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## Lichenoid Chronic Graft-vs-Host Disease Following Blaschko Lines<sup>☆</sup>

### Enfermedad del injerto contra el huésped crónica liquenoide con patrón blaschkoide

Graft-vs-host disease (GVHD) is a clinical syndrome that occurs when immunocompetent donor cells attack various host tissues, with the skin, gastrointestinal tract, and liver being the main target organs.<sup>1</sup> The onset of skin involvement in chronic GVHD is usually more than 100 days posttransplant. Signs basically consist of lichenoid eruptions and sclerodermoid manifestations, although many other patterns have also been described.<sup>2</sup> We report a new case of lichenoid chronic GVHD following Blaschko lines.

A 16-year-old boy was seen for a pruritic, linear rash on his left upper limb and the trunk that had appeared 2 weeks earlier. The patient had previously been diagnosed with a blastic plasmacytoid dendritic cell neoplasm, which was in complete remission following chemotherapy and an allogeneic bone marrow transplant with complete hematopoietic chimerism. He also had a history of acute cutaneous and intestinal GVHD. At the time of consultation, 20 months after the transplant, the patient was on low doses of methylprednisolone and ciclosporin and reported no history of herpes zoster.

Physical examination revealed 2 linear eruptions on the left upper limb—1 posterointernal and 1

posteroexternal—extending from the shoulder to the distal part of the dorsum of the first, third, fourth, and fifth fingers, respectively, of the left hand. The patient also had 3 similar S-shaped lesions on the left hemithorax that followed Blaschko lines (Fig. 1, A-C). The lesions consisted of flat, erythematous-violaceous papules measuring 1 to 3 mm that tended to coalesce. The physical examination was otherwise unremarkable.

Biopsy of a papule revealed features suggesting lichenoid dermatitis (Fig. 2). The patient was diagnosed with lichenoid chronic GVHD following Blaschko lines and, because no extracutaneous involvement was present, high-potency topical corticosteroids were prescribed. The lesions resolved after 1.5 months, leaving a slight hyperpigmentation.

Given the presence of an acquired linear lichenoid eruption along Blaschko lines, we considered the following differential diagnoses: linear lichen planus, lichen striatus, inflammatory linear verrucous epidermal nevus, linear porokeratosis, and linear psoriasis.<sup>1,3–6</sup> Nevertheless, given the patient's history of allogeneic bone marrow transplantation, localized lichenoid chronic GVHD was the first option.

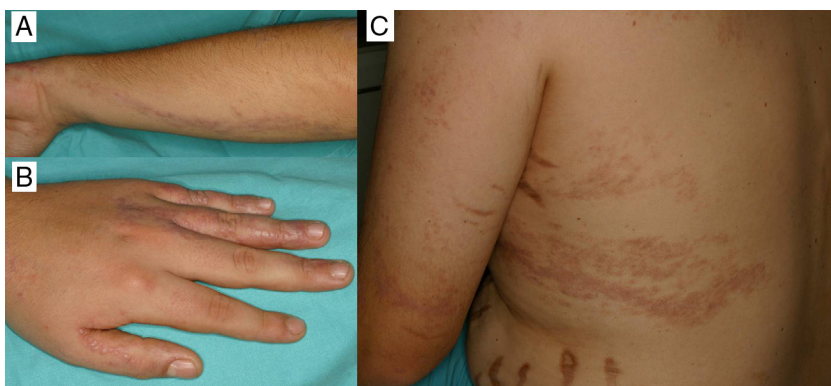
Chronic cutaneous GVHD can follow 2 main patterns: lichenoid eruptions and sclerodermoid manifestations. Other, less frequent manifestations include xerosis, poikiloderma, keratosis pilaris, ichthyosis, psoriasiform lesions, palmoplantar eczema, erythroderma, exfoliative dermatitis, and manifestations that mimic other annular dermatoses such as pityriasis rosea, centrifugal annular erythema, erythema multiforme, and subacute lupus. Most patients present generalized lesions but localized linear lesions, both lichenoid and sclerodermoid, have also been reported. Some lesions follow Blaschko lines, whereas others—with or without a history of herpes zoster in the same area—follow a metamer pattern.<sup>1–10</sup>

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**Table 1** Characteristics of Published Cases of Linear Lichenoid Graft-vs-Host Disease.

Case	Age, y	Underlying Disease	Interval Between Transplant and Clinical Presentation, mo	History of GVHD	History of Herpes Zoster	Site of Skin Lesions	Treatment Prescribed	Diagnosis
1 <sup>3</sup>	16	Metachromatic leukodystrophy	6.5	Acute	Yes (same metamere), negative PCR for VZV	Scalp and right lateral cervical region	Topical corticosteroids	Linear lichenoid chronic GVHD
2 <sup>9</sup>	19	Aplastic anemia	17	No	Yes (same metamere and other ipsilateral metameres)	Trunk and left upper limb	Topical tacrolimus	Lichen striatus
3 <sup>10</sup>	23	Chronic myeloid leukemia	8	No	Yes (same metamere)	Right hemithorax (T5-T6)	NR	Lichenoid chronic GVHD
4 <sup>10</sup>	47	Chronic myeloid leukemia	10	Yes	Yes (same metamere)	Cervical region (C3-C4), right upper limb and hemithorax	NR	Lichenoid chronic GVHD
5 <sup>7</sup>	38	Chronic myeloid leukemia	33	Acute	Yes (different metamere), negative PCR for VZV	Left upper limb, oral reticulated lichenoid eruption	Topical corticosteroids	Linear lichenoid chronic GVHD
6 <sup>4</sup>	12	Acute lymphocytic leukemia	17	Acute	Yes (different metamere)	Trunk and right lower limb	Methylprednisolone	Linear lichenoid chronic GVHD
7 <sup>8</sup>	15	Aplastic anemia	18	No	Yes (different metamere)	Trunk and right upper limb	Topical corticosteroids	Linear lichenoid chronic GVHD
8 <sup>4</sup>	40	Myelodysplastic syndrome	16.6	Acute and chronic	No (herpes zoster developed in a different metamere after GVHD)	Right lower limb	Psoralen-UV-A therapy	Linear lichenoid chronic GVHD
9 <sup>1</sup>	26	Acute promyelocytic leukemia	6	No	No	Trunk and right upper and lower limbs	Topical corticosteroids	Linear lichenoid chronic GVHD
10 <sup>6</sup>	50	Anaplastic large-cell lymphoma	14	Acute	No	Right lower limb (coinciding with the appearance of skin lesions associated with anaplastic large-cell lymphoma on the right buttock)	NR	Superimposed linear lichenoid chronic GVHD
11 <sup>5</sup>	44	Acute myeloid leukemia	8.3	No	No	Right lower limb	Topical corticosteroids	Linear lichenoid chronic GVHD along Blaschko lines
12 (present case)	16	Blastic plasmacytoid dendritic cell neoplasm	20	Acute	No	Trunk and left upper limb	Topical corticosteroids	Linear lichenoid chronic GVHD along Blaschko lines

Abbreviations: GVHD, graft-vs-host-disease; NR, not reported; PCR, polymerase chain reaction; VZV, varicella zoster virus.



**Figure 1** A, Linear lichenoid eruption following the Blaschko lines on the left upper limb. B, Linear lichenoid eruption on the first, third, fourth, and fifth fingers of the left hand. C, S-shaped linear lichenoid eruption on the left hemithorax.

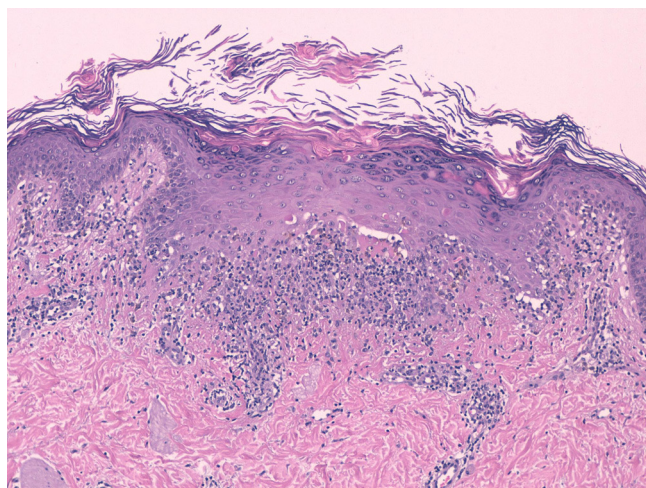
We found 11 reported cases of lichenoid chronic GVHD (Table 1). More than half of these patients had a history of acute GVHD. A prior history of herpes zoster was present in 7 patients, 4 of whom developed lichenoid papules in the same metameres that had been affected by the viral infection. Topical corticosteroids were prescribed to 6 patients, topical tacrolimus to 1 patient, oral methylprednisolone to 1 patient, and psoralen-UV-A therapy to 1 patient.<sup>1,3-10</sup>

Several hypotheses have been proposed to explain the pathophysiology of this unusual pattern. Lesions distributed along Blaschko lines might be caused by an underlying somatic mosaicism (a mutation during embryonic development). This cell clone would be tolerated by the host's immunocompetent cells until it is unmasked by the donor cells. According to other theories, metamer patterns of GVHD—whether of lichenoid or sclerodermoid lesions—may be associated with the clinical or subclinical reactivation of the varicella zoster virus. With reactivation, the immunologic characteristics of the ker-

atinocytes become altered, causing them to be attacked by donor lymphocytes (isotopic response, in which a dermatosis occurs at the site of a different healed disease). There have also been cases of sclerodermoid GVHD involving lesions that affect previously irradiated or injured zones. In such cases, the pathophysiological mechanism would be the underlying disease (a Köbner isomorphic response, in which new lesions appear in previously damaged areas). These 2 mechanisms can overlap.<sup>1,3,4,7-11</sup>

Differential diagnosis between linear lichenoid GVHD and ordinary linear lichen planus is practically impossible. In linear lichenoid GVHD, the papules are less angular, less well-defined, and can be associated with other manifestations of acute sclerodermoid GVHD or poikiloderma. Histologically, both processes are characterized by features of lichenoid dermatitis, although in GVHD the lymphohistiocytic infiltrate is more disperse and follows a perivascular and periadnexal distribution.<sup>1,5</sup>

In our patient's case—following an allogeneic bone marrow transplantation—the clinical and histologic findings support a diagnosis of lichenoid chronic GVHD distributed along Blaschko lines. In a patient with complete hematopoietic chimerism, this dermatosis would have been caused by the immunocompetent donor cells' reaction to the host and therefore satisfies the immunologic criteria required for a diagnosis of GVHD. The fact that the disease exclusively affected the skin along Blaschko lines is explained by the presence of a latent somatic mosaicism in the host, which was unmasked by the donor cells.



**Figure 2** Lichenoid dermatitis: orthokeratotic hyperkeratosis with a scaly appearance, focal hypergranulosis, slight irregular epidermal hyperplasia, blurring of the dermal-epidermal junction, basal layer vacuolization, and necrotic keratinocytes (hematoxylin-eosin, original magnification  $\times 200$ ).

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## Contact Allergy to Octocrylene in Children: A Report of 2 Cases<sup>☆</sup>

### Dos casos de alergia de contacto a octocrileno en niños

To the Editor:

The incidence of allergic and photoallergic reactions to sunscreen has increased in recent years due to the widespread use of UV filters. We report 2 pediatric cases of contact allergy to octocrylene; while known in adults, this reaction has not been previously reported in children in Spain.<sup>1,2</sup>

#### Patient 1

A 4-year-old girl was referred to our department as she had developed a skin rash on sun-exposed areas the previous summer. The physical examination at the time showed a skin rash consisting of erythematous micropapules on the face and limbs. While wearing sunscreen (Crema Solar Pediátrica Carrefour), the child had been exposed to the sun for 4 hours before the rash appeared. The distribution of the rash coincided with the areas where the sun cream had been applied. The patient had no history of atopic dermatitis or of the use of any medications or topical anti-inflammatory creams. We performed patch and photopatch tests with the Marti-Tor UV filter series and with the sunscreen product used by the patient. Positive results (++) were seen at 96 hours for the sun cream (Crema Solar Pediátrica Carrefour) and for octocrylene 10% in petrolatum in the pho-

topatch tests. The diagnosis was photoallergic dermatitis to octocrylene.

#### Patient 2

A 5-year-old girl was referred to our department following 2 episodes of acute eczema in sun-exposed areas that had been protected with 2 different sunscreens (Isdin Extrem Pediatrics 50+ and Anthelios Dermopediátricos). The patient had no history of atopic dermatitis or of the use of medications or topical anti-inflammatory creams. Patch and photopatch tests were performed using the Marti-Tor UV filter series and the sun creams the patient had used. Positive results (++) were seen at 48 and 96 hours for octocrylene 10% in petrolatum and for 1 of the sunscreens, Isdin Extrem Pediatrics 50+, which contained octocrylene 9%. The diagnosis was allergic contact dermatitis to octocrylene.

Greater awareness of the harmful effects of the sun and public health messages have led to a progressive increase in the use of sunscreens. UV filters are now found not only in sunscreens but also in a wide range of skincare and cosmetic products.<sup>3,4</sup> At the same time, however, there has also been an increase in the incidence of sensitization and photosensitization to these filters. UV filters have traditionally been classified as physical or chemical, and chemical filters are more frequently associated with skin allergy.

Octocrylene is an organic compound belonging to the cinnamate family. It is a relatively new filter, capable of absorbing both UV-B and UV-A rays. When used in isolation, its sun protection abilities are poor and it is therefore generally combined with other UV filters to offer a higher sun protection factor and a more stable product that is easier to apply and more water-resistant.<sup>4</sup>

Octocrylene has considerable allergenic potential and can induce serious contact eczema, even through passive transfer.<sup>5</sup> In some series, it has been found to be the main

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