Cytomorphology of Skin Adnexal Tumors: A Tale of Two Scalp Swellings

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Abstract

The primary and metastatic tumors of the skin can be effectively diagnosed by fine needle aspiration cytology (FNAC); however, the cytomorphological features of skin adnexal tumors are rarely described in the literature. We hereby describe the cytological features of two histologically confirmed cases of benign skin adnexal tumors. Case 1 is of a 46-year-old female who presented with an elevated firm nodule over the scalp. A cytological diagnosis of benign adnexal tumor possibly of sebaceous origin was given. The nodule was excised and histopathological examination confirmed the diagnosis of sebaceoma. Case 2 is of a 19-year-old male who presented with a pigmented scalp swelling. Cytomorphological features were suggestive of benign skin adnexal tumor with foci of melanin pigment. The swelling was excised and histopathological examination confirmed the diagnosis of eccrine poroma. To the best of our knowledge, only one previous report of sebaceoma and no report of eccrine poroma describing the cytological findings of these two tumors exist. We report these two cases of benign skin adnexal tumors to discuss the cytological features and the potential diagnostic dilemma that they pose to the cytologist.

Keywords: Adnexal, cytomorphology, eccrine poroma, sebaceoma, scalp

Case Reports

Case 1
A 46-year-old female presented with a nontender, nonmobile, elevated firm, yellow-colored nodule measuring 1 × 1 cm over the scalp [Figure 1a]. FNAC smears were cellular and revealed two cell populations arranged in sheets, clusters, and scattered singly. One population comprised of cells with moderate amount of finely vacuolated cytoplasm, oval-to-spindle nuclei having bland nuclear chromatin, and inconspicuous nucleoli. The other population was of basaloid cells [Figure 1b]. Few clusters showed a mixture of these two populations along with eosinophilic stroma [Figure 1c]. A diagnosis of benign adnexal tumor possibly of sebaceous origin was given.

Subsequently, excision and histopathological examination was done. Cut surface of the swelling was solid gray-white to yellow. Sections revealed a fairly circumscribed tumor in the dermis involving the subcutaneous tissue and focally reaching up to the epidermis. The tumor comprised of irregularly-shaped lobules with two types of cells, small round-to-oval basaloid cells admixed with larger cells having round vesicular nuclei and moderate foamy cytoplasm [Figure 1d]. Many typical mitosis (1–2/hpf) were seen. Histological features were diagnostic of sebaceoma.

Case 2
A 19-year-old male presented with an asymptomatic pigmented scalp swelling measuring 1.5 × 1.5 cm [Figure 2a]. FNAC

Access this article online

Quick Response Code:

Website:
www.jcytol.org

DOI:
10.4103/0970-9371.223594

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How to cite this article: Panwar H, Goel G, Majumdar K, Joshi D, Asati D, Kapoor N. Cytomorphology of skin adnexal tumors: A tale of two scalp swellings. J Cytol 2018;35:60-2.
smears revealed tight clusters and dispersed small polyhedral to cuboidal cells with cytoplasmic granularity [Figure 2b]. Many cells with cytoplasmic brown black pigment were seen along with specks of calcification [Figure 2c]. A diagnosis of benign adnexal tumor was given.

Subsequently, excision and histopathological examination was done. Cut surface showed a full thickness, irregular solid growth with black discoloration. Sections revealed a tumor arising from the epidermis extending into the dermis as broad anastomosing bands of uniform, cuboidal tumor cells with indistinct cell borders, round-to-oval basophilic nucleus, and few showing intracytoplasmic melanin pigment [Figure 2d]. In between the tumor cells, narrow ducts lined by eosinophilic cuticle and multiple small cysts were also seen. Histological features were diagnostic of eccrine poroma.

**Discussion**

The diagnosis of skin adnexal tumors by cytology is controversial because these lesions are clearly manageable by excision. However, a cytologist may have to face the challenge of diagnosing these lesions as it is documented in the literature in only a few large case series and case reports. Hence, the awareness of the cytologic features of skin adnexal tumors is essential.

FNA of skin adnexal tumors can reveal three different arrangements of cells. Tumors with follicular differentiation show tightly cohesive branching sheets of cells. Flat sheets and groups of cells in glandular pattern are characteristic of sweat gland carcinoma and hidradenoma. Presence of small cells is a feature seen in spiradenomas. The pattern of cellular arrangement along with clinical details facilitate a cytological diagnosis of skin adnexal tumors.

Sebaceoma was previously termed sebaceous epithelioma. The cytology of cutaneous sebaceous carcinoma has been discussed previously, however, the cytology of sebaceoma is described only once in a case series of 544 cases, which included one case of sebaceous epithelioma.

The presence of clusters with both basaloid and vacuolated cells along with stromal fragments in a lesion prompts a diagnosis of adnexal tumor of sebaceous origin. Cells having clear cytoplasm may be seen in other adnexal tumors and can be confused with mature sebocytes seen in sebaceoma. Presence of multiple vacuoles and an eccentrically placed nucleus in mature sebocytes differentiates them from clear cells of other adnexal tumors. In addition, the cell clusters in sebaceoma show maturation of sebocytes in the same cluster. Presence of vacuolated cells can lead the cytologist to think of tumor of an adipocytic origin, however, these tumors lack the basaloid cells, hence distinguishing them from sebaceoma. A differential diagnosis of basal cell carcinoma with sebaceous differentiation may also be considered on cytology, but it will show sheets of basaloid cells with peripheral palisading. Special stains such as Oil red O and Sudan IV on fresh tissue can confirm the diagnosis of sebaceoma. In the present case, similar features were noted, and thus a diagnosis of benign adnexal tumor possibly of sebaceous origin was rendered.

Analogous to sebaceoma, the cytological features of malignant eccrine poroma have been previously described in literature, however, till date, no prior report of cytology of benign eccrine poroma exists.

Various authors recommended a diagnosis of benign eccrine tumor in presence of cohesive clusters of polyhedral-to-cuboidal
cells and cytoplasmic granularity.[8,9] Histologically, there are three variants of eccrine poromas; benign, premalignant, and malignant variants. The benign eccrine tumors can be differentiated from the malignant porocarcinomas cytologically by lack of tight tumor islands with geographic contours, large, atypical cells without any differentiation, pleomorphic hyperchromatic nuclei, increased mitosis, necrosis, and absence of dual population of cells.[9] The present case lacked features of malignancy, but presence of cells with intracytoplasmic pigment was misleading, and hence a broad diagnosis of benign adnexal tumor was given. Majority of eccrine poromas are devoid of melanocytes; pigmented variant of eccrine poroma is rare.[10] Consequently, the presence of melanocytes in a lesion with cytological features favoring an adnexal tumor with eccrine differentiation should not deceive the cytologist.

Although precise subtyping of skin adnexal tumors may not be possible on cytology due to a lack of reports describing their cytomorphological features, an attempt should be made by the cytologist to identify these lesions. With this case report, we strive to emphasize the cytological features of sebaceoma and eccrine poroma. In tumors with sebaceous differentiation, the presence of foamy cells with vacuolated cytoplasm and presence of polyhedral and cuboidal cells in tumors with eccrine differentiation can aid in diagnosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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