Case Studies

Porokeratoma: A Possible Association with Human Papillomavirus Infection

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Key Words

Porokeratosis · Porokeratoma · Cornoid lamellae · Human papillomavirus

Abstract

Porokeratoma is a rare, relatively newly described and still unclear entity. Here, we describe the case of a 52-year-old male patient who presented with four well-defined, verrucous and hyperkeratotic lesions. Microscopically, one of the lesions showed acanthopapillomatosis overlying compact orthokeratosis. Prominent broad and confluent cornoid lamellae were present, with no granular layer and some dyskeratotic keratinocytes. PCR sequencing and in situ hybridization revealed the presence of human papillomavirus (HPV) type 16 in the lesion. The association of porokeratoma and HPV infection has not previously been reported.

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Background

Porokeratoma is a relatively new entity, first described in 2007 by Walsh et al. [1] as an acanthoma with features of porokeratosis. Here, we describe the case of a 52-year-old male patient known for chronic lymphoid leukemia; he underwent a bone marrow transplantation and photopheresis for graft-versus-host disease and had no prior diagnosis or family history of porokeratosis. He presented with four well-defined hyperkeratotic and verrucous lesions in the legs and pubis. The mucous membranes were not affected. The clinical differential diagnosis was verruca vulgaris and squamous cell carcinoma. Excisional biopsy of the four lesions was performed.

Methods

The biopsy materials obtained from the patient were fixed in formalin, embedded in paraffin, cut at 5 µm and stained with hematoxylin-eosin. PCR sequencing and in situ hybridization for human papillomavirus (HPV) was made in one of the specimens.

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Fig. 1. Well-defined lesion (**a**; original magnification $\times 1$) showing acanthopapillomatosis (**b, c**; original magnification $\times 10$) with multiple cornoid lamellae (**d, e**; original magnification $\times 20$).

Results

On histological examination, three of the lesions were diagnosed as verruca vulgaris. One of the lesions, located on the leg, appeared different. It was well circumscribed and consisted of acanthotic epidermis with papillomatosis and compact orthokeratosis. The major part of the lesion showed prominent broad and confluent cornoid lamellae, below which the granular layer was absent and dyskeratotic keratinocytes were identified. An abrupt transition to normal cornification was seen at the lateral edges of the lesion, and there was a chronic inflammation of the superficial dermis (fig. 1). The clinical and histological aspects of this lesion led to the diagnosis of porokeratoma. The PCR and in situ hybridization studies for HPV resulted positive for type 16 (data not shown).

Discussion

Porokeratosis is a disorder of cornification due to genetic predisposition with many different clinical expressions. The most important clinical forms are porokeratosis of Mibelli and disseminated superficial actinic porokeratosis. Rare clinical variants include porokeratosis palmaris et plantaris disseminata, linear porokeratosis and punctate porokeratosis [1, 2]. Each of these variants has distinctive clinical and histological features, but all are characterized by the presence of cornoid lamellae, which are a specific disorder of epidermal maturation [1]. At microscopy, cornoid lamellae are defined by a linear column of parakeratotic cells with an absent or decreased underlying granular layer and vacuolated or dyskeratotic

cells in the spinous layer [2]. This microscopic feature is the key to porokeratosis and its clinical variants, but it can be found incidentally in a variety of skin lesions such as actinic keratosis, seborrheic keratosis, scars, verruca vulgaris, milia, squamous cell carcinoma and basal cell carcinoma [1, 3].

Porokeratoma is an acanthoma containing multiple and confluent cornoid lamellae which has only recently been described. Very few cases have been presented in the literature, the largest series, published by Walsh et al. [1], reporting 11 cases. In this series, the mean age of the patients was 57 years, and there was a male predominance. The majority of the previously reported cases of porokeratomas have been solitary, except for one reported by Batalla et al. [4], where the patient presented with multiple lesions. Porokeratoma usually appears in patients without a personal or familial history of porokeratosis. Although many cases of porokeratosis have been associated with immunosuppression, none of the cases of porokeratoma described to date has shown this association [1, 4, 5]. Clinically, porokeratoma is described as hyperkeratotic scaling plaques, papules or nodules, and it can occasionally have a verrucous appearance [1]. The most frequent localization is on the extremities, followed by the head and neck, chest, buttocks and intergluteal cleft. Histological examination shows a well-defined lesion characterized by acanthosis and verrucous hyperplasia with prominent multiple and confluent cornoid lamellae. Batalla et al. [4] and Kanitakis et al. [5] reported two patients with ankylosing spondylarthritis, with a possible association between the two entities.

Although porokeratoma shares the histological feature of cornoid lamellae, it is clinically and morphologically distinct from porokeratosis and its variants [1]. In addition to differences in clinical presentation, porokeratoma differs from porokeratosis at the histological level, since there is no central epidermal atrophy and the cornoid lamellae are embedded throughout the entire horny layer instead of being present only at the borders [5].

Malignant neoplasms have been reported in different clinical variants of porokeratosis, with squamous cell carcinoma being observed most frequently [6, 7]. Due to the similarities with porokeratosis, it was suggested that porokeratoma might also have a potential for malignant transformation. Although malignant transformation has not yet been reported in porokeratoma, excision and close follow-up are indicated, especially if patients are immunocompromised [1, 5, 6].

We conclude that the case presented here is a porokeratoma. We cannot totally exclude a verruca vulgaris with cornoid lamellation, but the clear predominance of a cornoid lamellation pattern favors the diagnosis of porokeratoma; in addition, the detection of HPV DNA by molecular study suggests a possible association with HPV infection.

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