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Nodular Hidradenoma- An Uncommon Diagnosis on Cytology

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Introduction

Hidradenoma is a benign adnexal tumor of the eccrine sweat glands. It is also known as nodular hidradenoma, eccrine acrospiroma and solid- cystic hidradenoma. It is an intermediate entity between eccrine poroma and eccrine spiradenoma[1] based upon electron microscopic ultrastructural features and histochemical enzyme analysis. It can involve various sites such as scalp, face, axillae, arms, thighs, trunk, pubic region but commonest site is head.[2]

It usually occurs in second- fifth decade with a peak incidence in fifth- sixth decade showing a female preponderance. It usually presents as a slow growing, well- circumscribed, solitary, red- blue or brown colored, freely mobile mass with an average size of 5- 30 mm.[3] The cytological diagnosis of this tumor can be difficult at times as it mimics other benign and malignant skin neoplasms. On histopathological examination both solid and cystic components are noted with characteristic clear cells. In this case report, we present a case of a 45 year old female with a swelling over the left arm.

Case Presentation

A 45 year old female presented with a swelling over the left arm since 2 weeks. There were no symptoms associated with the swelling. Family history was insignificant and there was no history of any trauma. On local examination a 2x2 cm firm, mobile, non- tender swelling was noted. Erythema was noted over the swelling. A provisional clinical diagnosis of dermatofibroma was made. Fine- needle aspiration cytology was performed from the swelling. Cytosmears showed admixture of two types of cells, cohesive groups of uniform oval to polygonal cells and clear cells. There was no evidence of squamous or spindle cells. Eosinophilic cells showed round to ovoid nuclei, small nucleoli and moderate amount of eosinophilic cytoplasm. Clear cells showed round eccentric nuclei, fine granular chromatin and abundant clear cytoplasm. Eosinophilic cells formed large, cohesive three- dimensional group of densely packed clusters. Clear cells formed flat clusters. On the basis of these findings a diagnosis of clear cell hidradenoma was given. The swelling was excised and sent for histopathological examination. Grossly, a single nodular grey-white to grey- brown soft tissue piece was received measuring 0.8x 0.6x 0.2 cm. On cut section, gelatinous material was noted. Microscopic examination revealed a well- circumscribed, encapsulated tumor in the dermis with a characteristic grenz zone between the tumor and the epidermis. Overlying epidermis was unremarkable. A combination of solid and cystic areas were seen. Two types of cells were noted constituting the solid component of the tumor. One cell type was

polygonal with a round uniform nucleus, evenly distributed nuclear chromatin, inconspicuous nucleoli, moderate amount of eosinophilic cytoplasm and the other cell type was of clear cells having clear cytoplasm, round to oval eccentric nuclei, small nucleoli with distinct cell outlines. Formation of tubular lumina lined by cuboidal cells containing eosinophilic hyaline material was noted. Cystic spaces were also filled with amorphous eosinophilic material. Atypia, necrosis, mitosis or invasion were not seen. A diagnosis of nodular hidradenoma, benign adnexal tumor was rendered. Follow up period was uneventful.

Discussion

Sweat gland tumors are rare tumors, they are classified into benign and malignant types. Benign tumors include nodular, apocrine and clear cell based upon their histopathological presentation. Sweat gland carcinomas have infiltrative borders and/ or have metastatic potential.[4]

Nodular Hidradenoma was first outlined by Liu in 1949 as Papillary carcinoma of skin.[5] Henceforth, it was reported as nodular/ clear cell/ solid- cystic hidradenoma. Nodular hidradenoma usually occur in third to fifth decade and has a female predilection. Clinically it presents as an asymptomatic, solitary, 0.5- 0.6 cm in size, skin colored intradermal nodule.[6,7] Occasionally brown, bluish or red discoloration or surface ulcerations may be observed as was seen in this case. Involvement of scalp, face, anterior trunk and proximal limbs is commonly seen.[8] It is a slow growing tumor and rapid growth indicates a malignant change or trauma or hemorrhage.[7,9] In this case patient gave a history of short duration of only 2 weeks. Clinically it mimics many tumors such as basal cell and squamous cell carcinoma, melanoma, metastatic tumor, dermatofibroma, pyogenic granuloma, hemangioma, leiomyoma and other cutaneous adnexal tumors.[6,7] In this case a clinical diagnosis of dermatofibroma was given. Cytologic features show a cystic component characterized by foam cells and mucoid background and a solid component comprises of two types of cells, polygonal and clear. Problems can occur while making a diagnosis on cytology as it mimics clear cell tumors of skin, glomus tumor or sebaceous cyst. Trichilemmoma originating from the hair follicle show similar cytological findings but in addition show nests of basaloid cells with peripheral palisading and keratinisation.[10,11] Glomus tumor show presence of blood vessels and absence of mucoid material and foam cells. Sebaceous cyst shows predominance of anucleate squames in a dirty background. Histopathology shows both solid and cystic components in varying proportions. The tumor is composed of tubular lumina lined by cuboidal or columnar cells and variably sized cystic spaces filled with homogeneous eosinophilic material. The solid component contains two types of cells: polyhedral with basophilic cytoplasm and glycogen containing pale or clear cells with a clear cytoplasm.[12] Malignant hidradenomas present with infiltrative growth pattern, deep extension, necrosis, nuclear pleomorphism and greater than or equal to four mitosis per 10 high power field and Ki- 67 greater than 1%. High concentration of eccrine enzymes, phosphorylase and respiratory enzymes including succinic dehydrogenase and diphosphopyridine nucleotide diaphorase has been demonstrated by enzyme histochemical staining. The risk of local recurrence (10%) and a propensity for malignant transformation makes surgical removal with wide margins as the most widely accepted treatment.[13,14] However in this case there was no evidence of malignant transformation.

Conclusion

Due to its rarity and variable cytological features, diagnosis of this tumor is difficult. Cytological diagnosis

helps in precise surgical management thereby preventing chances of recurrence or malignancy. Therefore adequate cellularity on cytology smears is of utmost importance for rendering an accurate diagnosis.

Declarations

Consent for publication- Written informed consent was obtained from the patient and her parents for publication of this case report and accompanying images.

Competing interests- None.

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Figures

Fig 1: (A) Cytosmear showing large three-dimensional sheet of cells. (MGG stain, 10x).

(**B), (C) and (D)** Cytosmears showing cohesive groups of round to polygonal cells having round nuclei, inconspicuous nucleoli and eosinophilic cytoplasm and few cells showing clear cytoplasm. (MGG stain, 40x).

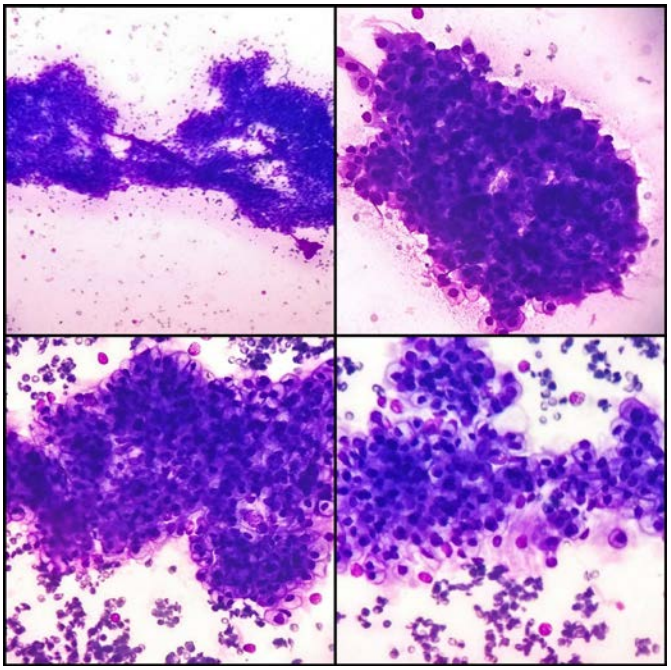

FIG 2: A) Microphotograph showing a well-circumscribed encapsulated intradermal mass comprising of solid and cystic components. (H and E stain, 4x).

B) Microphotograph showing an encapsulated mass with the characteristic grenz zone as shown by an arrow. (H and E stain 10 xs).

C) And D) Microphotograph showing amorphous eosinophilic material filled cystic spaces within the tumor mass as shown by black arrows. Duct- like luminal structures are also seen. (H and E stain, 10x).

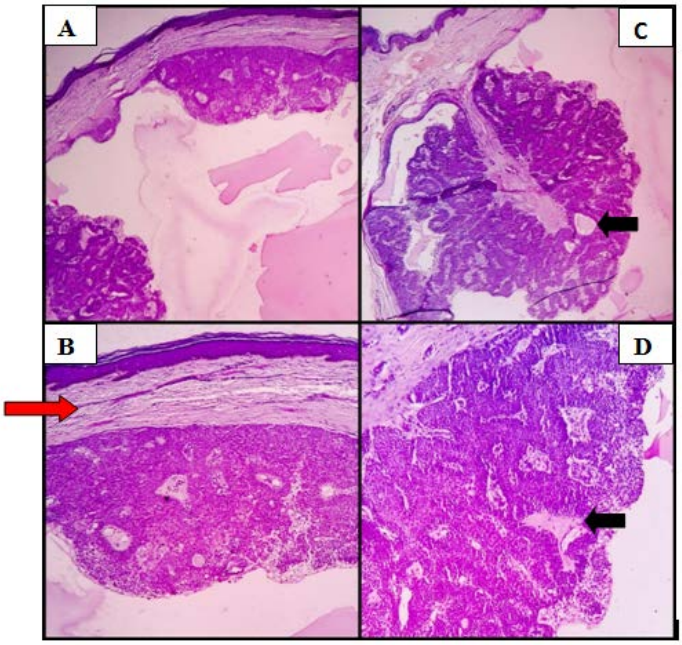

FIG 3- Microphotograph showing two type of cell population; round to polyhedral and clear cells. Polygonal cells showing round nuclei, bland nuclear chromatin, finely granular cytoplasm and clear cells show abundant clear cytoplasm and eccentric nuclei as depicted by an arrow. (H and E stain, 40x)