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Primary male neuroendocrine breast carcinoma — case report

Pierwotny neuroendokrynny rak piersi u mężczyzny — opis przypadku

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Abstract

Primary male neuroendocrine breast carcinoma (NEBC) is extremely rare neoplasm. This type of breast carcinoma has been reported sporadically in men. The authors of this article found described only two cases neuroendocrine breast carcinoma (NEBC) in men. Most neuroendocrine tumors are mainly located in the gastrointestinal tract and are heterogeneous group of rare tumors with positive reaction to neuroendocrine makers in at least 50% of cells. Neuroendocrine breast cancer was first time recognized by the WHO in 2003. Epidemiology, histogenesis and biology of this cancer are still unknown. There is no standard treatment protocol in neuroendocrine breast carcinoma.

The authors of this article presented a case of a 65-year-old Caucasian man who was treated in the hospital because of primary neuroendocrine breast cancer. The authors performed a literature review on primary neuroendocrine breast cancer diagnosis and treatment.

Key words: neuroendocrine, male, breast cancer, NEBC, neoplasm, treatment

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Streszczenie

Pierwotny neuroendokrynny rak piersi (NEBC) u mężczyzn jest niezwykle rzadkim nowotworem. Ten typ raka sutka występuje bardzo rzadko u mężczyzn. Autorzy tego artykułu znaleźli opisane tylko dwa przypadki NEBC u mężczyzn. Większość guzów neuroendokrynnych zlokalizowane jest głównie w przewodzie pokarmowym i są one niejednorodną grupą rzadkich nowotworów z pozytywną reakcją na markery neuroendokrynne w co najmniej 50% komórek. Neuroendokrynny rak piersi został pierwszy raz uznany przez WHO w 2003 roku. Epidemiologia, histogeneza i biologia tego nowotworu jest nadal nieznana. Nie ma standardowego protokołu leczenia neuroendokrynnego raka piersi.

Autorzy tego artykułu przedstawili przypadek 65-letniego mężczyzny rasy białej, który został przyjęty do szpitala z powodu NEBC. Autorzy dokonali przeglądu piśmiennictwa na temat diagnostyki i leczenia NEBC.

Słowa kluczowe: neuroendokrynny, mężczyzna, rak piersi, NEBC, nowotwór, leczenie

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Introduction

Primary male neuroendocrine breast carcinoma (NEBC) is extremely rare neoplasm [1, 2]. This type of breast carcinoma has been reported sporadically in men [1]. Most neuroendocrine tumors are located in the gastrointestinal tract and are heterogeneous group of rare tumors with positive reaction to neuroendocrine makers in at least 50% of cells [3, 4]. Neuroendocrine breast cancer was first time recognized by the WHO in 2003 [3, 4]. Epidemiology, histogenesis and biology of this cancer are still unknown. There is no standard treatment protocol in neuroendocrine breast carcinoma due to rarity of this disease [1, 3].

Case report

A 65-year-old Caucasian man was referred to the Department of Surgical Oncology Hospital Ministry of Internal Affairs with Warmia and Mazury Oncology Center in Olsztyn due to breast tumor discovered in palpable examination. The size of this tumor in ultrasound was 31 x 28 mm and it was located in the nipple of the left breast. The tumor was confirmed by imaging ultrasonography and mammogram studies. The mammography found the tumor diameter of about 30 mm, BIRADS V (Fig. 1). The patient had no other symptoms; there was no history of weight loss and loss of appetite. The patient was treated chronically for benign prostatic hyperplasia (BPH). He had no surgeries and there was no history of carcinoma in patient family. Blood test and other routine hematological examinations and biochemical tests were within normal limits.

Palpation for the nipple revealed palpable tumor, approximately 3 cm in diameter, painless, movable relative to the surrounding tissues. The patient suffered from gynecomastia of both breasts. Lymph nodes located in the left axilla were enlarged — a diameter of 15 mm.

In the Department of Surgical Oncology the patient had open surgical biopsy of the left breast tumor (Fig. 2).

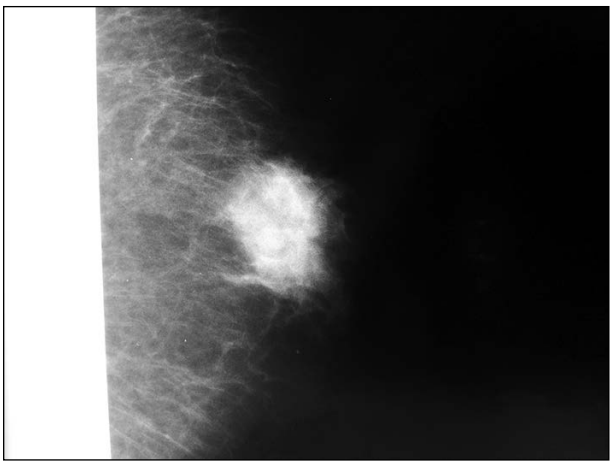

Figure 1. Primary male neuroendocrine breast carcinoma (NEBC) on mammography picture

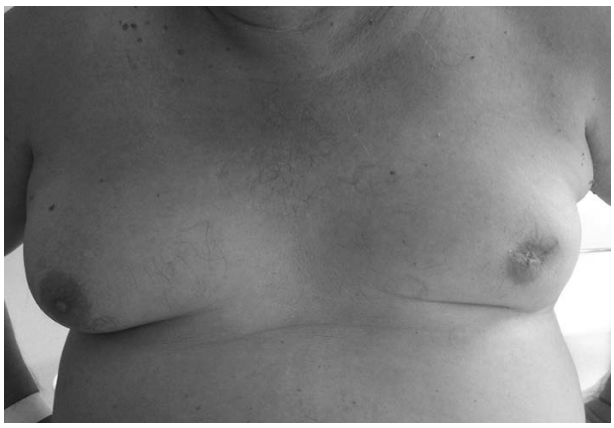

Figure 2. Gynecomastia of both breasts. The scar after open surgery biopsy of the neuroendocrine tumor located in the left breast

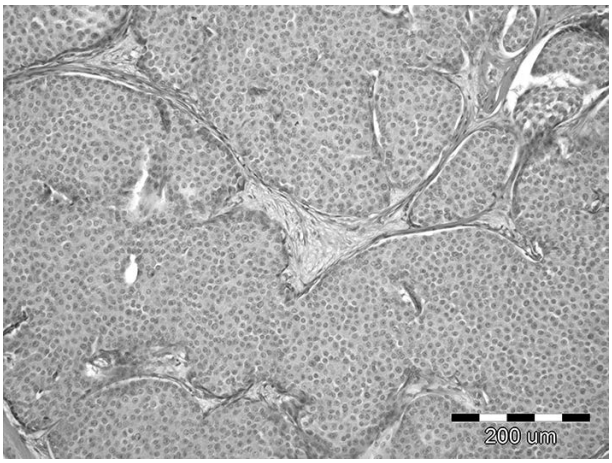

Figure 3. Neuroendocrine tumor cells in the male breast. Hematoxylin-Eosin staining, 100×

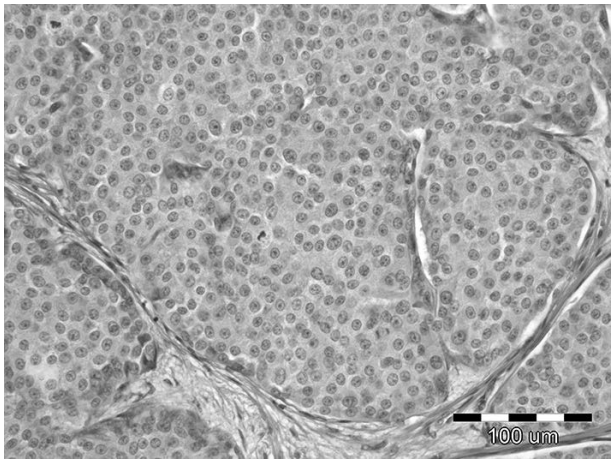

Figure 4. Neuroendocrine tumor cells in the male breast. Hematoxylin-Eosin staining, 200×

Next day after the surgical biopsy, the patient left the department in good condition.

Pathological diagnosis showed neuroendocrine tumor well-differentiated (Fig. 3 and 4). Tumor cells were

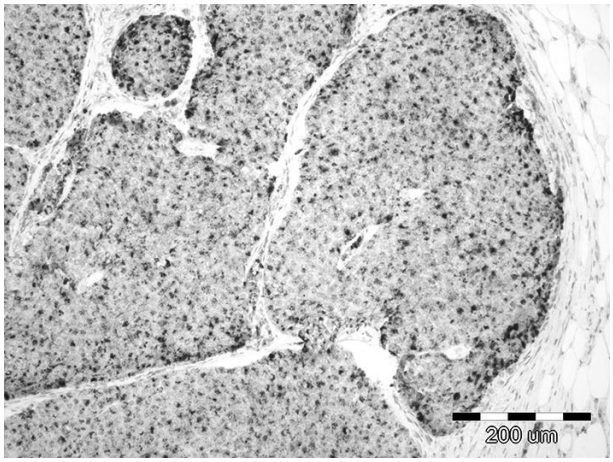

Figure 5. Tumor cells are positive to chromogranin (100×)

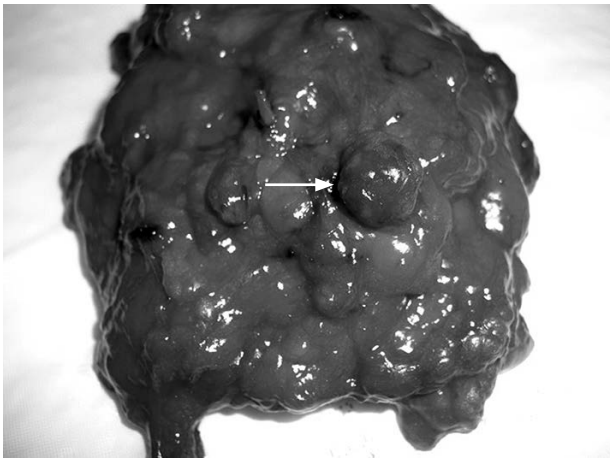

Figure 7. Removed enlarged axillar lymph nodes

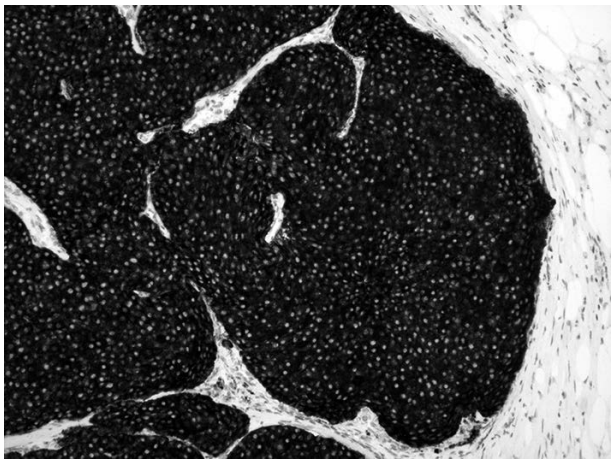

Figure 6. Tumor cells are positive to synaptophysin (100×)

chromogranin (+++), synaptophysin (++), ER and PR positive in 95%, Ki67 (+) in 20%, E-cadherin (++) and Her2 (0) (Fig. 5 and 6).

The patient was re-admitted to The Department of Surgical Oncology to be subjected to amputation of the left breast with axillary lymphadenectomy left-sided. The patient underwent surgery and left the Department of Surgical Oncology three days after surgery.

Histopathology examination showed metastases in 11 among 17 removed lymph nodes in the left armpit (Fig. 7). The patient was referred for further systemic treatment — chemotherapy.

Discussion

Primary neuroendocrine breast carcinoma (NEBC) is extremely rare type of breast tumor in male population and has been reported sporadically even in female [1, 2]. It is estimated that NEBC occurs up to 0.5% of all breast cancer specimens [2, 5]. According to Ogawa *et al.*, it accounts for less than 0.1% of all breast cancers and less than 1% of all neuroendocrine tumors [6]. This neoplasm in the majority of cases has been described in women. This cancer occurs more often in white women than in black women [7]. The authors of this article found described only two cases of neuroendocrine breast carcinoma (NEBC) in men [1, 8]. This neoplasm was first time described by Feyrter and Harmann in 1963 [9]. This type of breast cancer was first time recognized by the WHO in 2003 and defined as the expression of neuroendocrine markers in more than 50% of tumor cells [3, 4]. WHO divided neuroendocrine carcinomas into three subtypes:

— neuroendocrine tumor, well-differentiated;
— neuroendocrine carcinoma, poorly differentiated/ /small cell carcinoma and
— invasive breast carcinoma with neuroendocrine differentiation [3, 4].

Pathologists rely on using two most sensitive and specific neuroendocrine markers: chromogranin A or B and synaptophysin [10]. More than 80% of neuroendocrine breast carcinomas have positive progesterone receptor (PR) or estrogen receptor (ER) [11]. Her-2 expression is nonexistent or rarely present in neuroendocrine tumors [7, 12]. The same situation was in the case described by the authors of the following article. Tumor cells were positive to chromogranin and synaptophysin, but also positive for progesterone and estrogen receptors.

Prognosis seems to correlate with the stage of disease [10]. The majority of tumors are up to 20 mm and it means that patients are in early stage breast cancer. There are no specific recommendation regarding surgical, chemotherapeutical or radiotherapeutical management. Patients should be treated similarly to invasive ductal carcinoma, depending on clinical stage and location of the tumor [13]. It is estimated that about 50% of the regional lymph nodes are involved at the time of diagnosis, similarly as in our case.

Adjuvant radiation and chemotherapy plays important role in systemic treatment of neuroendocrine breast carcinomas [14]. It is important to choose the ideal type of cytotoxic therapy. In the literature there are some examples reported: paclitaxel alone; adriamycin and cytoxan or cisplatin; etoposimide and carboplatin or cis-

platin. Also estrogen and progesterone receptors positive patients should have hormonal therapy [15]. In our case, ER and PR receptors were positive and HER-2 negative so hormonal therapy was accordingly prescribed.

The primary neuroendocrine breast carcinomas may give distant metastasis [6, 7]. The most often distant metastases are observed in bones and liver [7]. Other distant metastases were observed in imaging studies in lungs, mediastinal lymph nodes, adrenal glands and fallopian tubes [7].

The treatment of neuroendorcine breast carcinomas should be conducted in oncological centers and patients need multimodal therapy. Surgery is still very important part of treating this neoplasm.

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