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Case report

Neuroendocrine Small Cell Carcinoma of the Breast – A Case Report

Zvonko Zadro[1], Jurica Fudurić[1], Ivan Frketić[1], Sanja Štifter[4], Tatjana Bujas[2], Ana Šoštarić Zadro[3], Zoran Veir[5] and Ines Doko[6]

[1] Karlovac General Hospital, Department of Surgery, Karlovac, Croatia
[2] Karlovac General Hospital, Department of Pathology, Karlovac, Croatia
[3] Karlovac General Hospital, Department of Radiology, Karlovac, Croatia
[4] University of Rijeka, School of Medicine, Department of Pathology, Rijeka, Croatia
[5] University of Zagreb, Zagreb University Hospital Center, Department of Surgery, Zagreb, Croatia
[6] University of Zagreb, »Sestre milosrdnice« University Hospital Center, Department od Physical medicine, Zagreb, Croatia

A B S T R A C T

Neuroendocrine tumors are very rare tumors that occur most commonly in the gastrointestinal tract. The occurrence of neuroendocrine tumors outside gastrointestinal tract is very rare but not unknown. Thus, neuroendocrine tumors and their primary seat can be found in the bronchi and lungs, as well as in the testicles, ovaries, prostate, etc. The occurrence of neuroendocrine tumors as a primary seat in the breast is extremely rare phenomenon that is described in literature. We present the case of 55-year old female in where routine mammographic examination found suspicious lesions that we recommended for further processing. The patient made a breast ultrasound examination in which tumor formation was found in size 27x19 mm and cytological puncture found breast adenocarcinoma. Further pathohystologic and immunohistochemical analysis set the diagnosis of neuroendocrine carcinoma, small cell type, second grade. Tumor formation by ultrasound initially sized 27x19 mm and pathohistologic diagnosis showed tumor size 26x20x20 mm. The axillary lymph node biopsy did not found distant metastases in lymph nodes as well as gatherings in other organs. Neuroendocrine small cell carcinomas are exceedingly rare phenomena in the literature. By the year 2009 in the USA there were described only 50 cases of this extremely rare tumor of the breast.

***Key words**: neuroendocrine, carcinoma, breast*

Introduction

Neuroendocrine tumors are very rare tumors, especially neuroendocrine tumors of the breast, which were first mentioned in literature in 1977 as such, and as an entity first classified in 2003[1]. The significance of neuroendocrine tumors is very large as they are tumors that have characteristics of nerve cells and characteristics of cells that can produce hormones. The most common hormones being: ACTH, leucoencephalin, gastrin, pancreatic polypeptide, bombesin, serotonin, HCG, prolactin, vasointestinal polypeptide (VIP) and luteinizing hormone releasing factor. Precisely because of its neuroendocrine part of their secretion of peptides and amines, clinical picture can be masked or presented in a variety of signs and symptoms that ultimately may mislead clinicians. Neuroendocrine tumors may occur in all parts of our body. The most common seat of them is digestive system, but they can appear in other organs such as lung, larynx, prostate, ovary etc. The occurrence of neuroendocrine tumors, in our case small cell neuroendocrine tumor is very rare as previously stated in American literature up to 2009 there were only 50 cases described. Neuroendocrine tumors accounted for only 0.1 to 0.4% of all tumors and are extremely rare neuroendocrine tumors of the breast[1]. According to its clinical picture they do not differ from other tumors that occur in the breast. The clinical picture corresponds to the other breast tumors as well as the age at which they most commonly appear, mortality did not differ significantly from other tumors. Diagnosis is primarily immunohistochemical and placed on the existence of three markers. Neuron specific

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enolase (NSE), chromogranin A and synaptophysin or with prior radiological, cytological and ultrasound confirmation of the existence of a suspicious formation. The therapy of the tumors did not differ from treatment of other malignant neoplasmas of the breast and it includes surgical removal of the breast and axillary evacuation with the possibility of radiotherapy or chemotherapy. We present the case of 55 year old female in which we demonstrated radiological, ultrasound and cytological punction and immunohistochemical analysis showed small cell carcinoma of the brest. Then we did ablation of the breast and axillary evacuation in which there were no metastases confirmed[3,4].

Case Report

We present a female patient who came to regular mammography breast examination where we found in the upper left quadrant of right breast sharply circumscribed hyperdense lesion size 25x27 mm with homogeneous structure (Figure 1). The patient was immediately told to make urgent ultrasound examination of the breast. On ultrasound examination, previously described formation is now little bigger in size approximately 27x19 mm hypoehogenic, irregular contour and inhomogeneous structures with dorsal beam attenuation in the peripheral parts. In the right axilla we did not found pathologically enlarged lymph nodes. Then patient is told to make cytology puncture of early mentioned lesion. Results came and showed formation with individual atypical cells plazmocitoid seems abundantly, lymphocytes and some elements of the peripheral blood. When the results came diagnosis was adenocarcinoma of the breast. The patient was recommended that hospitalization is needed for intraoperative biopsy of specified formation to which she agreed. Biopsy showed small cells with hyperchromatic nuclei with scant eosinophilic cytoplasm and scattered lymf plazmocytoid appearance, rare mitosis with areas of

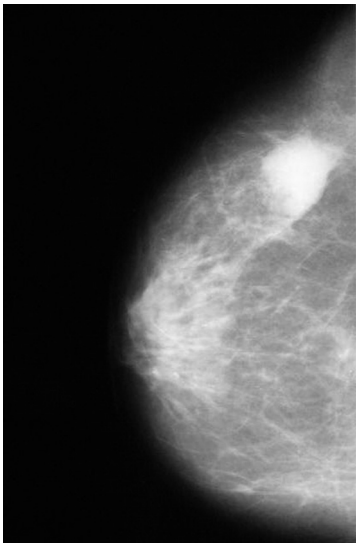

Fig. 1. Mammogram of the right breast showing tumor.

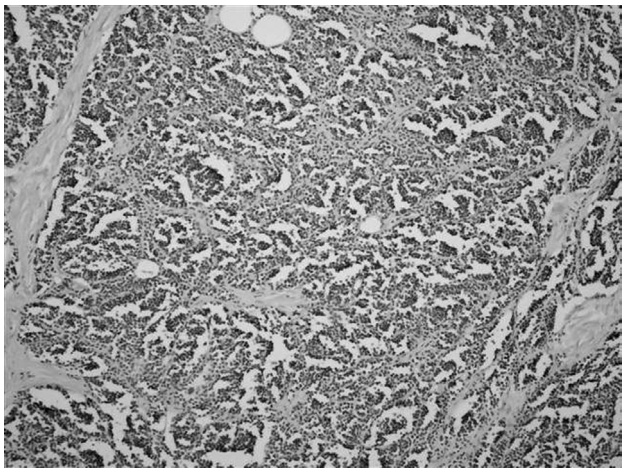

Fig. 2. HE stain demonstrating small, blue cells with necrosis.

necrosis (Figure 2). Immunohistochemistry of tumor cells for LCA and CK 20 was negative, focal positive for CK7 and positive for chromogranin and synaptophysin and NSE. In 100% of tumor cells found in medium strong to strong nuclear positivity of estrogen and 100% of the cells shown strong nuclear positivity progesterone and HER 2 was 0 Ki 67 was 15%. Also, tumor cells showed positive staining for CK 19 negativity in the TTF-1 and E-cadherin[5,6]. From theses founding's diagnosis of small cell carcinoma of the breast was made. Vascular or perineural invasion was not found. In consultation with the KB Merkur, they recommended to make the removal of the right axillary lymph nodes and further processing. Right axillary lymph nodes have shown no metastases. After removal of the lymph nodes patient didn't had any symptoms. Whole body scintigraphy does not show signs of pathological accumulation of radioisotopes, however, it was recommended that further chemotherapy is conducted for 6 cycles by FEC protocol. On the final inspection as an additional measure oncologists recommended radiation therapy.

Discussion and Conclusion

Neuroendocrine carcinomas are very common phenomena in the gastrointestinal tract and lungs and other organ systems. Since these tumors secrete biological amines and peptides, they can cause different clinical pictures. Occurrence of primary breast neuroendocrine cancer is extremely rare in the world and particular for Croatia. Breast cancer as adenocarcinoma and neuroendocrine carcinoma with its clinical manifestations do not differ from each other by the clinical picture or other clinical signs. The highest incidence is the same as for one and the other. Small cell carcinoma occurs most commonly in the lungs and the appearance of primary small cell carcinoma of the breast is rarely described phenomenon all around the world. To make diagnosis, first you must be sure that there is no other site of tumor or that the tumor isn't distant meatastases of another primary

tumor. To make definitive diagnosis of primary small cell carcinoma you must exclude any other cancer site with clinical, radiological, ultrasonic and other available means of detection. Immunohistochemistry raises the definitive diagnosis, which in our case was necessity[2]. However there are types of small cell carcinoma that aren't sensitive to immunohistochemistry and they do not show positivity for 3 characteristic markers NSE, chromogranin and synaptophysin. Small cell carcinomas are very aggressive tumors in which the result is never predictable with certainty.

The standard therapy for this rare tumor remains controversial. Treatment is limited to surgery such as mastectomy or lumpectomy, with axillary node dissection. A prognosis is difficult to make owing to the lack of long-term survival data among patients[7–10].

Our 55 year old female underwent diagnostic and therapeutic procedures that are normally used in breast cancer, the result found that tumor immunohistochemistry matches to primary breast neuroendocrine small cell carcinoma. In our case, we made ablation of the breast and tumor tissue, and we evacuated from axilla nodes that after analyses come showed no metastases. Patient was recommended to do additional post-operative treatment, chemotherapy and radiation. On the last control patient went through sixth cycle of chemotherapy and she was feeling well. Oncologist suggested an additional radiation therapy that should be performed as soon as possible.

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Z. Zadro

Karlovac General Hospital, Department of Surgery, Dr. Andrije Štampara 3, 47000 Karlovac, Croatia
e-mail: zvonko.zadro@zg.htnet.hr

NEUROENDOKRINI KARCINOM MALIH STANICA DOJKE – PRIKAZ SLUČAJA

SAŽETAK

Neuroendokrini tumori su vrlo rijetki tumori koji se najčešće javljaju u gastrointestinalnom sustavu. Pojavnost neuroendokrinih tumora izvan gastrointestinalnog trakta je rijetkost ali ne i nepoznanica. Tako, neuroendokrini tumori i njihovo primarno sijelo se može naći u bronhima i plućima kao i u testisima, ovarijima prostati itd. Pojava primarnih neuroendokrinih tumora dojke je izuzetno rijedak fenomen opisan u literaturi. Mi prikazujemo slučaj 55-godišnje žene, kod koje je rutinskom mamografijom nađena suspektna lezija, te se indicira daljnja obrada. Učini se ultrazvuk dojki kojim se nađe tumorozna formacija veličine 27x19 mm a citološkom punkcijom dijagnosticira se adenokarcinom. Daljnjom patohistološkom i imunohistokemijskom analizom postavljena je dijagnoza neuroendokrinog karcinoma, malih stanica, drugog stupnja. Tumorozna formacija na ultrazvuku inicijalno pokaže veličinu 27x19 mm a patohistološka dijagnoza pokaže tumor veličine 26x20x20 mm. Aksilarni limfni čvorovi biopsijom ne pokažu udaljenih metastaza kao što se daljnjom obradom ne nađe metastaza u udaljene organe. Neuroendokrini karcinomi sitnih stanica su neizmjerno rijetka pojava u literaturi. Do 2009. godine u SAD-u je opisano svega 50-ak slučajeva ovog izuzetno rijetkog tumora dojke.