breast cancer accompanied by multinodular goitre, we recommend that more punctures be performed during FNAB than is routinely done.

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Key words: metastases, breast cancer, thyroid

Streszczenia

Wstęp: Przerzuty do tarczycy są stosunkowo rzadko diagnozowane (2–3% złośliwych nowotworów tarczycy). Najczęściej narządem wyjściowym dla nowotworu przerzutowego są: sutek, nerka i płuco.

Opis przypadków: Zaprezentowano przypadki 2 chorych z rozpoznaniem rakiem sutka i przerzutami do tarczycy. Podobieństwa pomiędzy pacjentkami obejmują: 1) wiek pomenopauzalny; 2) ustalenie rozpoznania za pomocą BAC (liczne grupy komórek o fenotypie nabłonkowym, prawdopodobnie przerzut z raka sutka); 3) nadczynność tarczycy (jawna klinicznie u jednej pacjentki, subkliniczna u drugiej); 4) obecność wola guzkowego, w badaniu USG liczne lite zmiany ogniskowe normo-echogeniczne, lite ze zwapnieniami w obu płatach tarczycy; 5) prawidłowe stężenia przeciwciał przeciw-tarczycowych. Główną różnicą był moment postawienia rozpoznania; u pierwszej pacjentki przed mastektomią, równoległe do diagnostyki guza piersi, u drugiej 4 lata po mastektomii, w fazie rozsiewu choroby, z płynem w opłucnej i przerzutami do płuc. U pierwszej pacjentki przeprowadzono mastektomię, a dwa tygodnie później całkowitą tyreoidektomię, wdrożono substytucję L-tyroksyną i przekazano do dalszej terapii onkologicznej. Drugą pacjentkę zdyskwalifikowano z zabiegu z uwagi na stwierdzenie ogólnoustrojowego rozsiewu choroby.

Wnioski:

1. Diagnostyka cytologiczna zmian ogniskowych w tarczycy u pacjentek z wywiadem raka sutka powinna być obligatoryjnie wykonywana, mimo braku jednoznacznych cech potwierdzających obecność zmian przerzutowych.
2. Kontekst kliniczny badania cytologicznego ma kluczowy charakter.
3. W przypadku podejrzenia przerzutu do tarczycy należy rozważyć możliwość poszerzenia zakresu badania cytologicznego w wolu wieloguzkowym poprzez selekcję większej liczby bioptowanych zmian ogniskowych.

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Słowa kluczowe: przerzuty, rak sutka, tarczyca



Prof. Andrzej Lewiński M.D., Department of Endocrinology and Metabolic Diseases, Medical University of Łódź, Polish Mother's Memorial Hospital — Research Institute, 93-338 Łódź, Rzgowska St. 281/289, tel.: +48 42 271 17 15, fax: +48 42 271 13 43, e-mail: alewin@csk.umed.lodz.pl

Introduction

Metastatic cancer is rarely found in the thyroid gland. Despite abundant vascular supply, secondary involvement of the thyroid gland from the primary malignancy accounts for 2–3% of malignant thyroid tumours [1]. Primary sources usually include breast, kidney, and lung tumours [1–3]. The number of cases with thyroid gland metastases has increased during recent years [1], probably because of better and more precise diagnostic procedures, including ultrasonography-guided fine needle aspiration biopsy (FNAB) studies, positron emission tomography (PET) scans, and the extended life span of patients with cancer diseases.

Case report

Two cases of advanced breast cancer with thyroid metastases in female postmenopausal patients are presented. In both cases primary tumours were localized in the left breast. Initial examination revealed palpable thyroid nodules in both cases. Other clinical similarities and differences are shown in Table I. US results are presented in Figure 1.

The FNAB result is presented in Figure 2.

Discussion

A thyroid nodule arising in a patient with previous medical history of malignancy deserves careful medical surveillance. Both presented cases revealed metastas-

es by palpation, US examination, and FNAB; however, in some patients, clinically occult development was reported [1] and detection of metastases in CT, PET [1, 2] or during surgery [4] was described. FNAB results revealed numerous groups of cells with epithelial phenotype, which were not typical for thyroid cancer, strongly implying metastatic cancer. Clinical assessment of cytological findings is of critical value in the establishment of primary tumour localisation.

Both patients were hyperthyroid; the first women presented overt hyperthyroidism and the second, subclinical hyperthyroidism. In the majority of previously presented cases no endocrine disorders were found [5], and one case of hypothyroidism induced by thyroid metastasis of colon adenocarcinoma was reported [6]. There was also a massive intra-arterial embolisation presented as acute thyroiditis [7]. Severe thyrotoxicosis induced by thyroid metastasis of lung adenocarcinoma was shown only in one case [8]. The aetiology of hyperthyroidism may be related to the destruction of thyroid tissue by malignant neoplasm cells, but also with nodular toxic goitre and metastases coexistence. Although data about the coexistence of thyroid autoimmunity were presented [9], in our patients concentrations of thyroid antibodies were within the normal range.

According to American Thyroid Association recommendations, in the presence of two (2) or more thyroid nodules larger than 1–1.5 cm, those with suspicious sonographic features should be aspirated preferentially [10]. The US findings that have been reported for malignant thyroid nodules comprised entirely solid or

Table I. *Clinical similarities and differences between presented patients*

Tabela I. *Kliniczne podobieństwa i różnice pomiędzy prezentowanymi przypadkami*

	Patient 1	Patient 2
Age	49	65
Clinical diagnosis of nodular goitre	Before mastectomy	4 years after mastectomy, during metastatic phase, right pleural effusion, lung metastasis
Thyroid function	Hyperthyroidism	Subclinical hyperthyroidism
Anti-thyroid antibodies	Normal concentrations	Normal concentrations
US	Numerous nodular solid echogenic lesions, presence of calcifications in both thyroid lobes	Numerous nodular solid echogenic lesions in both thyroid lobes (Fig. 1)
FNAB	Left thyroid lobe: Numerous groups of cells with epithelial phenotype strongly implying metastatic breast cancer (Fig. 2) Right thyroid lobe: Colloid nodule	Left thyroid lobe — cancer cells probably metastatic breast cancer Right thyroid lobe — material scarcity
Treatment	Mastectomy and thyroidectomy	Disqualified, due to systemic metastatic disease
Thyroid histopathology	Many micro- and macrofocal metastases of the previously diagnosed lobular breast carcinoma were found in both thyroid lobes (Fig. 3)	None

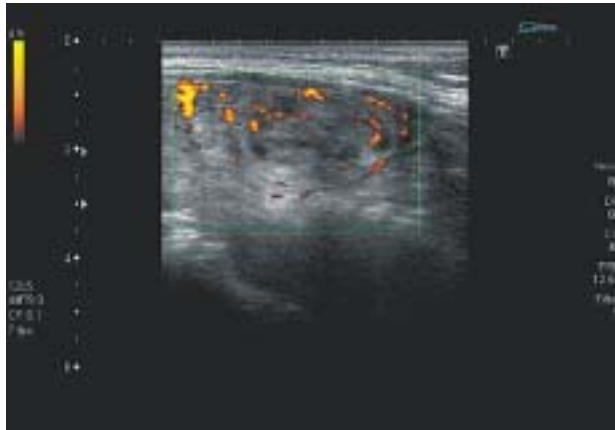


Figure 1. US results. A solid, normoechogenic tumour with regular margin and not increased vascularity

Rycina 1. Wynik badania USG tarczycy. Lite, normoechogeniczne, dobrze ograniczone ognisko, bez wzmożonego unaczynienia

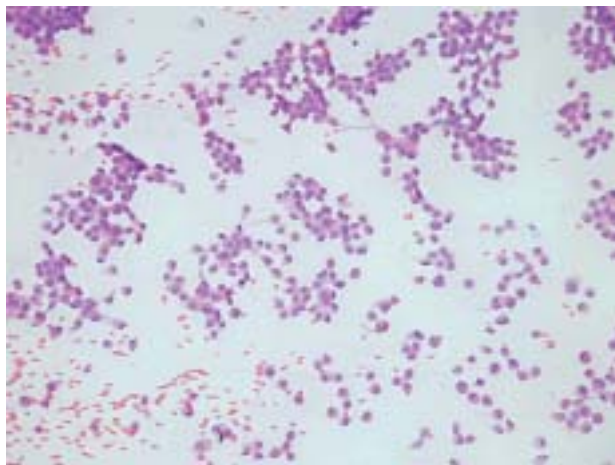


Figure 2. FNAB results. The numerous groups of cells with epithelial phenotype, not typical for thyroid cancer, strongly implying metastatic cancer

Rycina 2. Wynik badania BAC. Liczne grupy komórek o fenotypie nabłonkowym, nietypowe dla raka tarczycy, sugerujące zmianę o charakterze przerzutowym

predominantly solid nodules, a hypoechogenicity comparable to strap muscles, an irregular margin, intranodular microcalcifications, a taller than wide orientation, and an increase in intranodular vascularity [10, 11]. As shown in Fig. 1, all observed thyroid nodules appeared as solid but normoechogenic with a regular margin. Benign US pattern coexisting with hormonal disturbance characteristic for hyperthyroidism may be a reason for cytological diagnostic prorogation, although in patients with a history of malignancy in-

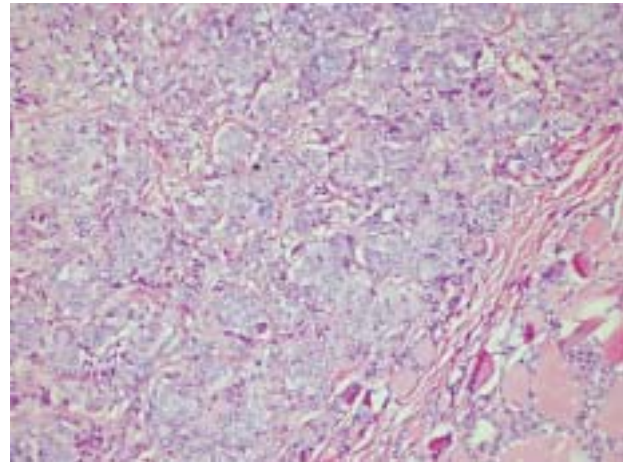


Figure 3. Thyroid histopathology results. Multiple micro- and macrofocal metastases of the previously diagnosed lobular breast carcinoma; normal thyroid tissue on right corner

Rycina 3. Wynik badania histopatologicznego tarczycy. Liczne, różnej wielkości ogniska przerzutowe, analogiczne do wcześniej zdiagnozowanego raka sutka; prawidłowa tkanka tarczycy w prawym rogu

dications for biopsy of a greater number of lesions should be considered.

An aggressive surgical approach has been recommended by many authors. Total thyroidectomy is dedicated for patients with metastatic cancer limited to the thyroid [2, 3, 5] because of the multifocality of metastases to the thyroid gland [2], to avoid potential morbidity of neck tumour recurrence, even if the prognosis remains poor, in the majority of cases [2, 3].

Conclusions

1. Fine needle aspiration biopsy of the thyroid gland should obligatorily be performed in patients with breast cancer and nodular goitre, even without any clinical data of metastatic disease.
2. The clinical context of cytological findings is of critical value.
3. In patients with breast cancer accompanied by multinodular goitre, we recommend more punctures be performed during FNAB than is routinely done.

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