Nodular hidradenoma: clinical, dermoscopic, and histopathological features

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Abstract

Nodular hidradenoma is an infrequent benign tumor originating from the proximal portion of the sweat glands, most commonly associated with the apocrine glands. Owing to its variable clinical presentation, correctly diagnosing nodular hidradenoma can be challenging, with several potential conditions in the differential diagnosis to consider. This article presents a healthy 52-year-old woman with an atypical location of nodular hidradenoma, highlighting the critical role of integrating clinical, dermoscopic, and histopathological characteristics for an accurate diagnosis. We discuss the clinical features, dermoscopic findings, histological examination, differential diagnosis, and treatment options for nodular hidradenoma, emphasizing the importance of surgical intervention in preventing potential malignant transformation.

Keywords: adnexal, neoplasms, skin appendage, sweat gland, tubular adenoma

Introduction

Nodular hidradenoma is a rare benign tumor of the proximal portion of the sweat glands that most frequently arises from the apocrine glands. This tumor, initially documented by Liu in 1949 as clear cell papillary carcinoma of the skin, has undergone several changes in nomenclature over time. In recent literature, the preferred terms are clear cell hidradenoma, nodular hidradenoma, or solid and cystic hidradenoma. Other designations include clear cell myoepithelioma, eccrine sweat gland adenoma of the clear cell type, and eccrine acrospiroma [1,2]. The clinical presentation of nodular hidradenoma is variable and nonspecific, posing challenges in achieving an accurate diagnosis. Differential diagnoses for nodular hidradenoma include various adnexal tumors, basal cell carcinoma, melanoma, epidermal cysts, and cutaneous metastases [2]. We present a healthy 52-year-old woman with a nodular hidradenoma in an atypical location to emphasize the importance of the correlation of clinical, dermoscopic, and histopathological characteristics to establish an accurate diagnosis.

Case Synopsis

A previously healthy 52-year-old woman presented with an 18-month history of an asymptomatic nodular lesion on her right thigh. Physical examination revealed a solitary, dome-shaped, erythematous firm nodule measuring 2cm×1.5cm, with serous drainage (**Figure 1A**). The patient reported no history of trauma. Dermoscopic evaluation demonstrated a well-defined nodule composed of structureless white-pink areas, red lacuna-like areas, eccentric ulceration, and polymorphous atypical vessels (**Figure 1B**). The tumor was surgically excised and subjected to dermatopathological study. Histological examination revealed a well-circumscribed tumor with a solid-sheet arrangement of polyhedral and clear cells, ductal structures, and cystic spaces

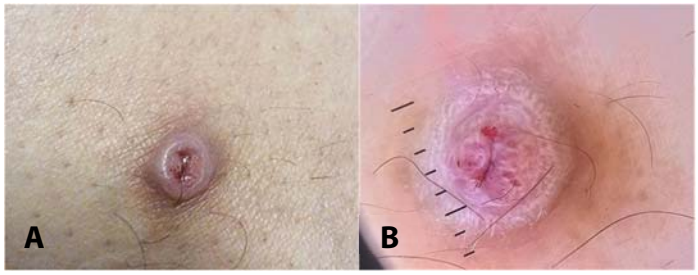

Figure 1. ***A)*** *Nodular hidradenoma, clinical image. Dome-shaped, erythematous firm nodule, 2cm×1.5cm sized, with serous drainage on the thigh.* ***B)*** *Nodular hidradenoma, dermoscopic image, well-defined nodule composed of structureless white-pink areas, red lacuna-like areas, eccentric ulceration, and polymorphous atypical vessels.*

(**Figure 2**). Based on the clinicopathological findings, a diagnosis of nodular hidradenoma was established.

Case Discussion

Nodular hidradenoma predominantly affects middle-aged adults, with a slight preponderance in females. It commonly presents on the head, neck, and trunk. Clinically, nodular hidradenoma manifests as a solitary, slowly growing, asymptomatic, well-circumscribed nodule, typically ranging in size from 0.5-3cm. The overlying skin may exhibit various characteristics such as smoothness, thickening, atrophy, or ulceration, with colors varying from skin-colored, red, brown, to blue [3].

Dermoscopic evaluation of nodular hidradenoma typically reveals a prevalent pattern characterized by a homogeneous area occupying the entire lesion, accompanied by vascular and white structures. This dermoscopic pattern accounts for 75% of observed nodular hidradenoma cases. The color of the homogeneous area is commonly pinkish in non-pigmented hidradenomas (42.8%) and bluish or less frequently brownish in pigmented hidradenomas (39.3%) [4-6].

Histopathologically, the homogeneous area corresponds to large lobulated masses consisting mainly of polyhedral eosinophilic and clear cells, along with various-sized ductal structures and abundant cystic spaces located in the upper and mid dermis. The bluish or brownish coloration observed in some cases can be attributed to increased melanin pigment, hemorrhage within cystic spaces, or the Tyndall phenomenon, which arises from the cystic nature and dermal localization of the tumor. The presence of white structures on dermoscopy

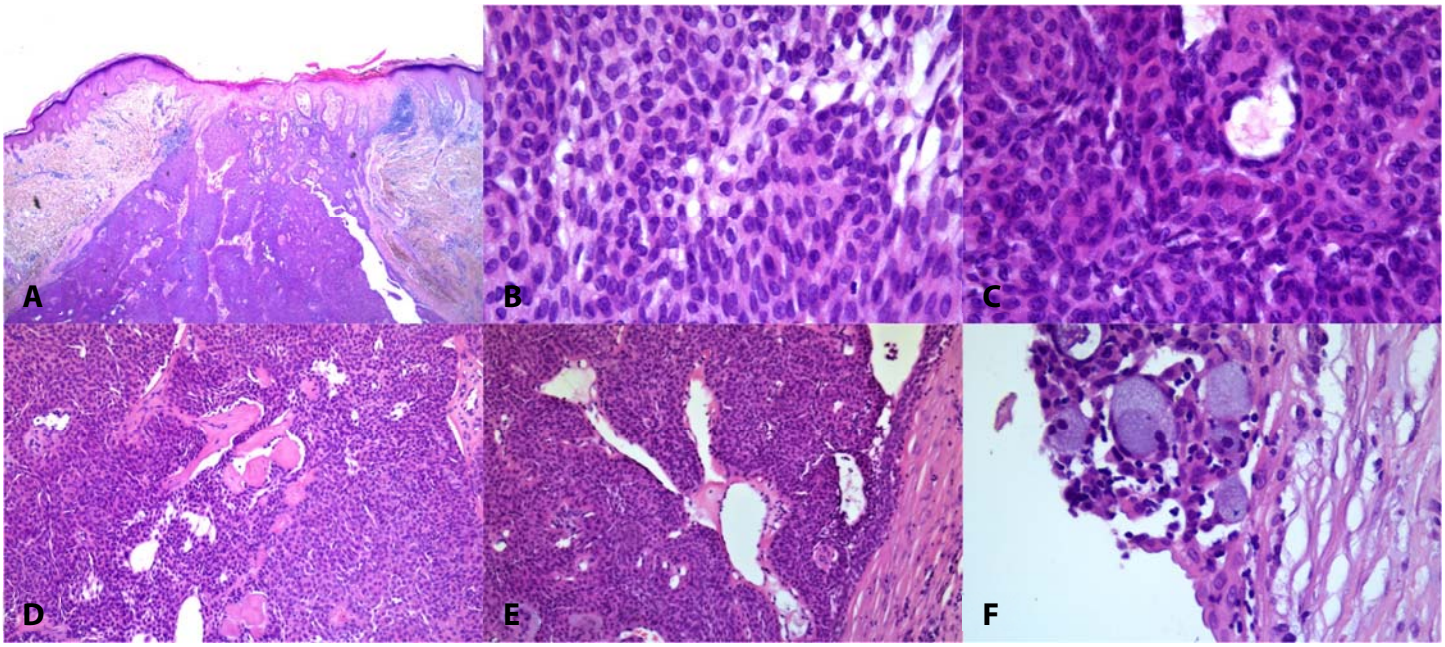

Figure 2. *H&E nodular hidradenoma histopathology.* ***A)*** *A large, well-circumscribed, non-encapsulated, multilobular proliferating tumor in the dermis, with an ulcerated surface and attachment to the overlying epidermis, 16×. The tumor lobules consist of well-circumscribed basaloid cells, some of which showed clear cell change.* ***B, C)*** *These clear cells revealed abundant cytoplasm, a well-demarcated cell membrane, and a small, eccentric nucleus, 400×.* ***D, E)*** *There were areas of large cystic spaces, ductal structures, and a rich supply of blood vessels, 100×.* ***F)*** *In some areas, cells with mucinous secretion are present, 400×.*

corresponds histopathologically to the fibrovascular or hyalinized stroma, which is a characteristic feature of nodular hidradenoma [2]. In routine clinical practice, immunohistochemical analysis is generally dispensable owing to the high diagnostic accuracy achieved using hematoxylin and eosin-stained sections. However, there may arise circumstances necessitating its implementation to distinguish potential mimics of hidradenoma. In such scenarios, staining with AE1/AE3 and other low molecular weight cytokeratins, as well as EMA and CEA, provides valuable diagnostic utility. Moreover, certain cases exhibit partial immunoreactivity with SMA, p63, and actin-muscle-specific markers [2].

Surgical excision with appropriate safety margins remains the treatment of choice because of the potential for malignant transformation in approximately 6.7% of cases [2].

Conclusion

Accurate diagnosis of nodular hidradenoma requires a comprehensive evaluation integrating clinical, dermoscopic, and histopathological findings. Though these tumors are benign, surgical excision of all lesions suggestive of nodular hidradenoma should be performed to confirm the diagnosis histopathologically because this tumor is a simulator of malignant lesions, including basal cell carcinomas, melanomas, and cutaneous metastases, on clinical and dermoscopic examination. In addition, there is always a concern that they could be malignant.

Potential conflicts of interest

The authors declare no conflicts of interest.

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