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Professional paper

Fine Needle Aspiration Cytology in Diagnosing Rare Breast Carcinoma – Two Case Reports

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A B S T R A C T

In this paper, we are presenting the two cases of very rare tumors: breast sebaceous carcinoma, which has been described for the first time in Croatian medical literature, and pure breast squamous carcinoma. First case, sebaceous carcinoma, is still quite unknown regarding its morphological characteristics and biological behavior. In the second case, squamous carcinoma, also very rare, was found in a patient who previously had a number of diagnosed head and neck skin carcinomas, and was diagnosed as primary squamous breast carcinoma. As a first case we present a 85-year-old female with a two months history of swelling of the left breast under the mammilla. The second one, a 69-year-old female presented to our hospital in January 2008 with a two months history of a lump in the lower outer region of the left breast and enlarged lymph nodes in left axillary region. Fine needle aspiration cytology (FNAC) of the breast was performed in order to diagnose the exact type of both tumours. This methodology was found important in diagnosis, but in both cases showed certain limitations in diagnosing such rare tumors. The final diagnoses were determined after carefully synthesizing the histological findings and clinical data. Careful and accurate classification of these tumors is necessary. A detailed analysis of their biological behavior and response to the therapy is necessary in order to formulate definite recommendations in managing these patients/diseases.

Key words: *FNAC, rare breast cancer, sebaceous carcinoma, squamous cell carcinoma*

Introduction

Fine needle aspiration cytology (FNAC) of the breast is a standard diagnostic technique in breast malignancies diagnostics and their further sub typing. In a number of cases, FNAC of breast makes subtyping breast malignancies possible with a high degree of accuracy. Determination of special types of breast carcinoma by fine-needle aspiration cytology may have prognostic implications but cytologists are still facing some difficulties in determining the tumour subtypes. At University Hospital for Tumors, 3075 breast carcinomas were operated in the last 5 years. Most of them, around 75%, were ductal invasive carcinomas (NOS), others were rarer types of carcinoma. In this paper, we present two cases of very rare tumors: sebaceous carcinoma and squamous carcinoma, both being described for the first time in Croatia. First case, sebaceous carcinoma, is still quite unknown regarding the morphological characteristics and biological behavior. Second case, squamous carcinoma, also very rare, after a number of previously diagnosed head and neck skin carcinomas, was diagnosed as primary breast carcinoma.

Case Reports

Case 1

A 85-year-old female had a 2 months history of swelling of the left breast under the mammilla, and in February 2008, visited our Hospital. Segmentectomy was per-

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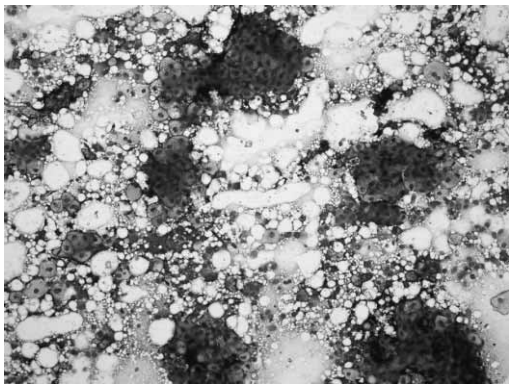

Fig. 1. Clusters and rare single, fairly uniform cells with abundant finely vacuolated cytoplasm. May-Grünwald-Giemsa, x100.

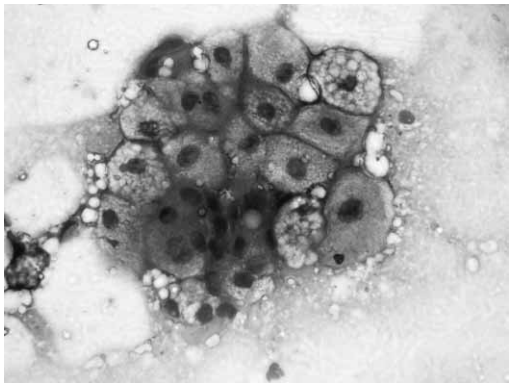

Fig. 2. Sebaceous carcinoma. May-Grünwald-Giemsa, x400.

formed after US guided FNAC. The aspirates showed a lot of clusters and single, mostly uniform cells with visible clear cytoplasmatic vacualization and coarse cromatin structure (Figures 1 and 2). Cytology diagnosis wasn't specific, because it could include several diagnoses: sebaceous carcinoma, lipid cell carcinoma and apocrine carcinoma. A gross examination revealed a tumor measuring 2.5 cm with its portion reaching the excision margin, without any skin tissue. Histologically, the tumor was made of loose connective tissue stroma with solid clusters of large cells of markedly light-colored cytoplasm and areas of squamous morulas (Figure 3). Histology could not distinguish whether this was a primary sebaceal carcinoma of the breast or of the skin. Immunohistochemistry showed negative reaction for ER, PR and HER2/neu.

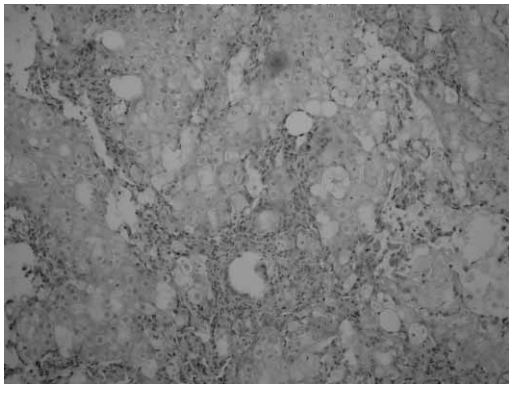

Fig. 3. The lobules are made up predominantly of large clear or multivacuolated cells. admixed with minor non-vacuolated epithelial cells. Hematoxylin and eosin, x100.

After 10 months the patient came with a new swelling under the postoperative scar. The cytology presentation of the smears was the same as previous one and mastectomy was performed. This time, tumor was 5 cm in diameter and histology was the same as the previous one. The lesion had no connection to the overlying skin or the nipple. Immunohistochemically, the tumor cells were positive for AE1/AE3 (Dako, Glostrup) (Figure 4) and a negative for GCDFP-15 (Figure 5), ER, PR and HER-2/neu.

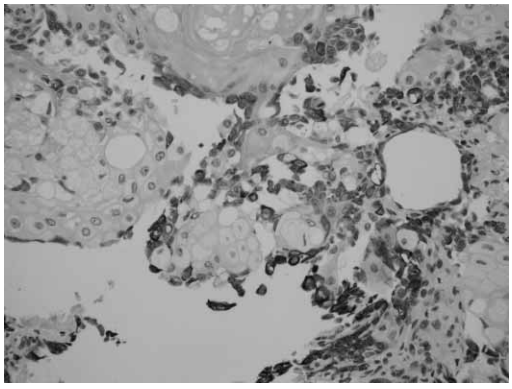

Fig. 4. IHC staining is positive for pan CK, x200.

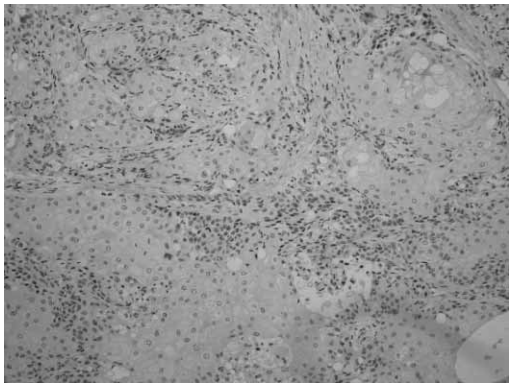

Fig 5. IHC staining is negative for GCDFP-15, x100.

MIB-1 labeling index was approximately 25%. The histopathological diagnosis qualified this carcinoma as sebaceous carcinoma of the breast.

Case 2

A 69-year-old female presented to our hospital in January 2008 with a two months history of a lump in the lower outer region of the left breast and enlarged lymph nodes in left axillary region. Ultrasonography revealed a cystic tumor and FNAC aspiration under USG control

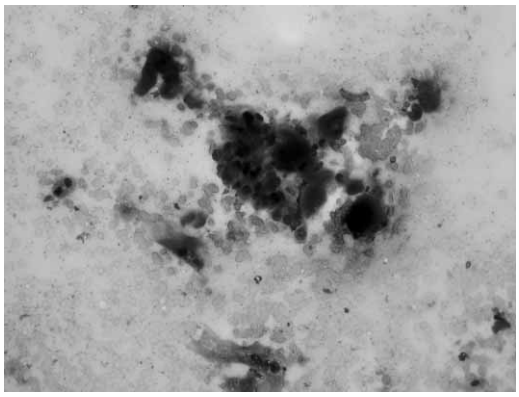

Fig. 6. Well differentiatet malignant epithelial cells. May-Grünwald-Giemsa, x100.

was performed. The skin and the nipple-areola complex were not involved.

Aspiration smears were characterized by squamous cells, both isolated and in aggregates, at various stages of maturation. The tumour cells showed hyperchromatic nuclei and eosinophilic cytoplasm (Figure 6). The smear background showed inflammation and necrosis. Cytological diagnosis was suggestive of squamous cell carcinoma. Segmentectomy with axillar dissection was performed. Histopathology showed ill-defined grey tumor 1x1.5 cm in size, made up of conglomerates and threads of atypical epithelial squamous cells that have had corneal focus (Figure 7). Eight axillary lymph nodes were extirpated and examined, and one of them was positive for tumor cells with ectracapsular spreading to the fat tissue. Tissue of the tumor had penetrated through the lymph node capsule, invading the surrounding fat tissue. Estrogene and progesterone receptors, and HER2/neu receptors were negative, while CK5 was positive. Medical history recorded that the patient underwent two excisions of the skin malignant melanomas of the face in past ten years. In the same period, the patient has had excisions of four basaliomas: at the both sides of the nose, left parotid region, and forehead. All previous findings have been revised and the results were in accordance with the original findings. To exclude metastatic disease, CT scan of the abdomen and thorax was performed. Since metastatic disease was not found, the patient was diagnosed as primary squamous cell breast carcinoma.

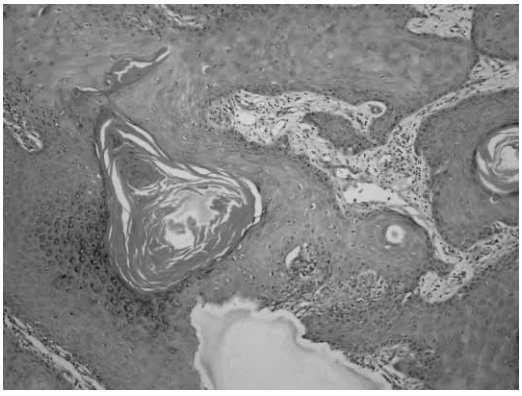

Fig. 7. Well differentiated Squamous cell cancer. Hematoxylin and eosin, x100.

Discussion

Fine needle aspiration cytology of the breast has a high range of accuracy (72–99%)[20–22] in the diagnosis of malignancy and its sub typing. Despite this, some rare lesions create problems at cytodiagnosis. Accuracy of cytodiagnosis of malignant breast tumors is very important, to know the exact line of treatment preoperatively. Histologically, 25–30% of epithelial malignancies are in the group of specialized breast carcinoma like lobular, papillary, apocrine, tubular, cribriform, medullary, mixed and others[1]. The sub typing of breast tumors using aspiration cytology is useful, in order to decide the best type of treatment. If tumors are of low malignant potential, options for conservative breast carcinoma treatment are being available for the patient[2]. However; it is not always possible to label the exact subtype on aspiration cytology without correlating the clinical and histopathological findings.

In the first case we described a very rare sebaceous carcinoma, first case to be described in Croatian medical literature. Sebaceous carcinoma is a rare breast carcinoma characterized by unequivocal morphologic differentiation towards sebaceous epithelium or sebocytes. Other sites have been more widely studied and described, most commonly, the periocular and only occasionally the extraocular regions[6]. Despite the possible derivation from a common origin of the mammary glands and skin appendages, it is notable that primary sebaceous carcinoma of the breast is extremely rare[7].

The sebaceous feature in mammary carcinomas was initially recognized by Bogaert and Maldague (1977), and although mammary sebaceous carcinoma was first described as a variant of lipid-secreting carcinoma of the breast[3], the recent WHO classification of breast tumors has recognized this type of tumor as a distinct subtype of invasive breast carcinomas[10]. The number of previously documented cases with such a peculiar mammary carcinoma with sebaceous differentiation is still very low, and their detailed clinicopathologic information is available in only five examples[4–6,8,11] The sebaceous differentiation was identified in mammary adenoid cystic carcinoma by Tavassoli and Norris (1986)[1] and in mammary carcinoma with ductal, squamous and myoepithelial elements by Prescott et al. (1992)[4] In 1999 Tavassoli first described the mammary carcinoma with well-differentiated sebaceous morphology under the rubric of sebaceous carcinoma in her monograph[6]. Although skin carcinomas may also occur in the breast or involve the mammary gland, such lesions should not be included in the category of mammary sebaceous carcinoma[12].

Microscopically, the carcinoma is essentially characterized by a lobular or nested growth pattern of tumor cells variably admixed with those displaying sebaceous

differentiation[6,10]. Our case, similar to the case described by Hisaoka et al.[11] showed distinct, well-delineated solid and lobular structures without other histological elements such as squamous and myoepithelial cells or in situ components.

Immunohistochemical expression of cytokeratin was positive like in all described cases but there were negative reaction for GCDFP-15, ER, PR and HER2/neu which was different in other five described cases.

The extend of the sebaceous morphology differed among the reported cases[4–8,11], and the criteria of mammary sebaceous carcinoma seem ambiguous at this point[6,10]. The origin of sebaceous cells in breast carcinoma and their biological behavior is still unclear.

In the second case we described squamous carcinoma of the breast which is a rare disorder, accounting for an estimated 0.04 to 0.075% of all breast malignancies[10,15,18,22].

The first case was reported in 1908 and till now about one hundred cases of SCC have been reported[13]. The criteria to define »pure» squamous cell Ca of the breast are: 1) that no other neoplastic elements such as ductal or mesenchymal ones are present in the tumor; 2) that the tumor is independent of adjacent cutaneous structure; 3) that no other distant epidermoid tumor exists in the patient[14]. Metastatic SCC from lung, the oral cavity, cervix and esophagus and the skin was excluded in our patient, and the diagnosis of SCC of the breast was initially suggested by fine aspiration cytology.

The origin of this tumor is controversial; it has been stated as arising from dermatoid cyst of the breast, chronic abscesses, and complete metaplasia of glandular breast tissue[14].

SCC of the breast is a tumor of elderly age group[15]. Tumors frequently reach large volumes and can be as large as 5 cm[16]. Our patient was 69 years old and she has had a mass smaller than the others, measured 1.5 cm. These tumors are usually estrogen and progesterone negative and the same thing was with our patient, so hormonal adjuvant therapy could not be performed. However, if they are receptor positive, tamoxifen should be the adjuvant therapy of choice. Receptor negative patients may require adjuvant chemotherapy, especially if they are premenopausal. The role of adjuvant radiotherapy has not been extensively studied but may have an important role in breast treatment management[19]. Smaller primary SCC of the breast could be treated with lumpectomy with dissection followed by radiotherapy[17]. In our case, a small tumor was detected, our patient underwent segmentectomy and axillary dissection, followed by radiotherapy. In a report of Menes et al.[13] SCC was found to be associated with lower rate of lymph node metastasis at presentation (22% *vs*. 40–60% for infiltrating ductal carcinoma) and a significant rate of distant metastasis without lymph node involvement. This is in contradiction to squamous cell carcinomas appearing at other parts of body which metastasise frequently to regional lymph nodes. Our patient had one positive lymph node. She is now in 14 months in routine follow up and did not have local recidive or metstatic disease until now. Despite the rarity of this neoplasia, it should be kept in mind that within a cystic mass of the breast, in older patients, a squamous cell carcinoma could be found.

Conclusion

Sebaceous and squamous carcinomas are rare breast carcinomas. Their prognosis and appropriate treatment approach are still debated. Therefore, new case reports would help in determining the right approach to these diseases. The origin of sebaceous cells in breast carcinoma is still unclear. Most common sebaceous carcinomas arising in extramammary sites are aggressive tumors. The prognostic significance connotation of the sebaceous phenotype in breast carcinoma remains unclear due to this peculiar variant.

Regarding the squamous cell carcinoma, its existence and possible evolution of an apparently benign disorder to malignant one, underlines the importance of pathological examination of complicated cysts and breast abscesses. Careful and accurate classification of these tumors is necessary. A detailed analysis of their biological behavior and response to therapy is necessary in order to formulate definite recommendations in managing these patients/diseases.

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CITODIJAGNOZA RIJETKIH TUMORA DOJKE – PRIKAZ SLUČAJEVA

S A Ž E T A K

U ovom radu predstavljamo dva slučaja vrlo rijetkih tumora dojke: rak lojnih žlijezda dojke, koji se po prvi puta opisuje u hrvatskoj medicinskoj literaturi, te čisti pločasti karcinom dojke. U prvom slučaju, karcinom lojnica je još uvijek dosta nepoznat u pogledu morfoloških karakteristika i biološkog ponašanja. U drugom slučaju, pločasti karcinom je također vrlo rijedak, a u pacijentice je otkriven nakon ranijih brojnih karcinoma na koži glave i vrata, te dijagnosticiran kao primarni pločasti karcinom dojke. U prvom slučaju predstavljamo 85 godišnju ženu u čijoj povijesti bolesti unatrag dva mjeseca nalazimo čvor u lijevoj dojci ispod mamile. Drugi slučaj, 69 godišnje žene započinje u siječnju 2008, kada dolazi nakon što je prije dva mjeseca primijetila čvor u donjem vanjskom kvadrantu lijeve dojke sa uvećanjem limfnih čvorova lijeve aksilarne regije. Kako bi se odredio precizan tip tumora, u oba slučaja učinila se punkcija dojke pod kontrolom ultrazvuka (FNAC). Ovo je važna metoda za dijagnostiku, no u oba slučaja pokazali su se njeni nedostaci u dijagnosticiranju ovako rijetkih tumora. Konačna dijagnoza utvrđena je nakon pažljive sinteze citoloških i histoloških rezultata te kliničkih podataka. Nužna je pažljiva i točna klasifikacija ovih tumora kao i detaljna analiza njihovih bioloških karakteristika te odgovora na terapiju kako bi se formulirale konačne smjernice za postupanje/liječenje ovih bolesnika/bolesti.