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CASE REPORT

Metastatic breast cancer in regrowth of thyroid lobe after subtotal thyroidectomy – case report

Authors' Contribution:
A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
G – Funds Collection

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ABSTRACT: Breast cancer is the most common malignant neoplasm among women. Metastases to the thyroid are relatively rare. Those lesions annunciate neoplasm dissemination in most cases. Metastatic breast cancer of thyroid lobe regrowth hasn't been described yet. In the article the authors present a case of a 66-year old women with isolated, metachronous breast cancer metastasis in regrowth of the right thyroid lobe. Resection of the right lobe with metastatic tumor was performed with a purpose of total recovery. Despite surgery, multiple bone metastases were detected a few months after. In conclusion, regrowth of the thyroid is a potential site of recurrence and metastasis. Therefore, the thyroid bed cannot be omitted in routine examination during and after oncological treatment.

KEYWORDS: breast cancer, metastases, thyroid gland

ABBREVIATIONS

FNA – fine-needle aspiration biopsy
CMF – cyclophosphamide, methotrexate, fluorouracil

INTRODUCTION

Breast cancer is the most common malignant neoplasm among women in Poland and in the world with an incidence of 22.2% and 25.45%, respectively [1, 2]. For that reason, it coexists with numerous other conditions and affects patients operated previously for other reasons. Metastases of breast cancer are frequent but are rarely located in the thyroid gland. So far, no case has been described in literature of metastases in a stump after subtotal thyroidectomy.

CASE REPORT

A female patient aged 66 with a history subtotal thyroidectomy performed 27 years ago was admitted to the Clinic in November of 2014 due to a suspected recurrence of breast cancer in the thyroid bed along the right lobe of thyroid. Significant information in the medical history of the patient included: right breast cancer diagnosed 20 years ago and treated with neoadjuvant chemotherapy, right-sided mammectomy, and adjuvant radio- and hormonal therapy (up to 2008) as well as left breast cancer diagnosed in 2010 treated with Madden mastectomy and complementary radio and chemotherapy.

Thyroid neoplasm was diagnosed during routine ultrasound of the neck performed as part of observation after combined treatment of left breast cancer. Regrowth of the right thyroid lobe with a hypoechoic focus of 19x18x23 mm with peripheral vascularization and the presence of peripheral calcifications was described in the ultrasound. No pathological foci were found in the stump of the left lobe. 18 F-FDG PET-CT scan revealed a foci of increased glucose utilization in the right thyroid lobe without any other abnormalities. Cytopathological examination of the specimen taken from the neoplasm by fine-needle aspiration showed a recurrence of breast adenocarcinoma. The patient was qualified for urgent surgery. Surgical resection of the regrowing lobe of thyroid gland was performed.

Due to a lack of nodular lesions, lymphadenectomy was abandoned. Histopathological examination of the post-operative specimen confirmed a recurrence of breast cancer with immunophenotype CK7+, ER+, Tg-, Mammaglobin -/+ and a lack of HER2 receptor expression. In the postoperative course, the patient received chemotherapy according to the CMF regimen which was changed to paclitaxel and hormonal therapy with Fulvestrant due to a bad tolerance. In a year after 18 F-FDG PET-CT surgery, a dissemination of the neoplastic process with numerous bone metastases was found. Less than 3 years after surgery, the patient died due to disseminated cancer.

DISCUSSION

The incidence of breast cancer in Poland in 2015 was 22.2% in relation to all cancers and has doubled over the past decade with a simultaneous fall in mortality to 14.1% [1]. Worldwide, according to the data of World Cancer Research Found from 2018, breast cancer accounts for 25.4% of all malignancies with a death rate of 20.6% [2]. Recurrence of breast cancer after primary treatment is quite common and occurs in 5.9% to 38% of patients [3, 4]. Distant recurrences account for 62% to 65% of all relapses [3]. The most common secondary localization of the neoplastic process are bones (21.9%) and lungs (19%), followed by the lymph nodes, liver and brain. The thyroid gland, despite a very high blood flow and close proximity, is a rare destination for metastasis of breast cancer [5]. Metastatic tumors of the thyroid constitute from 0.3% to 2.2% of all malignant tumors of the thyroid gland [6, 7]. Most of them are metastases of clear cell carcinoma of kidney (22%) and lung cancer (22%). Metastases of carcinoma of the large intestine, esophagus, larynx, neuroendocrine carcinomas and sarcomas are found less frequently [8, 9]. Metastasis of breast cancer accounts for between 3%

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and 11% of thyroid malignancies [8, 9]. Thyroid metastases are most often metachronous with a very broad spectrum of occurrence ranging from 6 to 121 months [10]. In most patients, which has not been confirmed in the present case, other metastatic sites are also diagnosed [8]. Symptoms such as dysphagia, hoarseness, a rapidly growing tumor on the neck are observed in 21.9%–85% [9, 11]. Asymptomatic metastases, as described by the authors, are detected accidentally in routine examinations during and after oncological treatment [9]. The basic diagnostic methods include neck ultrasound and PET-CT using 18F-FDG [11, 12]. The latter, also performed in our patient, is characterized by very high sensitivity in diagnosing metastatic changes [13]. In most cases, as in our case, the metastases detected are single, rarely multiple or disseminated [8, 10]. Fine-needle aspiration biopsy (FNA) is an indispensable test in assessing the nature of a nodular lesion of thyroid, especially in patients with a history of a malignant neoplasm. The sensitivity and specificity of FNA in the diagnosis of thyroid metastases is estimated at 94% and 100%, respectively [8]. Surgical treatment of patients with thyroid metastases involves total or subtotal thyroidectomy or lobectomy and has a proven effect on extending survival [8, 14]. The choice of surgical method depends on the number and distribution of metastases in the gland, although recurrent metastases in thyroid tissue preserved after incomplete resection are described in patients with a generalized cancer [15]. In patients without other metastases or with metastases eligible for surgery, the procedure is performed with the intention of complete recovery. In other cases, the indication for thyroidectomy is a rapidly growing tumor mass, which may cause swallowing and breathing disorders due to pressure imposed on the esophagus and trachea [15]. In extreme cases, the surgical procedure is limited to performing a rescue tracheostomy [9]. In our patient with isolated metastasis, it was decided to remove the regrowth of the right lobe with the tumor. Cervical lymphadenectomy was abandoned due to the lack of suspected lymph nodes in imaging examinations. Within a few months of surgery, the patient had numerous bone metastases. The prognosis in patients with isolated thyroid metastases is mostly unfavorable. Dissemination of tumor is found in more than half of patients within 3–45 months [14]. While isolated metastatic lesions in the thyroid gland, except for cases of rapidly growing tumors causing compression of the cervical organs, do not seem to have much clinical significance on their own, they are extremely important in oncological practice, as they mostly constitute the first manifestation of tumor recurrence.

CONCLUSIONS

Routine tests during and after oncological treatment play a key role in the early detection of breast cancer recurrence. In these studies, in addition to examining the lymph nodes, it is also necessary to assess thyroid residue or thyroid bed after resection due to the possibility of gland regrowth, which then becomes a potential site for metastasis. Ultrasound and fine-needle aspiration biopsy play a key role in making the diagnosis. Surgical treatment should depend on the stage of cancer and the chances of full recovery. The presence of isolated thyroid metastases is associated with poor prognosis in patients with breast cancer and in most cases, it is the first announcement of the dissemination of cancer.

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