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CASE REPORT

Disseminated superficial actinic porokeratosis with progression to squamous cell carcinoma: case report

Poroceratose actínica superficial disseminada com evolução para carcinoma espinocelular: relato de caso

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Abstract

Porokeratoses are dermatoses characterized by defective epidermal maturation, leading to the formation of abnormal cornoid lamellae. Disseminated superficial actinic porokeratosis (DSAP) is the most common variant. Malignant transformation into squamous cell carcinoma (SCC) is rare, particularly in immunosuppressed patients. A 70-year-old male with extensive photodamage, no comorbidities or immunosuppression, presented with annular papules and plaques with hyperkeratotic borders on sun-exposed areas. Biopsy of a typical lesion confirmed DSAP, while biopsy of a verrucous lesion on the right lower limb revealed SCC. Surgical excision of the malignant lesion was performed, and acitretin therapy was initiated with a good response. Clinical surveillance in chronic photo-induced dermatoses is of great importance, allowing early diagnosis of potential malignant transformation.

Keywords: Disseminated superficial actinic porokeratosis. Squamous cell carcinoma. Cutaneous neoplasms.

Resumo

Poroceratoses são dermatoses com defeito na maturação epidérmica, formando lamelas córneas anormais e sua variante actínica superficial disseminada (DSAP) é a mais comum. A transformação maligna para carcinoma espinocelular (CEC) é rara, e especialmente em pacientes imunossuprimidos. Homem, 70 anos, com intenso fotodano, sem comorbidades ou imunossupressão, apresentava pápulas e placas anulares com bordas hiperceratóticas em áreas fotoexpostas. Biópsia de lesão típica confirmou DSAP e de lesão verrucosa em membro inferior direito revelou CEC. Realizou-se excisão cirúrgica da lesão maligna e iniciou-se acitretina, com boa resposta. A vigilância clínica nas dermatoses crônicas fotoinduzidas é de suma importância, possibilitando diagnóstico precoce de possíveis malignização das lesões.

Palavras-chave: Poroceratose actínica disseminada superficial. Carcinoma espinocelular. Neoplasias cutâneas.

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Introduction

Porokeratoses are a group of dermatoses characterized by a defect in epidermal maturation, resulting in the formation of abnormal cornoid lamellae. Disseminated superficial actinic porokeratosis (DSAP) is the most common variant and presents as papules and plaques with hyperkeratotic borders, predominantly on sun-exposed areas. It is often associated with genetic predisposition and chronic sun exposure[1,2]. Malignant transformation into squamous cell carcinoma (SCC) is a rare but significant complication, particularly in immunosuppressed patients or those with extensive photodamage[3,4]. The present case is noteworthy due to the rare progression to SCC in an immunocompetent patient, underscoring the importance of clinical vigilance and early diagnosis.

Case report

A 70-year-old male patient, Fitzpatrick phototype II, a construction worker with intense occupational sun exposure since youth, had no comorbidities or history of immunosuppression. He reported the gradual onset of erythematous, scaly skin lesions with raised borders on the upper and lower limbs and back, followed by accelerated growth over the past 2 years. He also noted a change in the pattern of a lesion on the right lower limb approximately 1 year ago.

Physical examination revealed multiple annular papules and plaques with well-defined, hyperkeratotic borders, displaying a brownish central area under dermoscopy, predominantly in sun-exposed regions (Figs. 1 and 2). One lesion on the right lower limb had a verrucous surface (Fig. 3).

Two incisional biopsies were performed: one on a typical annular lesion and another on the verrucous lesion. Histopathological examination of the former showed hyperkeratosis with focal parakeratosis, regular acanthosis, a focal area of keratinocyte necrosis, solar elastosis, and a dermal lymphohistiocytic inflammatory infiltrate (Fig. 4). The biopsy of the verrucous lesion revealed a malignant keratinocytic neoplasm composed of atypical keratinocytes with keratin pearl formation and invasion of the reticular dermis (Fig. 5).

Surgical excision of the malignant lesion with oncologic margins was performed, and treatment with acitretin 20 mg/day was initiated for the porokeratosis lesions due to their extensive involvement, lesion severity, and significant impact on quality of life. The patient continues regular dermatologic outpatient follow-up, with strict photoprotection guidelines and a good therapeutic response.

Discussion

DSAP has a multifactorial etiology involving genetic predisposition, prolonged sun exposure, and, in some cases, immunosuppression. Mutations in the mevalonate kinase gene have been described as part of the disease's pathogenesis, suggesting a potential involvement of the cholesterol biosynthesis pathway[5]. Although considered benign, progression to SCC is

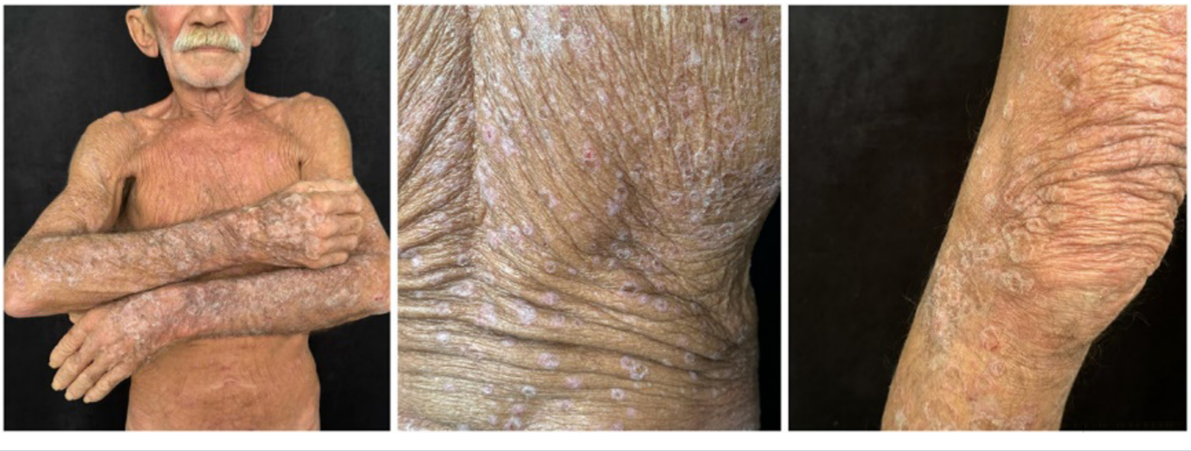

Figure 1. Multiple annular papules and plaques with well-defined margins and hyperkeratotic borders, predominantly in photoexposed areas.

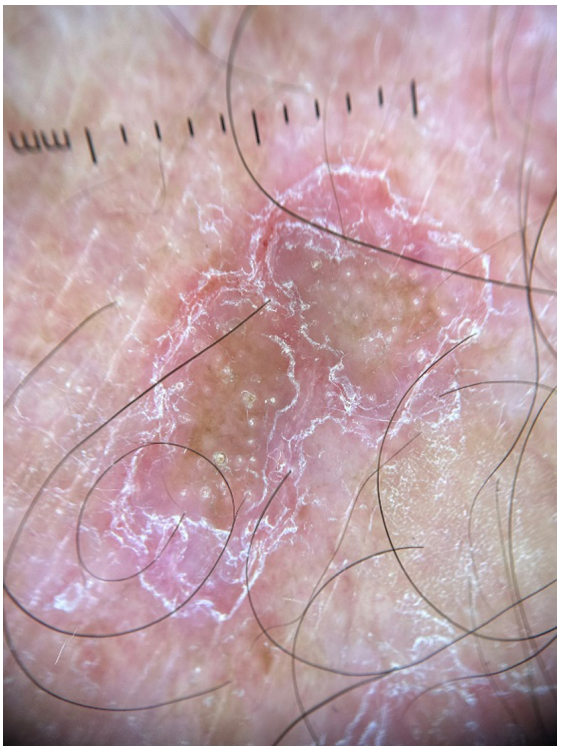

Figure 2. Hyperkeratotic plaques with irregular double peripheral borders and central brownish pigmentation.

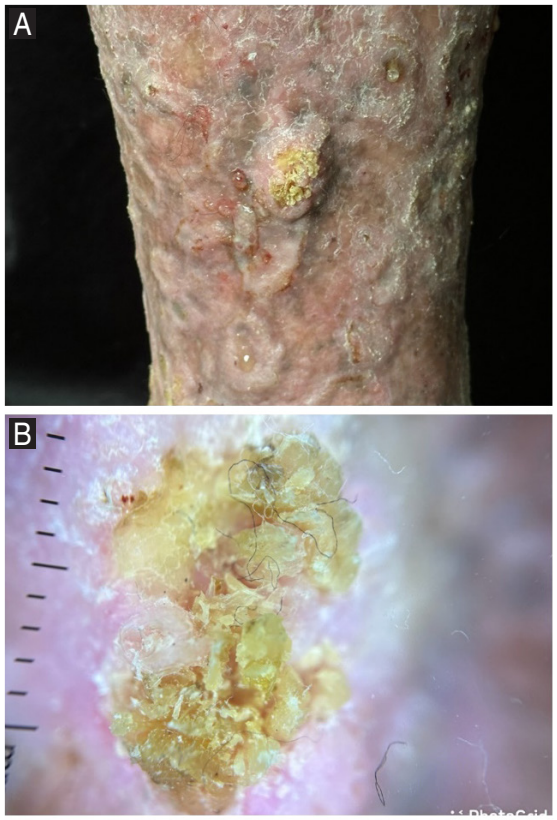

Figure 3. Slightly erythematous nodule located over pre-existing porokeratosis lesions **(A)**, with a verrucous surface and yellowish coloration better visualized under dermoscopy **(B)**.

well-documented in the literature, especially in long-standing cases, with intense photodamage and advanced age[3,4].

In the case presented, malignant transformation occurred in an immunocompetent patient, highlighting the isolated role of chronic sun exposure and cutaneous aging as significant risk factors. The presence of a rapidly growing lesion with ulceration and marked hyperkeratosis raised clinical suspicion of malignant degeneration, which was confirmed by histopathology.

Definitive diagnosis was achieved through histopathological examination, considered the gold standard for both DSAP and SCC. Surgical excision proved to be an appropriate therapeutic decision, allowing complete lesion removal and continued monitoring.

This case is academically relevant as it illustrates the need for ongoing clinical attention in chronic photo-induced dermatoses, even in the absence of immunosuppression. Furthermore, it reinforces the importance of clinicopathologic correlation for the early diagnosis of malignant transformation in seemingly indolent cutaneous diseases.

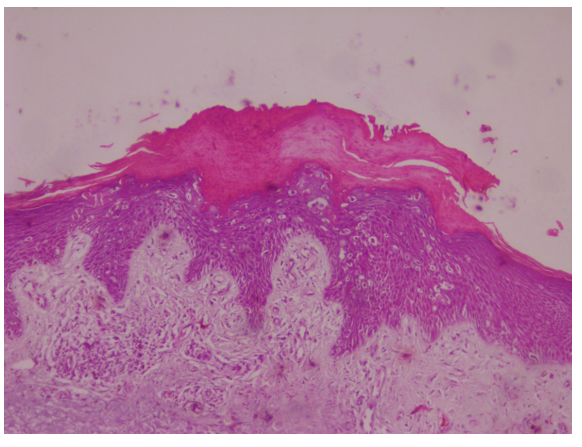

Figure 4. Histopathological examination of an annular lesion showing hyperkeratosis with focal parakeratosis, regular acanthosis, and a focal area of keratinocyte necrosis, along with solar elastosis and a dermal lymphohistiocytic inflammatory infiltrate (H&E ×100).

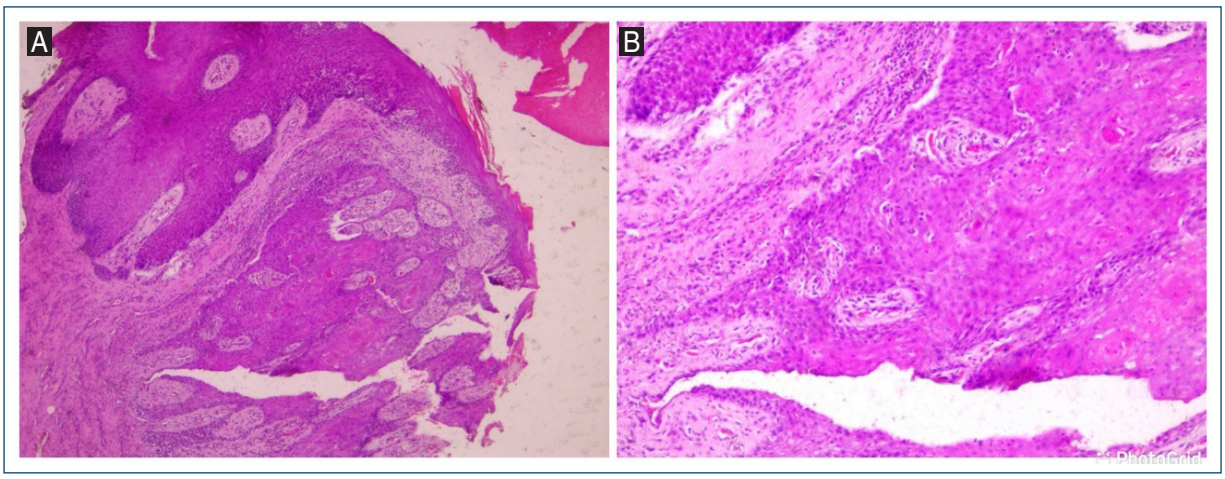

Figure 5. Histopathological study showing malignant keratinocytic neoplasm composed of atypical keratinocytes with keratin pearl formation and invasion of the reticular dermis – H&E ×100 **(A)** and ×200 **(B)**.

Conclusion

This case reinforces the importance of maintaining high clinical suspicion for malignant transformation in patients with disseminated superficial actinic porokeratosis, even in the absence of immunosuppression. Chronic sun exposure and cutaneous aging alone may suffice as risk factors for squamous cell carcinoma development in long-standing lesions. Early recognition of suspicious changes and prompt histopathological confirmation are essential to ensure timely treatment and favorable outcomes. Continued clinical monitoring and photoprotection remain key pillars in the management of chronic photo-induced dermatoses.

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None.

Conflicts of interest

None.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments involving humans or animals were conducted for this research.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's confidentiality protocols, obtained informed consent from patients, and received approval from the Ethics Committee. The SAGER guidelines were followed according to the nature of the study.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing of this manuscript.

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