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CASE REPORT

Single-plaque psoriasis: a single-clue diagnostic challenge

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Introduction: Psoriasis is a chronic, common immune inflammatory condition of the skin, affecting 2-3% of the population, with regional variability. Classically, psoriasis presents as one of the following types: plaque, guttate, inverse, pustular or erythrodermic psoriasis. Typically, the patient will present with several symmetric psoriatic plaques on typical areas of the body, leading the clinician towards the diagnosis of psoriasis. **Case report**: The present case report series focuses on an atypical presentation of psoriasis noted in 2 patients who presented to our office with a single large, erythematous plaque located on the lower leg. Due to poor response to previous treatment, a biopsy was performed and upon analysis, revealed a diagnosis of psoriasis. The lesions showed significant improvement under local therapy. **Conclusion**: In spite of significant research on such a common and seemingly well-understood dermatosis, the present case reports plead for further study with regards to atypical presentations of psoriasis.

Keywords: psoriasis, single plaque, histopathology, unilateral

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Introduction

Psoriasis is one of the more common dermatological conditions, with a global prevalence of approximatively 2-3% [1]. It is a chronic inflammatory immune-mediated disease, manifesting through excessive proliferation of keratinocytes and uncontrolled angiogenesis.

Clinically, the psoriasis plaque is described as a sharp, scaly, indurated, silvery plaque associating pruriginous symptoms, typically located on the trunk, scalp or extensor surfaces. In time, the plaques may coalesce and extend, thus covering significant areas of the epidermis [2]. Classical dermatological semiology recognizes the following types of psoriasis: plaque, guttate, inverse, pustular and erythrodermic [3].

Psoriasis is a multifactorial condition, whereby a genetically predisposed individual encountering environmental triggers will develop the condition. Further on, exacerbations of psoriasis can lead to systemic inflammation and cardiovascular comorbidity, alongside the significant burden on the quality of life of the patient.

The following case report showcases two atypical psoriasis cases, with the diagnosis being confirmed through histopathological analysis of the biopsy samples.

Case report

Patient 1

A 27-year old male presented to our dermatology clinic with a pale red lesion located on the anterior aspect of the right lower leg. The patient history revealed that the lesion appeared spontaneously 2 years prior to our consult, did not associate symptoms such as pain or itching and did not respond to courses of therapy prescribed by previous practitioners. Furthermore, the lesion was reported to be extending to the adjacent skin. The patient has no family history of dermatological conditions, and was otherwise clinically healthy upon presentation.

On previous consults in different clinics, the patient underwent several treatment regimens with Clotrimazol 10mg/g ointment, Clobetasol 0,5 mg/g ointment, Fusidic acid 20mg/g ointment, Betamethasone, clotrimazol, gentamycin 0,5mg+10mg+1mg/g cream , with no resolution of the lesion.

On examination, we noted the presence of a large, scaly, erythematous plaque measuring 23*15,3 cm on the anterior aspect of the lower right leg, presenting erosions on the internal lesion margin (Figure 1). The surrounding epithelium was intact, with no venectasia. Dermatoscopy revealed clustered glomerular vessels.

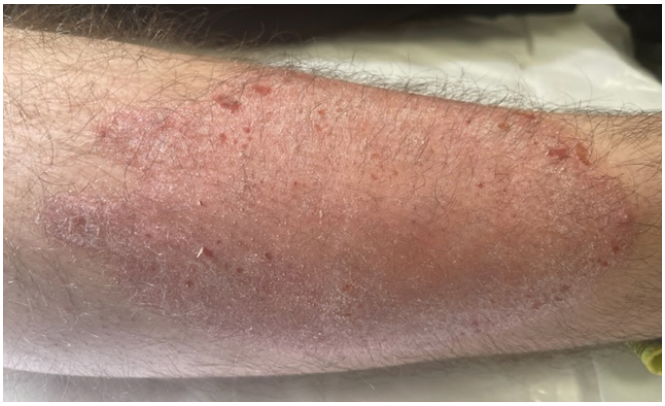

Fig 1. Lesion appearance upon initial examination

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The lack of response to treatments prescribed, as well as the patients' personal and medical history excluded a series of differential diagnoses: contact dermatitis, stasis dermatitis, tinea corporis.

Two 6mm punch biopsies were performed on the latero-external border of the lesion, sampling both affected and clinically healthy skin (Figure 2). The biopsy site aftercare consisted of sterile local bandages with betadine, with closure of the biopsy site occurring within the physiological timeframe of 1 month.

The biopsy sample was transported in a formaldehyde medium and processed by hematoxylin-eosin staining (Figure 3).

Histological analysis of the biopsy sample revealed uniform hyperplasia of the epithelium, elongated rete ridges with a thickened base, thinning of the suprapapillary plate with an absent granular layer. The lesion presents moderate inflammatory infiltration in the dermis with perivascular focus, dilation of the superficial vascular plexus, as well as intermittent parakeratosis. Histologically, the lesion presents typical aspects of psoriasis.

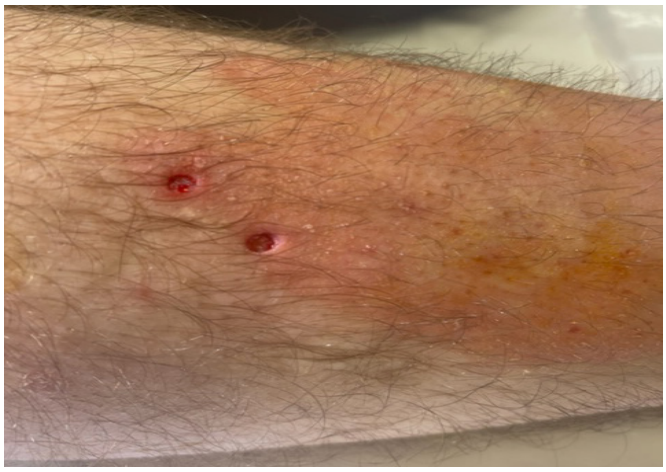

Fig 2. Lesion aspect after punch biopsy sampling

Upon establishing the diagnosis, we initiated treatment with calcipotriol and betamethasone ointment 50mcg + 0,5 mg /g twice daily. Within a month, there was marked improvement of the lesion, with a significant resolution of erythema and an absence of scales (Psoriasis Area Severity Index PASI reduced from 3,6 to 0,4).

Patient 2

A 37-year old male presented to our dermatology clinic with a several red lesions located on the external aspect of the right lower leg. The patient history revealed that a primary lesion appeared spontaneously 4-5 months prior to our consult; similar to our first patient, the lesion did not associate symptoms such as pain or itching and did not respond to courses of therapy prescribed by previous practitioners. Furthermore, the lesion was reported to be extending to the adjacent skin by way of satellite lesions. The patient history revealed a positive family history of skin disorders, with a primary cousin being diagnosed and treated successfully for psoriasis. Our patient was previously diagnosed with seborrheic dermatitis, with bilateral perinasal lesion at the moment of examination.

On previous consults in different clinics, the patient underwent several treatment regimens with Diflucortolon valerate, isoconazole nitrate 1mg+10mg/g cream, Clotrimazol 10mg/g cream, Betamethasone + gentamycin 0,5 mg + 1 mg/g cream, Hydrocortisone butyrate 1mg/g cream, with no resolution of the lesion.

On examination, we noted the presence of multiple small erythematous, shiny plaques with several of them coalescing, affecting an area of 15,4*8,2 cm. Dermatoscopical analysis revealed regularly spaced dotted vessels.

Given the extensive topical treatments used in the previous months, a purely clinical diagnosis was unlikely. This substantiated the need for histopathological analysis of the lesion.

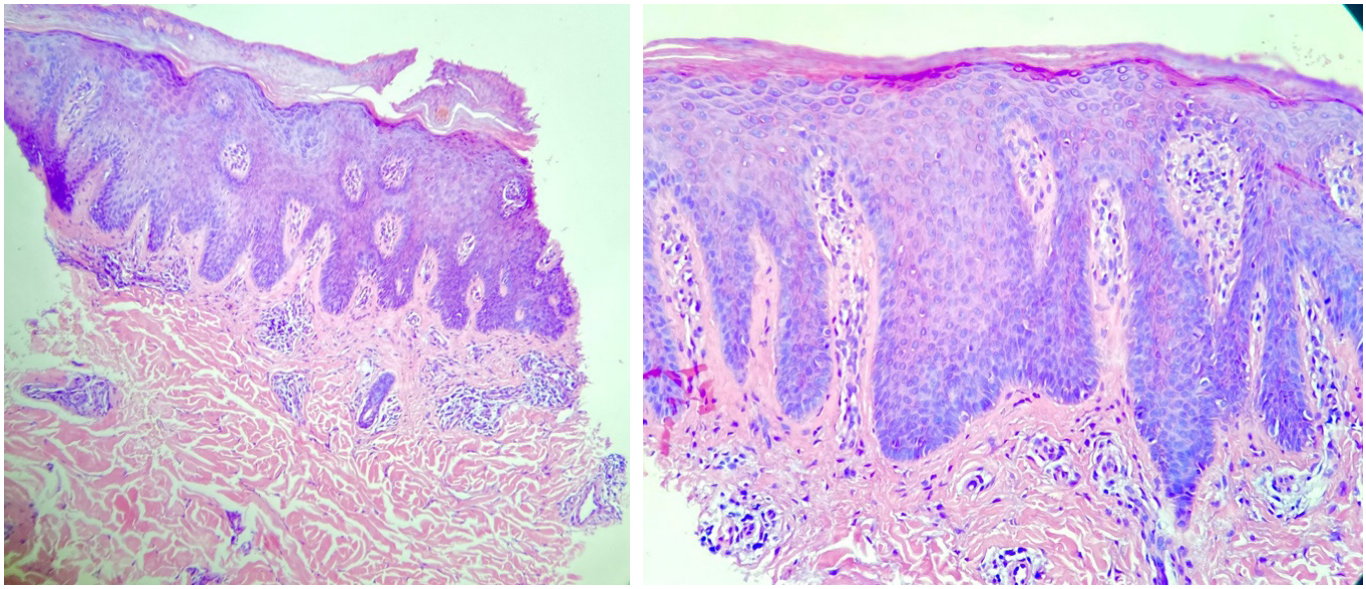

Fig 3. 10x (left) and 20x(right) HE staining of biopsy sample (Patient 1)

One 8mm punch biopsy was performed on the most recent lesion located on the anterior aspect of the coalescent plaque. The punch lesion borders were approximated by use of SteriStrips covered by a sterile bandage. Wound closure occurred within a physiological timeframe, similar to Patient 1.

The biopsy sample was transported in a formaldehyde medium and processed by hematoxylin-eosin staining (Figure 4).

Histological analysis of the biopsy sample revealed parakeratosis, elongation of the rete ridges, the main characteristic of psoriasis.

Upon establishing the diagnosis, we initiated treatment with Calcipotriol and betamethasone foam 50mcg+0,5 mg /g twice daily for 10 days. Following treatment, the lesion improved substantially, with marked decrease of erythema (PASI decreased from 2,8 to 0,8). A further course of treatment was prescribed alternating keratolytic treatment for 20 days, followed by another 10 day course of calcitriol and corticoid, until full remission of the lesion was achieved.

Discussion

To our knowledge, this is the first case report in literature describing single plaque, unilateral, lower limb presentations of psoriasis. Correct and timely diagnosis is particularly important in psoriasis, given the potential arthropathic involvement present in 30% of cases [4].

In the above-mentioned cases, a timely diagnosis would have prevented the administration of topical antibiotics, antifungal and low potency cortisone preparations. Aside from the concerns regarding antibiotic and antifungal resistance, skin microbiome imbalance and dermal atrophy, topical treatments modify the clinical and histological aspect of the lesion, hindering a correct diagnosis.

Scientific literature regarding unilateral psoriasis cases hypothesizes that in younger patients, unilateral lesions appear de novo, whereas in older patients, unilateral psoriasis lesions are reported consecutive to skin trauma such as surgical lesions [5]. In the second situation, the Koebner phenomenon explains the occurrence of the psoriasis lesion; psoriasis lesions are expected to occur within 10-20 days post-injury, however cases have been reported ranging from 3 days to 2 years post-surgical trauma [6].

A potential explanation for de novo unilateral psoriasis could be represented by genetic mosaicism [7], however other researchers suggest that neuropeptides released consecutive to nerve injury may trigger de novo psoriasis lesions [5]. These hypotheses require a series of in vitro, ex vivo and in vivo studies to be confirmed.

Another reported case of single-plaque psoriasis involved the nipple-areola complex of a 31 year old female patient. Similar to our patients, she had received a series of topical and systemic treatments without clinical improvement of the lesion. The incisional biopsy revealed a histological aspect indicating psoriasis, and upon topical calcineurin inhibitor treatment, the patient responded favorably [8].

The involvement of psoriasis regarding the oral mucosa is typically limited to a fissured, geographic tongue; however, histopathological analysis revealed a diagnosis of psoriasis in a 21 year old female patient presenting with recurrent, spontaneously remitting fissures of the vermillion and lower lip [9].

Atypical cases of psoriasis are easily confused with a plethora of other dermatological conditions, prompting repeated failed therapeutic attempts which only serve to hinder the diagnostic process. The common denominator of case presentations reporting on atypical forms of psoriasis is the recommendation to resort to biopsy analysis as early as possible. While a biopsy on an initial consult of a seemingly conventional case of dermatosis is not warranted, an initial failed therapeutic attempt should prompt the clinician to request histopathological examination of the lesion.

Conclusion

We report on 2 cases of single-lesion psoriasis, having undergone several failed treatment attempts due to a strictly clinical interpretation of the lesions presented. Histo-

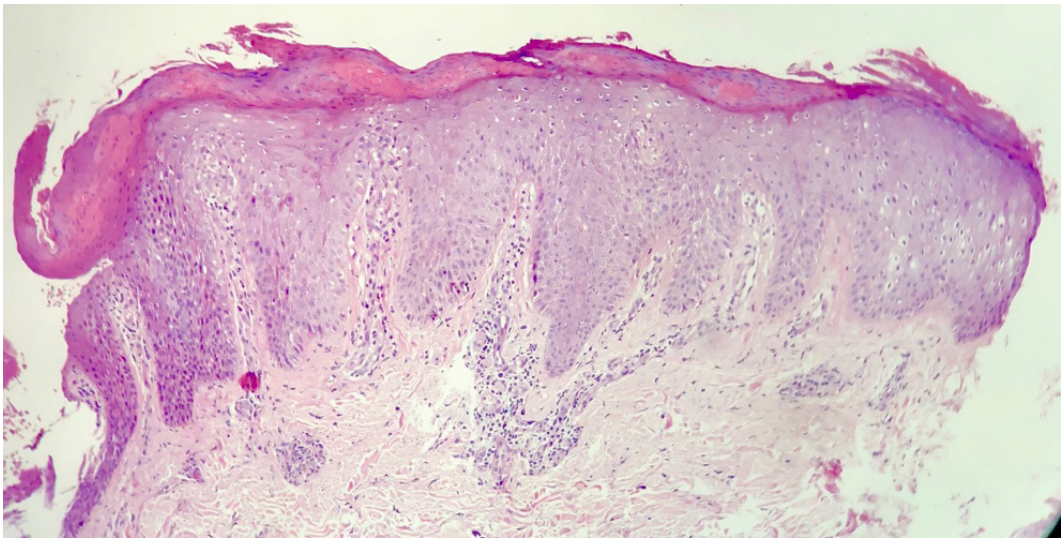

Fig 4. 10x magnification of HE stained biopsy sample (Patient 2)

pathological analysis represented a vital element leading to the correct diagnosis and management of our patients.

Author contributions

DLE was responsible for conceptualization, data curation, formal analysis, funding acquisition. IRF was responsible for supervision, validation, visualization and writing the original draft. SA was responsible for methodology, project administration, resources, software. BI was responsible for investigation, validation, visualization. MA was responsible for supervision, validation, project administration, review and editing of the manuscript.

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