

A Intraepidermal Eccrine Poroma (Hidroacanthoma Simplex): A Pigmented Plaque Mimicking Malignancy

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Abstract:

Hidroacanthoma simplex is a rare benign intraepidermal adnexal tumor arising from the eccrine sweat duct and represents a distinct variant of eccrine poroma. Clinically, it often presents as a pigmented or verrucous plaque and may closely mimic benign or malignant cutaneous lesions, including seborrheic keratosis, Bowen disease, and pigmented basal cell carcinoma, leading to diagnostic challenges. We report the case of a 73-year-old woman who presented with a gradually enlarging hyperpigmented verrucous plaque over the right buttock, accompanied by a separate jet-black arcuate lesion over the breast. The clinical appearance raised suspicion of malignancy. Histopathological examination revealed marked acanthosis and hyperkeratosis with multiple well-circumscribed intraepidermal nests of uniform poroid cells demonstrating the characteristic Borst–Jadassohn phenomenon. The tumor cells were small and cuboidal with minimal atypia and showed focal duct-like luminal structures indicative of eccrine differentiation. These findings confirmed the diagnosis of hidroacanthoma simplex. The patient was advised complete surgical excision, and the postoperative course was uneventful with no evidence of recurrence on follow-up. This case highlights the diagnostic dilemma posed by pigmented variants of hidroacanthoma simplex and underscores the importance of histopathological evaluation in distinguishing it from malignant cutaneous neoplasms. Awareness of this entity and its characteristic features is essential for accurate diagnosis and appropriate management, especially in elderly patients presenting with atypical pigmented plaques. Early recognition helps prevent unnecessary aggressive treatment and ensures optimal patient outcomes.

Keywords:

Hidroacanthoma simplex;
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eccrine adnexal tumor; pigmented
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Introduction

Hidroacanthoma simplex is an uncommon benign adnexal neoplasm originating from the intraepidermal portion of the eccrine sweat duct, also known as the acrosyringium [1]. First described by Smith and Coburn in 1956 [1], it is classified among poroid neoplasms, which include

eccrine poroma, dermal duct tumor, and poroid hidradenoma [2]. Among these, hidroacanthoma simplex is unique due to its strictly intraepidermal localization [2].

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Clinically, the lesion typically presents as a slightly elevated, verrucous or plaque-like lesion, often on the trunk or extremities of elderly individuals [3]. Pigmented variants are particularly challenging as they may mimic melanocytic lesions or malignant epithelial tumors such as Bowen disease or basal cell carcinoma [3, 4]. Due to this nonspecific clinical appearance, histopathological examination remains the gold standard for diagnosis [2]. We present a case of pigmented hidroacanthoma simplex mimicking malignancy, emphasizing the importance of clinicopathological correlation.

Case Presentation

A 73-year-old female presented with a gradually enlarging pigmented lesion over the right buttock for approximately one year. The lesion initially appeared as a small dark macule and progressively increased in size. The patient denied any associated symptoms such as pain, pruritus, bleeding, or discharge.

Cutaneous examination revealed a well-demarcated hyperpigmented verrucous plaque measuring approximately 7 × 5 cm over the right buttock, with an irregular surface and areas of variable pigmentation (**Figure 1**). Additionally, a jet-black arcuate plaque with sharply defined borders was observed over the breast, clinically raising suspicion of a melanocytic or malignant lesion (**Figure 2**). Both lesions were non-tender and firm in consistency. No ulceration, crusting, or regional lymphadenopathy was noted.

Based on the clinical morphology, differential diagnoses included seborrheic keratosis, Bowen disease, pigmented basal cell carcinoma, and clear cell acanthoma. A skin biopsy was performed to establish a definitive diagnosis.

Histopathological Findings Histopathological examination revealed marked hyperkeratosis and acanthosis of the epidermis. Multiple well-circumscribed intraepidermal nests of poroid cells were identified, consistent with the Borst–Jadassohn phenomenon (**Figure 3**). At higher magnification, these nests were composed of uniform basaloid cells confined to the epidermis with minimal cytologic atypia (**Figure 4**).

Further magnification demonstrated small cuboidal poroid cells with round nuclei and scant cytoplasm, along with focal duct-like luminal structures suggestive of eccrine differentiation (**Figure 5**). High-power examination confirmed well-defined intraepidermal nests with ductal differentiation, supporting the diagnosis of hidroacanthoma simplex (**Figure 6**). The underlying dermis showed mild inflammatory infiltrate without evidence of invasion.

Discussion

Hidroacanthoma simplex is a rare variant of eccrine poroma characterized by intraepidermal proliferation of poroid cells [2]. It commonly affects elderly individuals and is most often located on the trunk and extremities [3]. Clinically, it may resemble several benign and malignant cutaneous lesions, leading to diagnostic confusion [3, 4].

The hallmark histopathological feature is the presence of intraepidermal nests of poroid cells forming the Borst–Jadassohn phenomenon [2]. These cells are small, cuboidal, and uniform, often showing ductal differentiation, which confirms eccrine origin [2]. Pigmented variants are particularly rare and may closely mimic melanocytic lesions or pigmented basal cell carcinoma [4]. The pigmentation is attributed to melanocyte colonization or melanin accumulation within tumor cells [4].

Recent molecular studies have identified recurrent YAP1 gene fusions in poroid neoplasms, suggesting a common pathogenetic mechanism [5]. Although benign, rare cases of malignant transformation into eccrine porocarcinoma have been documented [6]. This case is unique due to its large size, prominent pigmentation, and clinical mimicry of malignancy. The diagnosis in the present case was established based on the characteristic intraepidermal nests of poroid cells forming the Borst–Jadassohn phenomenon (**Figures 3–6**), along with ductal differentiation confirming eccrine origin.

Conclusion

Hidroacanthoma simplex is a rare intraepidermal eccrine adnexal tumor that may clinically resemble various benign and malignant cutaneous neoplasms. Because the clinical appearance is often nonspecific,

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histopathological examination remains essential for establishing the diagnosis. Awareness of this uncommon entity and its characteristic histologic features can help avoid diagnostic pitfalls and ensure appropriate treatment.

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Figure Legends

Figure 1. Clinical photograph showing a well-demarcated, hyperpigmented verrucous plaque with irregular surface and focal scaling over the right buttock.



Figure 2. Clinical image depicting a jet-black, sharply demarcated arcuate pigmented plaque over the breast, clinically mimicking a melanocytic or malignant lesion.



Figure 3. Low-power histopathological view (Hematoxylin–eosin stain, ×40) showing acanthotic epidermis with multiple well-circumscribed intraepidermal nests of poroid cells.

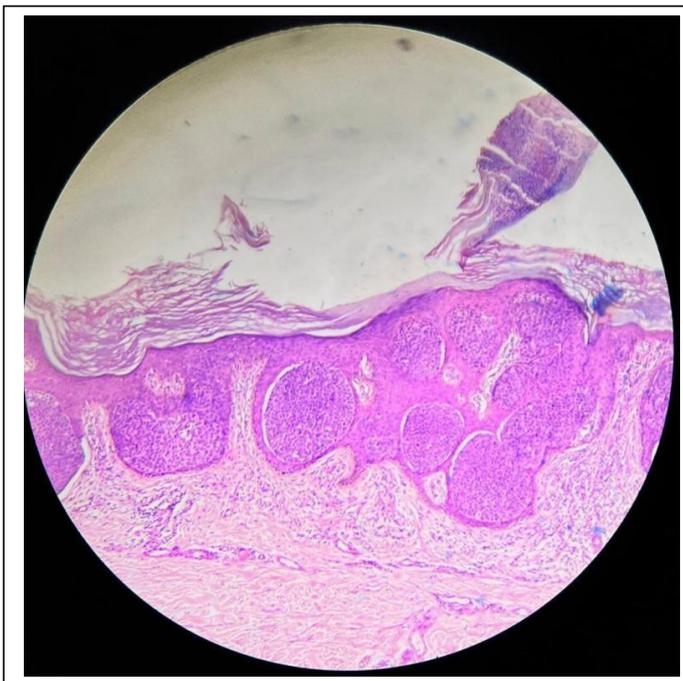


Figure 4. Histopathology (Hematoxylin–eosin stain, $\times 100$) demonstrating intraepidermal proliferation of uniform basaloid (poroid) cells arranged in discrete nests, consistent with the Borst–Jadassohn phenomenon.

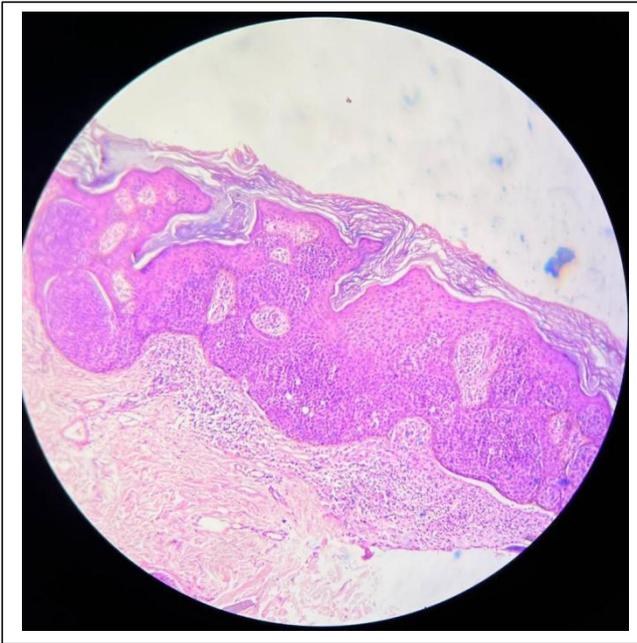


Figure 5. Higher magnification (Hematoxylin–eosin stain, $\times 200$) showing poroid cells with round to oval nuclei, minimal cytologic atypia, and focal duct-like luminal differentiation indicating eccrine origin.

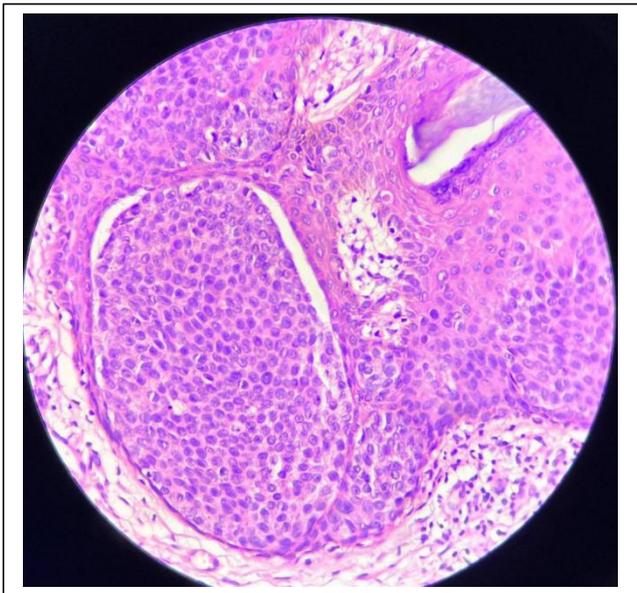


Figure 6. High-power histopathological image (Hematoxylin–eosin stain, ×400) highlighting well-defined nests of poroid cells with intercellular bridges and focal ductal structures, confirming the diagnosis of hidroacanthoma simplex.

