Case Report

Nodular hidradenoma presenting as a scalp swelling: A case report and histopathological analysis

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ABSTRACT

Among the myriad pathologies presenting as scalp swellings, benign adnexal tumors are a very small subset, with nodular hidradenoma being a rare cause. Nodular hidradenoma is a skin tumor with eccrine or apocrine differentiation, mostly seen in the scalp or in the axilla. These tumors can raise the suspicion of being malignant in nature, especially due to their varied presentation as having irregular margins and pain, rapid increase in size, and bleeding, or ulceration. As no clear-cut diagnosis can be made till now, a histopathological examination is performed, it presents a challenge in establishing a diagnosis and its management. We encountered a case of a woman presenting with a scalp swelling with atypical features, which raised the suspicion of it being a pyogenic granuloma, that is either highly vascular or a malignancy due to its firm consistency and irregular margins with multiple bleeding points. The case with its diagnostic dilemma and its confirmation in histopathological examination has been presented here.

Key words: Adnexa, Apocrine, Eccrine, Histopathological, Nodular hidradenoma

Adnexal tumors have a mixture of follicular, eccrine, sebaceous, and/or apocrine cells. Sweat gland tumors are extremely rare and can be benign or malignant. Nodular hidradenoma belong to the benign variety, mostly reported in the scalp and axilla, although rare sites such as abdominal wall and genitalia have also been reported, mostly when the tumor starts becoming symptomatic [1,2]. These have been reported under terms such as eccrine spiradenoma, eccrine acrospiroma, solid-cystic hidradenoma, clear cell acrospiroma, clear cell myoepithelioma, and eccrine sweat gland adenoma [3]. They usually present as well-defined and multilobulated tumors seen in dermis and the subcutaneous tissue and are primarily solid and cystic, and sometimes tubulocystic. These tumors are slow-growing and usually have a long history before the patient seeks surgical excision. When a surgeon decides to operate on such a swelling, it is important to excise a cuff of normal tissue in case that the histopathological examination reveals a malignant swelling [2]. Malignant transformation and metastases have been reported in rare cases [2,4]. Wide local excision is hence the best management strategy for these tumors or in swellings where this differential is being considered [1,4].

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CASE PRESENTATION

A 55-year-old female presented to the general surgery outpatient department with the complaint of a swelling in the right high parietal region of the scalp for 1 year. There was a gradual increase in the size of the swelling over 1 year, not associated with pain or ulceration, but associated with bleeding points and thin serous discharge from the surface. There was no similar history in the past or in her family, and no history of medication intake or any surgical history.

On examination, blood pressure was 132/88 mm Hg, and pulse rate was 74/min at rest. Local examination revealed a firm, well-circumscribed nodular swelling in the right high parietal region of the scalp, 3 cm in diameter. It had irregular margins and a rough surface. The overlying skin was red and had multiple small nodules and punctate bleeding points (Fig. 1).

Ultrasound imaging showed a well-defined hypoechoic lesion confined to the subcutaneous tissue. Fine-needle aspiration cytology was inconclusive. As per the external appearance, the lesion was presumed to be a pyogenic granuloma.

Excision was carried out under local anesthesia using an elliptical incision, with a cuff of normal skin, and sent for histopathological examination. Grossly, the mass was encapsulated with cystic areas, which were

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Figure 1: A 3 × 3 cm well-circumscribed firm swelling on the right high parietal region with punctuate bleeding spots and nodular surface

separated by normal tissue, and no adherence to the underlying structures. Histopathological report revealed a well-circumscribed dermal tumor composed of two cell populations: Polygonal cells with eosinophilic cytoplasm and glycogen-abundant clear cells. Cystic degeneration and duct-like spaces were seen. There was no evidence of atypia, mitotic activity, or necrosis. These features confirmed the diagnosis of a benign skin adnexal tumor resembling a nodular hidradenoma (Fig. 2).

The post-operative period was uneventful, and sutures were removed on the 8th post-operative day. The scar site healed in 2 weeks.

DISCUSSION

Nodular hidradenomas are slow-growing adnexal tumors, which can occur in women and men in the ratio of 2:1 at a mean age of 37.2 years [5]. The common locations of the lesion are axilla, face, arms, thighs, trunk, scalp, and pubic region, but the most common site is the head [1]. Rare cases have been reported in the breast and vulva [5]. The first reported case dates back to 1949 [6]. Most of these tumors are cystic swellings and are often thought to be dermoid or sebaceous cysts. Occasionally, they may show changes in color from normal to brown, blue, or red discoloration or have superficial ulceration and serous discharge, causing confusion with aggressive metastatic tumors, carcinoma, or sarcoma [7].

Among the various cases previously reported, nodular hidradenoma represent a pitfall, being difficult to differentiate clinically and dermoscopically from other skin tumors such as basal cell carcinoma, melanoma, dermatofibroma, epidermal cyst, basal cell carcinoma, and other adnexal tumors such as eccrine spiradenoma and hidrocystoma. Histologically, the differential can include apocrine mixed tumor, syringoma, and metastatic tumors from clear cell cancers, like renal cell carcinoma [1,8].

Though conventionally regarded as eccrine, they have been reclassified into eccrine and apocrine types [9]. According to Ohnishi and Watanabe, clear cell variations are of apocrine differentiation, whereas only a minority have true eccrine differentiation [10]. It presents typically as a well-circumscribed, unencapsulated tumor mainly in the dermis, with the mass containing solid and cystic areas. The solid area has cells with small dark eccentrically located nuclei with clear cytoplasm and round, fusiform, or polygonal cells with round or oval vesicular nuclei and eosinophilic cytoplasm.

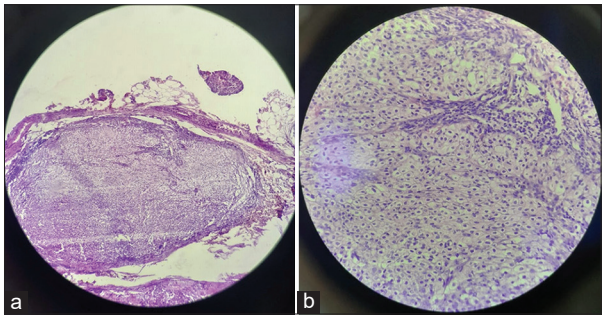

Figure 2: Histopathological images of the excised specimen in 10× (a) and 40× (b) magnification showing a dermal tumor with polygonal cells having p eosinophilic cytoplasm and glycogen-abundant clear cells

Immunohistochemistry shows the markers AE1/AE3, epithelial membrane antigen, and carcinoembryonic antigen: However, immunohistochemical analysis is not usually required as hematoxylin and eosin stains are reliable for making an accurate diagnosis [6]. There may be decapitation secretion suggestive of an apocrine nature. This feature is generally absent or focal [11]. Both squamous and sebaceous differentiation are common, with squamous being more frequently seen with the infundibular type of keratinization. Both hyaline and myxoid variants of stroma are conventionally seen [9]. In rare cases, when a malignant transformation is noted, they show an inclination toward the various components of the eccrine sweat glands. The nuclear anaplasia may be absent or only slight so that establishing its malignancy can be challenging. Other patterns displayed are infiltrative or invasive, atypical mitosis, necrosis, and angiolymphatic invasion [4]. In the benign variety, the tumors contain glycogen, but acid mucopolysaccharides are found only occasionally and only in minute amounts. Histopathological examination remains the gold standard for diagnosing nodular hidradenoma due to its varied locations, atypical clinical presentation, and the absence of definitive radiological criteria, and aspiration cytology is not able to make a confirmatory diagnosis in most cases [7].

Our case aligns with the results of previous case reports by Arthi *et al.* [1], Jaitly *et al.* [5], Bijou *et al.* [6], and Vinodini and Vijayshankar [12]. In contrast to our patient, the patients in these cases were suspected to have an epidermoid cyst, lymphatic cyst, metastasis, sarcoma, or a malignant tumor. The significant risk of recurrence and potential for malignancy reinstates the importance of deciding on appropriate treatment methods. Complete excision with wide margins is crucial for preventing local recurrence. However, there is currently a lack of consensus in the literature regarding the optimal excision margins. Further research and clinical guidelines are necessary to establish standardized protocols for surgical management to minimize recurrence rates and enhance patient outcomes.

CONCLUSION

Nodular hidradenoma is a rare benign adnexal neoplasm with distinct histopathological features. It frequently

mimics other benign or malignant lesions, including vascular tumors like pyogenic granuloma, making histological examination critical, which is the gold standard for establishing a diagnosis. Surgical excision remains the cornerstone of treatment, with recurrence being uncommon following complete resection. It is important to take a cuff of normal skin and tissue with the lesion in case malignancy is suspected. Clinicians and pathologists must be aware of its features to ensure accurate diagnosis and management, and it should be considered as an important differential diagnosis, especially when planning surgical excision. The patient should be followed up for recurrence.

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