



Rare localisation of breast cancer metastasis to thyroid gland

Retka metastaza karcinoma dojke u tiroidnu žlezdu

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Abstract

Introduction. Metastases to the thyroid gland are very rare. They are usually seen in malignant melanoma, kidney, breast cancer and lung cancer. **Case report.** We presented a 54-years-old female patient with breast cancer diagnosed in 2002. The adequate surgical procedure was done and the tumor and axillary lymph nodes were removed. The patient also received adjuvant postoperative chemotherapy. After seven years of a disease free period, the first relapse of the disease was detected as thyroid gland tumor with axillary lymphadenopathy. The patient had a good response to systemic treatment so the surgical removal of thyroid gland and enlarged lymph nodes was performed. Histopathological analysis confirmed metastasis with breast cancer origin. Radical mastectomy was also performed. Second relapse of the disease was detected 10 months later, while the patient was on hormonal therapy. It was manifested as the appearance of bone and skin metastases, pleural effusion and lymphadenopathy. **Conclusion.** This case report emphasized the importance of detailed examination of any new onset of thyroid swelling in a patient with previous history of malignancy.

Key words:

breast neoplasms; neoplasm metastasis; thyroid gland; diagnosis, differential; immunohistochemistry.

Apstrakt

Uvod. Metastaze u štitnoj žlezdi veoma su retke. Najčešće se viđaju kod malignog melanoma, karcinoma bubrega, karcinoma dojke i karcinoma pluća. **Prikaz bolesnika.** Kod bolesnice, stare 54 godine, postavljena je dijagnoza karcinoma dojke 2002. godine. Sprovedeno je adekvatno hirurško lečenje pri čemu su uklonjeni tumor i limfni čvorovi iz istostrane pazušne jame. Bolesnica je primila i adjuvantnu postoperativnu citostatsku terapiju. Nakon sedam godina došlo je do prvog relapsa bolesti koji se manifestovao pojavom čvora u štitnoj žlezdi i uvećanim limfnim čvorovima u pazušnoj jami. Bolesnica je dobro odgovorila na sistemsku hemioterapiju, pa je sprovedeno hirurško uklanjanje štitne žlezde i uvećanih limfnih čvorova. Patohistološka analiza potvrdila je da se radi o metastazi karcinoma dojke. Takođe, učinjena je i radikalna mastektomija obolele dojke. Drugi relaps bolesti registrovan je nakon 10 meseci, dok je bolesnica bila na hormonskoj terapiji. Detaljnom procenom bolesti potvrđeno je prisustvo metastaza u kostima, na koži, pleuralni izliv i uvećanje limfnih čvorova. **Zaključak.** Ovaj prikaz ukazuje na važnost detaljnog ispitivanja svakog novonastalog uvećanja štitne žlezde kod bolesnika sa prethodnom istorijom malignog oboljenja.

Ključne reči:

dojka, neoplazme; neoplazme, metastaze; tireoidna žlezda; dijagnoza, diferencijalna; imunohistohemija.

Introduction

Metastasis to the thyroid gland is usually considered rare^{1,2}. The overall incidence in autopsy series has been 0%–1% in unselected autopsy studies and around 24% in patients with metastatic disease^{3–8}. The most common among metastasizing cancers to the thyroid gland are malignant melanoma, kidney, breast cancer and lung cancer⁹. We presented a female patient with local recurrence of breast cancer and metastasis in the thyroid gland, without any other distant metastases.

Case report

A 54-year-old woman was diagnosed with carcinoma of the right breast in 2002 at the Institute for Oncology and Radiology of Serbia, Belgrade, Serbia. After initial biopsy, tumorectomy with axillary dissection was performed in stage T2N1. Histopathological analysis confirmed ductal carcinoma with lobular component. Oestrogen receptors were 30% positive, progesterone 10% and HER2/neu was negative at immunohistochemistry. Malignant cells were found in one out of nine lymph nodes. The patient received six cycles of

adjuvant chemotherapy with CMF protocol, containing cyclophosphamide, methotrexate and 5-fluorouracil. Postoperative radiotherapy was also administered.

The patient was followed up every six months for the period of seven years. No local or distal recurrence was found until the beginning of 2009, when the first relapse of the disease was detected as local recidive in the right breast with both side axillary lymphadenopathy. At that time, Eastern Cooperative Oncology Group/World Health Organization (ECOG/WHO) performance status of patient was 0. The treatment was continued with systemic chemotherapy according to FAC regimen (5-fluorouracil, doxorubicin and cyclophosphamide). After the first cycle of chemotherapy, thyroid gland became physically palpable so additional examination was done. Ultrasonography showed low density, 3 cm sized nodule in the left lobe of the thyroid gland, with no calcification. The thyroid hormone levels in blood were within normal ranges. The patient did not have any symptoms such as dyspnoea or wheezing present. After six cycles of chemotherapy, lobectomy was performed in June 2009. Biopsy *ex tempore* showed metastatic breast cancer cells in thyroid gland tissue (Figure 1). Definite histopathological confirmed two foci of breast cancer metastasis. In addition, immunohistochemical analysis confirmed: oestrogen receptor (ER) Allred score 8, progesteron receptor (PR) score 7, HER2/neu 1+ (Figure 2), CK7+, CK19+. The tests

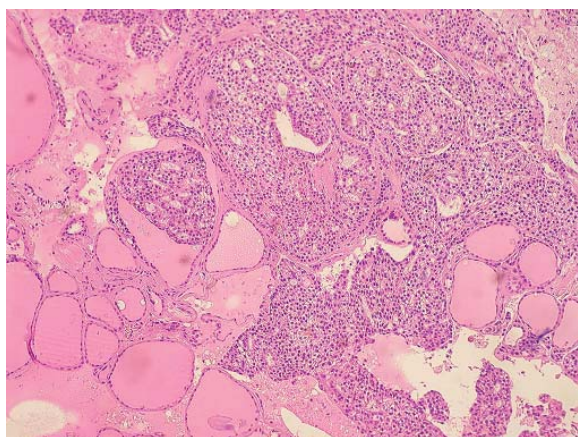


Fig. 1 – Breast cancer metastasis in the thyroid gland tissue (*Ex tempore* diagnostics; HE, ×10)

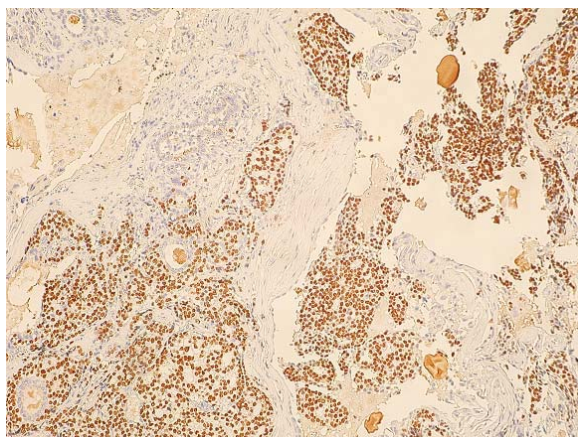


Fig. 2 – Oestrogene receptor, immunocytochemical staining (Allred score 8)

were negative for thyroid transcription factor-1 (TTF-1) (Figure 3), tireoglobuline, vimentine and monoclonal antibody HBME-1. The struma was also seen. During surgical procedure, enlarged lymph nodes were removed and breast cancer metastases were also found in 3/5 supraclavicular and 2/3 jugular lymph nodes. The treatment was continued with six cycles of weekly paclitaxel and hormonal therapy tamoxifen. After the partial response was achieved, radical mastectomy of the right breast was performed in April 2010. Histopathology confirmed invasive lobular carcinoma grade 2, ER score 8, PR score 7, HER2/neu negative (score 1+) (Figure 4). The patient continued to be on hormonal therapy until March 2011 when the new evaluation of the disease was performed. Computed tomography body scan (PET CT) showed multiple metastases in bones. Chest radiography revealed pleural effusion. Cutaneous lenticular metastases and axillary lymphadenopathy were seen on clinical examination. The only symptom that the patient reported was pain in the lower spine. ECOG/WHO performance status was 1.

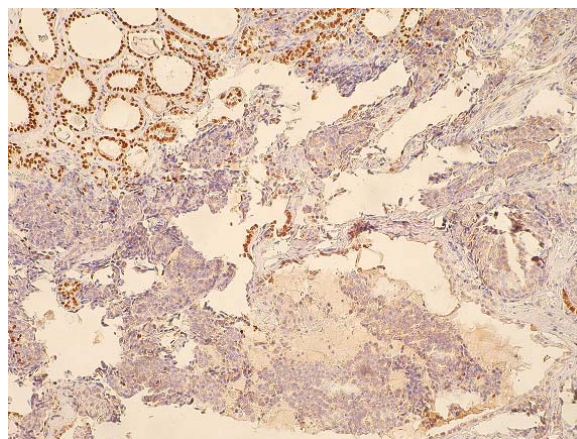


Fig. 3 – Tumor tissue negative, surrounding the thyroid gland tissue positive (immunocytochemical staining for thyroid transcription factor-1)

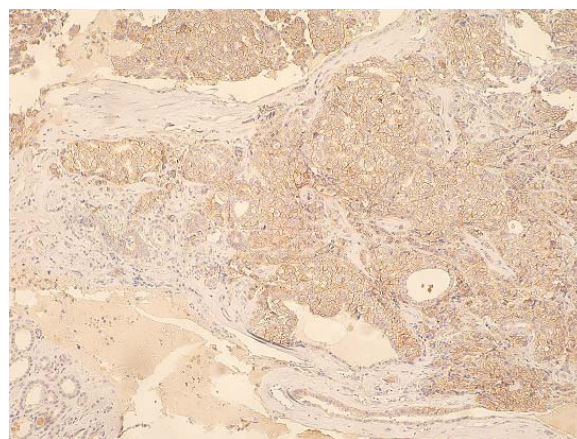


Fig. 4 – c-erbB2 receptor (HER2/neu) immunocytochemical staining (score 1+)

The patient was presented to a multidisciplinary team at the Institute for Oncology and Radiology of Serbia. It was decided to interrupt tamoxifen and continue the treatment with aromatase inhibitors. Palliative radiotherapy of the cervical spine and pelvis bones was also planned.

Discussion

The incidence of metastatic disease to the thyroid gland has been reported to be 0%–1% in unselected autopsy studies and around 24% in patients with confirmed metastatic disease^{3–8}. As a result of the lack of awareness among clinicians, clinical diagnosis is even less common than *postmortem* findings.

Although the thyroid gland could be the only site of malignant disease, usually most of patients with thyroid metastases have widespread metastatic disease. Therefore, detection of metastasis to the thyroid gland often indicates poor prognosis. In a small percentage of patients, early diagnosis and aggressive surgical or medical therapy probably may be effective and contribute to the prolonged survival^{10–12}. There is still no precise consensus, but a thyroid lobectomy and/or isthmectomy is recommended in case of

solitary metastasis and a total thyroidectomy if thyroid metastases are bilateral¹³.

A long interval between the diagnosis of primary cancer and subsequent thyroid gland metastasis can represent a diagnostic dilemma. Therefore, the standard for all newly incurred thyroid swelling in a patient with previous history of malignancy, regardless the duration of that period, should be considered as recurrence until proved otherwise¹⁴. In patients with metastases, low performance status and poor prognosis, fine needle aspiration biopsy (FNAB) can be used to detect an unsuspected malignancy and to avoid unnecessary thyroidectomy⁷.

Conclusion

This report emphasizes the importance of detailed examination of any new onset of thyroid swelling, especially in a patient with previous history of malignant disease.

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