Clinical, dermoscopic, and histopathologic findings of hidroacanthoma simplex: a case report and literature review

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Abstract

Hidroacanthoma simplex (HS) is a rare benign intraepidermal tumor that originates in the acrosyringial portion of the eccrine duct. Clinically, they are well-defined lesions, flat or verrucous brownish plaque, and can be misdiagnosed with other types of benign or malignant tumors. Dermoscopy reveals small black globules and fine scales. The histopathology of HS is characterized by typical intraepidermal nests, well-circumscribed, composed of uniform basaloid and poroid cells within the acanthotic epidermis with cystic or ductal structures in the nests. We report a case of HS that changes its clinical appearance, dermoscopy, and histopathologic findings over time. Differential diagnoses included seborrheic keratosis, Bowen disease, melanoma, and malignant HS.

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Introduction

Hidroacanthoma simplex (HS) is a rare intraepidermal benign tumor in the acrosyringeal portion of the eccrine duct.[1-9] HS is frequently found on the lower limbs and trunk, and the lesions present as flat brownish or verrucous plaques.[1-4] Its clinical diagnosis is often confused with squamous cell carcinoma *in situ* [Bowen's disease (BD)], seborrheic keratosis (SK), or another adnexal tumor.[1-9]

The dermoscopic findings of HS are not well defined in the literature, but some characteristics have been reported. Small black globules and fine scales with annular distribution were described as characteristic of HS.[5,6] Dots vessels are not specific but can be found.[5,6]

Histopathologically, HS is characterized by well-circumscribed intraepidermal nests composed of uniform basaloid and poroid cells within the acanthotic epidermis, which may contain cystic or ductal structures in it.[1-8] The existence of well-defined nests within the epidermis, whether the cells are typical or atypical, is known as the Borst-Jadassohn phenomenon.[1-3,6-8] This morphological phenomenon is not exclusively present in HS and can be observed in several malignant or benign lesions, including clonal seborrheic keratosis (cSK), BD, and porocarcinoma.[1-3,6-8]

Since the cSK is also composed mainly of basaloid cells, it is difficult to perform its differential diagnosis accurately.[1-3,6-8]

There are reports of malignant transformation of HS through time or after cryosurgery. Malignant HS has metastatic potential with associated mortality.[4,7,9]

Case Report

A 65-year-old male came for his first visit with a history of melanoma on the back and multiple non-melanoma skin cancer on the trunk and arms in the last five years. He complained of a lesion on his right leg, which had already been biopsied in 2017 but was increasing in diameter. In this first biopsy, the histopathological result showed an epidermal lesion with the proliferation of small, round cells with a hyperchromatic nucleus and scarce cytoplasm

without atypia, forming nests with well-defined contours in the interpapillary cones, papillomatosis, and laminar orthokeratosis with a diagnosis of hidroacanthoma simplex (Figure 1A and B).

In our first exam in 2019, he had a brownish keratotic well-delimited plaque with irregular edges of approximately 5 cm in diameter on his right leg. It varied in shades of dark brown on the upper part and light brown on the lower with an erythematous area in the middle (Figure 2A). The dermoscopy showed brownish globules with an erythematous area, where dots and glomerular vessels were observed (Figure 2B). The histopathology at this time revealed an epidermal lesion with several foci of the proliferation of epithelial cells, with basaloid, round, and small, without atypia or mitosis. Such cells formed teak-shaped nests with regular sizes and rounded contours arranged discontinuously. The papillary dermis showed vascular proliferation and a slight lymphocytic inflammatory infiltrate with a diagnosis of clonal seborrheic keratosis (Figure 2C-E). The patient was oriented to return for follow-up and in case of any clinical modification.

In 2021, the patient returned as the lesion had grown. A papular erythematous component appeared in the middle of the lesion (Figure 3A). Dermoscopy showed brownish areas with rounded, brown, and well-defined structures throughout the lesion and an erythematous area with glomerular vessels and chrysalis (Figure 3B). Given the suspicion of malignant transformation, a third biopsy was performed, which confirmed the diagnosis of hidroacanthoma simplex due to the presence of intraepithelial neoplasia constituted by the proliferation of poroid cells, forming nests surrounded by ducts of different sizes lined by cuticular cells (Figure 3C and D). The complete excision was not indicated at that moment.

Discussion

Hidroacanthoma simplex can be easily confused with other benign and malignant tumors, which may present the Borst-Jadassohn morphological phenomenon, including cKS, BD, and porocarcinoma, which leads to misdiagnosis and treatment.[1-9]

Shiiya *et al*. described 4 cases of HS to distinguish it from BD and cKS.[5] The authors concluded that small black globules (75% of cases) and fine scales distributed annularly (100%) were characteristic of HS. Glomerular vessels are highly suggestive of BD, although they were absent in the 4 lesions described. Regarding cKS, as it presents a variety of dermoscopic findings, it can be challenging to differentiate precisely some types of seborrheic keratosis from HS by dermoscopy alone.[5] In our case, although small black globules and fine scales were distributed in the lesions, the presence of glomerular vessels was also noted, which led to the initial suspicion of BD. It is possible to differentiate BD from HS by its cytological and architectural characteristics in the histopathological study.[4] BD is characterized by acanthosis with total disorganization of the epidermal architecture, lack of cell polarity, and loss of maturation.[1] Tumor cells are large with atypical hyperchromatic nuclei and abundant cytoplasm.[1] Numerous mitotic figures, including atypical forms, can be observed.[1] These findings were not found in our case. It can be challenging to differentiate cSK from HS on histopathological examination as the Borst-Jadassohn phenomenon is present in both entities.[1-9] HS presents discrete intraepidermal circumscribed nests of pale-stained basaloid cells within an irregularly acanthotic epidermis, mimicking cSK, evidenced in the second biopsy.[1-8] In our case, it was misdiagnosed as the tissue sample analyzed was a fragment of an incisional biopsy, and the previous diagnosis should be considered, being a teaching point to keep in mind. The HS can also comprise nests of poroid cells within an acanthotic epidermis and

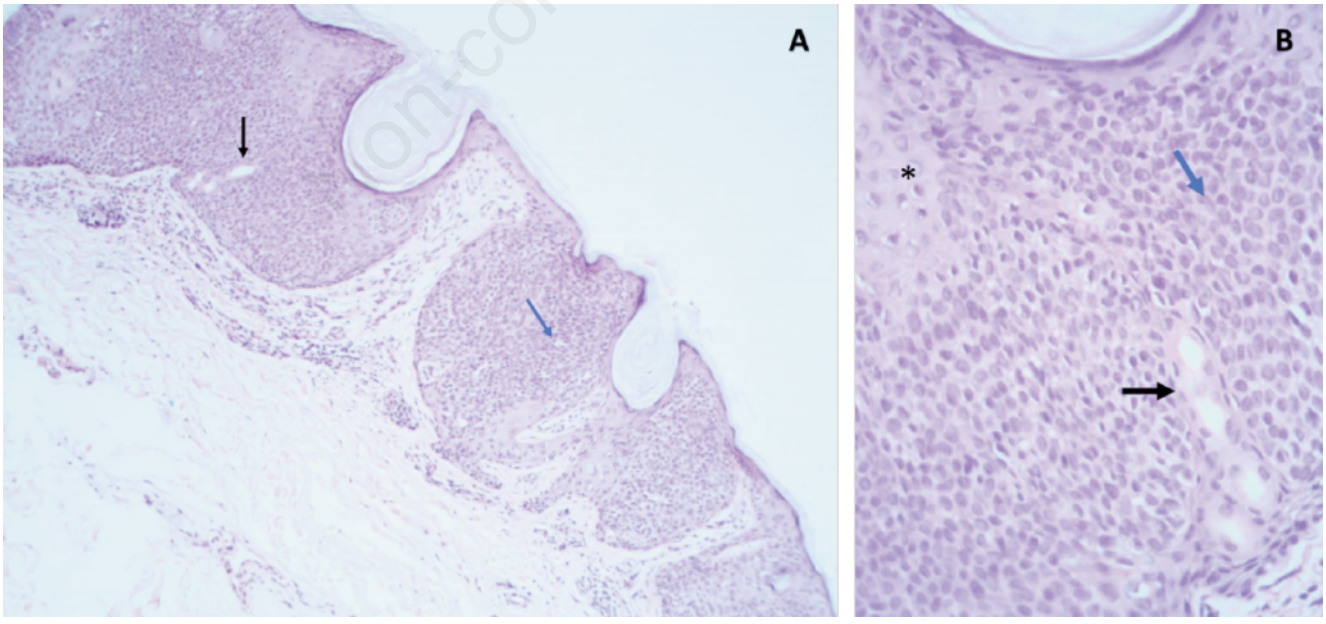

Figure 1. Epidermis with orthokeratosis, mild papillomatosis, acanthosis with nests of small, round cells without atypia, poroid in appearance (blue arrow), smaller than the surrounding keratinocytes (*). A duct is seen among the poroid-looking cells (black arrow). A) Hematoxylin and eosin, 100×; B) Hematoxylin and eosin, 400×.

contain cystic or ductal structures in the nests, characteristics that are not present in cSK.[1-3,6,8] These findings were evidenced in the third biopsy, confirming the diagnosis of HS. The literature demonstrates that it is also acceptable to diagnose HS if the condition coexists with one or more types of poroma (*e.g.*, Pinkus-type poroma, poroid hidradenoma, or dermal duct tumor),[8] not observed in our case.

Conclusions

HS is a clinically underdiagnosed and misdiagnosed entity due to its similarity with other skin tumors. Histological exams are essential to avoid mistreatment, as dermoscopy cannot help differentiate between other benign and malignant lesions. More reports compiling clinical, dermoscopic, and histological findings can help us identify this entity earlier.

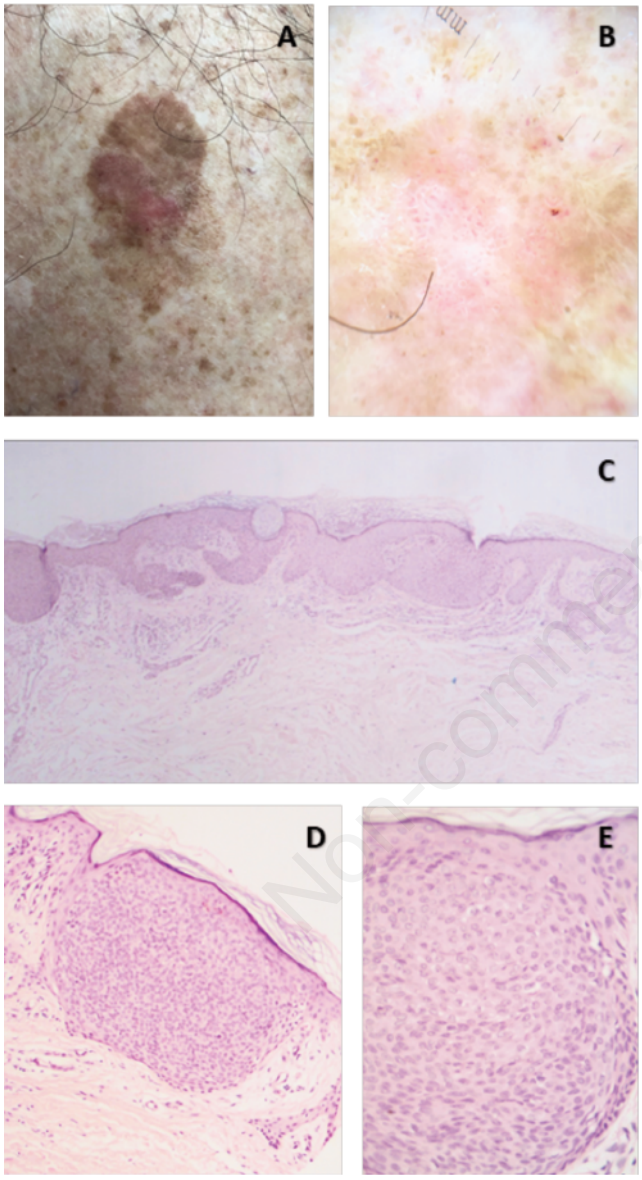

Figure 2. A) Clinically, brownish keratotic well-delimited plaque with irregular edges. Area of erythema in the middle of the lesion; B) Dermoscopy showed brownish globules around an erythematous area, where dots and glomerular vessels were observed; C) Fragment of the lesion showing defined nests of small, round, poroid, or basaloid-shaped cells without atypia located in the spinous layer of the acanthotic epidermis, characterizing the Borst-Jadassohn phenomenon. Hematoxylin and eosin, (original magnification) 40×; D) Hematoxylin and eosin 100×; E) Hematoxylin and eosin 400×.

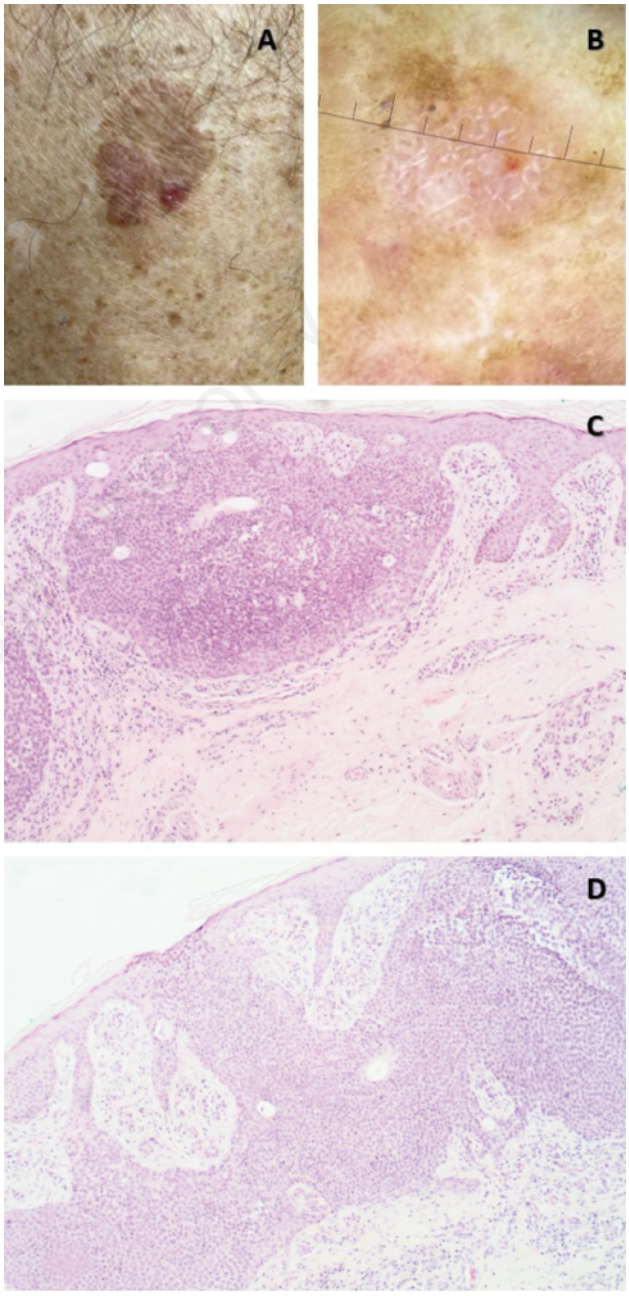

Figure 3. A) Clinically, brownish keratotic well-delimited plaque with irregular edges with a papular erythematous component is in the middle of the lesion; B) Dermoscopy, an erythematous area with glomerular vessels and chrysalis surrounded by several rounds, brown, well-delimited structures throughout the lesion characterizing the Borst-Jadassohn phenomenon; C) Proliferation of poroid cells in the epidermis with some ductal structures. (Hematoxilin and eosin, ×100); D) The intraepidermal proliferation of small round cells (poroid cells) and ductal structures (Hematoxylin and Eosin, ×100).

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