Fine-needle Aspiration Cytology of Eccrine Porocarcinoma of Scalp – Report of a Rare Case with Review of Literature

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Abstract

Eccrine porocarcinoma is a rare malignant adnexal tumor of duct of eccrine sweat gland. Cytology of eccrine porocarcinoma has been described in very few literatures. Here, we are presenting a case of fine-needle aspiration cytology (FNAC) of eccrine porocarcinoma of scalp, confirmed subsequently by histology. Accurate preoperative diagnosis of eccrine porocarcinoma by FNAC is difficult but determining the malignant nature of the lesion is crucial for a curative surgery. FNAC can be a convenient, safe, and effective approach to solve difficult diagnostic dilemma.

Keywords: *Eccrine porocarcinoma, fine needle aspiration cytology, scalp*

Introduction

Eccrine porocarcinoma is a malignant adnexal tumor of an intraepidermal ductal portion of sweat gland.[1] It was first described by Pinkus and Mehrgan in 1963.[2] Eccrine porocarcinomas account 0.005% of all cutaneous tumors.[3] About 609 cases of porocarcinoma cases have been enlisted till date.[4] It is also termed as malignant hidroacanthoma simplex, malignant intraepithelial eccrine porocarcinoma, eccrine poro-epithelioma, malignant syringoacanthoma, dysplastic poroma, and sweat gland carcinoma in many previous literatures. Eccrine porocarcinoma may be *de novo* or may arise as a result of malignant transformation of a long-standing eccrine poroma.[2,5] Most of the cases involves lower extremities and trunk.[2,3] The scalp is an uncommon location of eccrine porocarcinoma.[1,5,6] Local recurrence and lymph nodal metastasis (20%) may occur in eccrine porocarcinoma.[2,7] Most of the cases were diagnosed by histopathology. Cytology of this uncommon tumor has not been described thoroughly in the previous literature. Here we are reporting a case of eccrine porocarcinoma of the scalp, diagnosed on fine-needle aspiration cytology (FNAC) and subsequently confirmed by histopathology.

Case Report

A 58-year-old male patient presented with a gradually increasing painless mass at scalp over parietal region for 3 months. On clinical examination, the lesion was (5 cm × 4 cm × 3 cm) bosselated reddish yellow mass and was fixed with underlying skin. The patient had no anorexia, weight loss, and examination did not reveal any cervical lymphadenopathy. Computed tomography scan brain did not show any intracranial extension and bone involvement by the tumor. Fine-needle aspiration was performed with 24-gauge needle attached with 10 ml syringe. Smears were stained by Leishman-Giemsa and PAP stain. Cytology revealed hypercellular smears showing cohesive sheets and clusters of oval cells as well as scattered single cells in a background of necrotic debris. The tumor cells had moderate amount pale basophilic cytoplasm, hyperchromatic nuclei with irregular nuclear contour and prominent nuclei [Figures 1 and 2]. Multiple atypical mitotic figures and few squamoid cells were seen in the smears. Cytology was reported as malignant adnexal tumor. Wide local excision was performed, and specimen was sent for histopathology. On gross examination, it was an irregular friable soft to firm mass 4 cm × 3 cm with the white cut surface. On hematoxylin and eosin-stained sections, the tumor was comprised polyhedral cells arranged in solid cord, sheets, and lobules [Figure 3]. Few lobules showed central necrosis. The tumor cells had abundant pale eosinophilic cytoplasm and enlarged round nuclei. The nuclei show mild pleomorphism,

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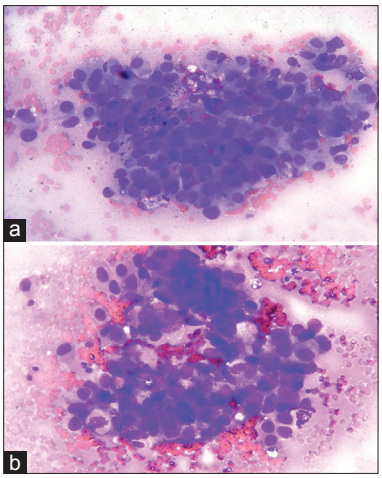

Figure 1: (a and b) Cytology reveals round to oval neoplastic cells having pale basophilic cytoplasm, round to oval hyperchromatic nuclei with moderate aniso-nucleosis and prominent nucleoli and frequent mitosis (Leishman-Giemsa, ×40)

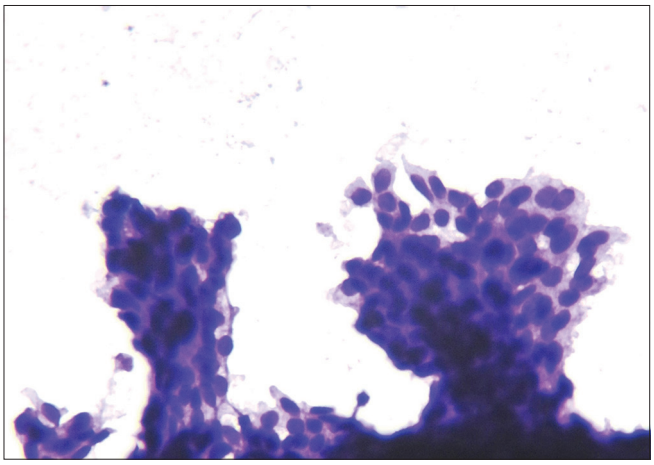

Figure 2: Cytology reveals overlapping oval neoplastic cells with high nuclear-cytoplasmic ratio, nuclear hyperchromatia, and prominent nucleoli (PAP, ×40)

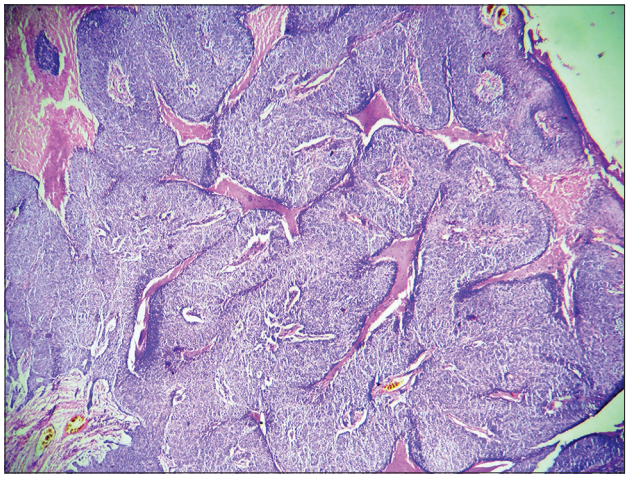

Figure 3: Photomicrograph shows lobular arrangement of neoplastic cells which invade downwards into dermis with epidermotropism (H and E, ×10)

hyperchromatia, prominent nucleoli, and frequent mitosis. Epidermotropism and areas of squamous differentiation were also seen in the sections. Dermal infiltration was deep to reticular dermis. No intercellular bridges and kerato-hyaline granules were noted, and surgical margins were free from of tumor tissue. Histopathological diagnosis was performed as eccrine porocarcinoma of scalp. He was referred for postoperative chemotherapy. He is followed up to 1 year but did not have any local recurrence and lymphnodal metastasis.

Discussion

Sweat gland carcinomas are rare adnexal tumor and eccrine porocarcinoma is commonest among them.[1] Common sites of eccrine porocarcinoma are lower limbs (44%), trunk (24%), and head-neck region (24%).[8] The tumors affect elderly patients of 60–80 years of age, but cases also have been reported in younger patients too.[1,2,7] Eccrine porocarcinomas are considered as primary malignant adnexal tumors which arise from intraepidermal portion of eccrine sweat ducts or acrosyringium.[2,8] It may arise as primary lesion or secondary to any preexisting lesion such as eccrine poroma, nevus sebaceous, chronic lymphocytic leukemia, or actinic keratosis.[2,8,9] Clinically, these present as solitary nodular polypoid or plaque, pale yellowish, or reddish mass with or without superficial ulceration.[1,2,8] Eccrine porocarcinomas of scalp mimic poroma, cylindroma, sebaceous adenoma, sebaceous carcinoma, pillar tumor, and metastatic carcinoma.[9]

Till date, very few cases of cytology of eccrine porocarcinoma have been described.[1,2,7,9] In the present case cytology revealed discohesive clusters of neoplastic cells as well as singly. The cells have moderate amount cyanophilic cytoplasm, high nuclear cytoplasmic ratio, round to oval large nuclei with moderate pleomorphism, and prominent nucleoli. Areas of necrosis and mitotic figures are also seen in the smears. Cytology of the present case correlates well with other workers such as Bonadio *et al*., Yu *et al*. and Kalogeraki *et al*.[1,2,8] Cytology of eccrine porocarcinoma should be differentiated from nonkeratinizing squamous cell carcinoma, basal cell carcinoma, metastatic adenocarcinoma, and malignant melanoma.[2,8] In nonkeratinizing squamous cell carcinoma, the neoplastic cells have well-defined cell border and refractile cytoplasm, hyperchromatic nuclei with coarse chromatin and prominent nucleoli.[2,8] Basal cell carcinoma is distinguished from eccrine porocarcinoma by the presence of tight clusters of basal cells with peripheral palisading, scanty cytoplasm, oval nuclei, and inconspicuous nucleoli.[2] In metastatic adenocarcinomas, the neoplastic cells are arranged in an acinar pattern or tight clusters. The tumor cells have moderate amount vacuolated cytoplasm, pleomorphic nuclei with prominent nucleoli. Cytology of malignant melanoma reveals various types of neoplastic

cells of epitheloid, plasmacytoid, or spindle shape. Intracellular melanin pigment, prominent macronucleoli, multi-nucleation, tumor giant cells, mitosis are frequent in melanoma.[2,8] All the above possible differential diagnoses should be excluded during cytological evaluation of a smear suggestive of eccrine porocarcinoma.[1]

However, definitive diagnosis always depends on a histopathological examination of the tumor. Robson *et al*. discussed two types of eccrine porocarcinoma considering the observation of Abenoza and Ackerman *et al*., Roaf *et al*. and Shaw *et al*.: (1) cytologically malignant cellular morphology and necrosis and (2) infiltrating tumor margin irrespective of the degree of cytological atypia.[3,8] Sometimes, the neoplastic cells of poroma may reveal low-grade cytological atypia which may be misinterpreted as porocarcinoma in cytology smears.[2,8] However, in histology, eccrine poromas lack infiltrative growth pattern, tumor necrosis or vascular invasion.[2] In our case, the tumor invasion was obvious and mitotic rate was high.

Eccrine porocarcinomas are slow growing tumor, and wide local excision is a rational approach of treatment. Chance of local recurrence is 20%, and lymph node metastasis may also occur in 20% of the cases, which are the determinant of poor prognosis.[1,8] Distant metastasis is uncommon but documented previously.[3,6] Poor prognosis of eccrine porocarcinoma determined by the presence of lymphovascular invasion, positive margin status after resection, mitotic count (>14/HPF), and depth of invasion (>7 mm).[3]

Conclusion

Exact cytological diagnosis is often difficult and may not be possible without correlating with history and clinical findings. However, FNAC may provide a diagnosis of malignant adnexal tumor which can give sufficient guideline for choosing treatment protocol.

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Conflicts of interest

There are no conflicts of interest.

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