Pigmentary demarcation lines of Voigt-Futcher: dermoscopic and reflectance confocal microscopy features

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To the Editor: Voigt-Futcher pigmentary demarcation lines (VFPDL) are abrupt transition lines between more deeply pigmented skin areas and lighter ones. They are mainly a cosmetic problem, rather common in individuals with darker skin types[1,2], with a female gender predilection. Based on their location, pigmentary demarcation lines are classified into eight types (A-H)[3]. The pathogenesis of this condition remains unknown and at our knowledge their dermoscopic and reflectance confocal microscopy (RCM) features have not been described.

A 33-year-old woman of Brazilian origin at the 27th week of her first pregnancy was referred for hyperpigmentation that have been developing for 1 month. On physical examination, we observed well-defined hyper-pigmented areas on the posterolateral part or her inferior limbs and on the anterolateral part of her arms (Fig. 1a,b). On dermoscopic examination, clear borders of abrupt transition could be observed between more and less pigmented skin areas (Fig. 1c). Although brown curved lines were noticed in both areas, lines were darker and thicker in the more pigmented areas (Fig. 1d,e). Moreover, the background pigmentation was more pigmented in the darker areas (Fig. 1d,e). RCM showed that hyper-reflective keratinocytes were more abundant and reached the upper layers of the epidermis in darker areas compared to lighter ones (Fig. 2). Moreover, top of dermal papillae was higher in the darker areas (Fig. 2). Atypical melanocytes were not observed. Clinical, anamnestic and instrumental findings were consistent with type A and B VFPDL. Skin biopsy was not performed due to the patient's failure to consent.

Most cases of type B pigmentary demarcation lines and few cases of type A occur during the last stages of pregnancy. Their distribution follows the Voigt's lines, which define the distribution of peripheral nerves. Although neurogenic inflammation and/or mosaicism are thought to play a role in their development, the aetiology of the disease remains unknown. It has been suggested that pigmentation could be induced by the compression of the peripheral nerves originating from the S1 and S2 levels of the spinal cord by the enlarged uterus in the latter stages of pregnancy[4]. However, this hypothesis does not explain type A of pigmentary demarcation lines that are located on upper limbs. It was also suggested that hyperpigmentation of the specific areas could be triggered by the increase in hormones such as melanocyte-stimulating hormone during pregnancy[5]. Furthermore, most of the cases of pigmentary demarcation lines associated with pregnancy disappeared after delivery. Differential diagnosis includes vitiligo, nevus depigmentosus, nevus anemicus, leprosy, and Fitzpatrick patches of tuberous sclerosis. Lack of awareness of facial

VFPDL may lead to such misdiagnoses as postinflammatory pigmentation, melasma, nevus of Ota, nevus of Ito, or melanocytic nevus.

Cutaneous histopathological examination showed slight lymphocyte infiltration around vessels in the upper dermis and mild basal layer hyperpigmentation in one case[5,6]. RMC examination of our patient confirmed the presence of basal epidermal hyperpigmentation and showed pigmentation of suprabasal keratinocytes. Interestingly, top of the dermal papillae of the darker areas were upper and this aspect could also partially explain the increase in pigmentation visible at naked eye and better appreciated under dermoscopy. Notably, our case did not show any inflammation in the superficial dermis under RCM. Curved lines observed on dermoscopy probably corresponded to the pigmentation of epidermal rete ridges.

It is important for health care providers and dermatologists in particular to recognize pigmentary demarcation lines in patients with dark skin[7] and to be aware of their possible development during pregnancy. Recognition of these benign variations will help to reassure the patients on their benign and generally self-limiting evolution and to avoid unnecessary treatment. Non-invasive imaging technique such as dermoscopy and RCM can help to better characterize this physiological condition.

Key words: dermoscopy, reflectance confocal microscopy, Voigt-Futcher pigmentary demarcation lines.

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Legend for figures

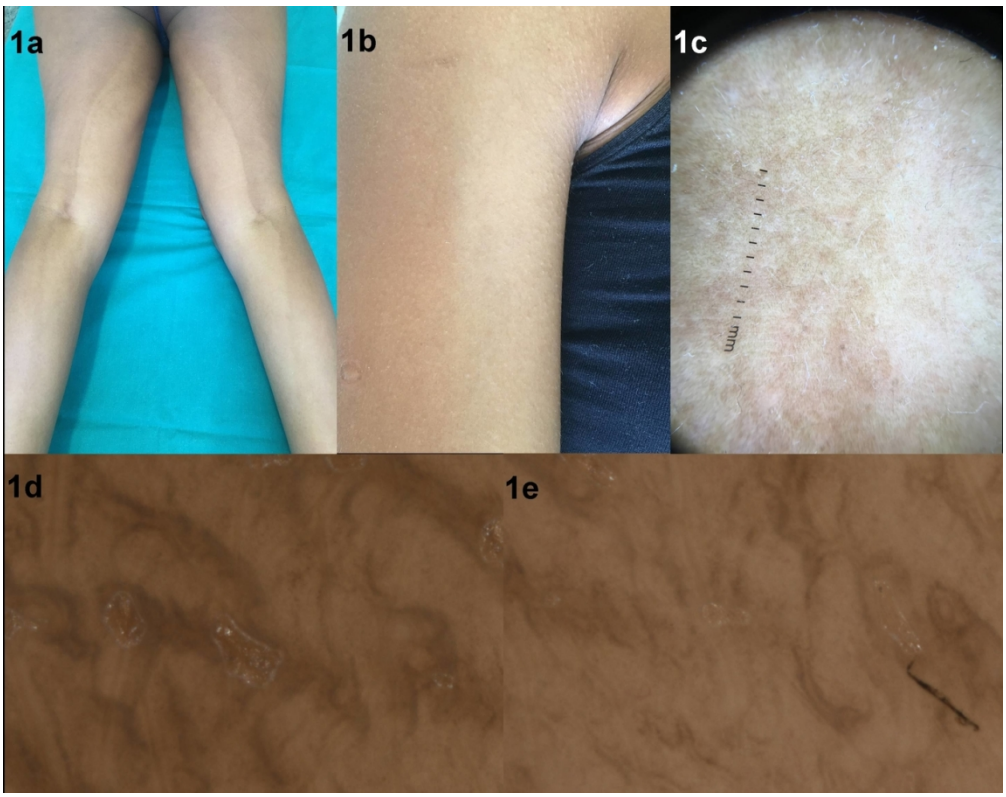
Figure 1 On physical examination, well-defined hyper-pigmentationon the posterolateral part or her inferior limbs and on the anterolateral part of her arms were observed (Fig. 1a,b). On dermoscopic examination (10x), clear borders of abrupt transition could be observed between more and less pigmented skin areas (Fig. 1c). With an higher magnification (200x), although brown curved lines were noticed in both areas, lines were darker and thicker in the ebony areas (Fig. 1d,e). Moreover, the background pigmentation was more pigmented in the darker areas(Fig. 1d,e).

Figure 2 Reflectance confocal microscopy (RCM) features of darker (a,c,e) and lighter (b,d,f) areas. RCM shows hyper-reflective keratinocytes in the upper part of the epidermis (white rectangle, a,b,) and in the basal layer of the epidermis around dermal papillae (yellow rectangle, c,d, e, f). In darker areas hyper-reflective keratinocytes are more abundant (a,c,e) and tops of dermal papillae are higher (c).

Abbreviation and acronym list:

Voigt-Futcher pigmentary demarcation lines (VFPDL)

Reflectance confocal microscopy (RCM)



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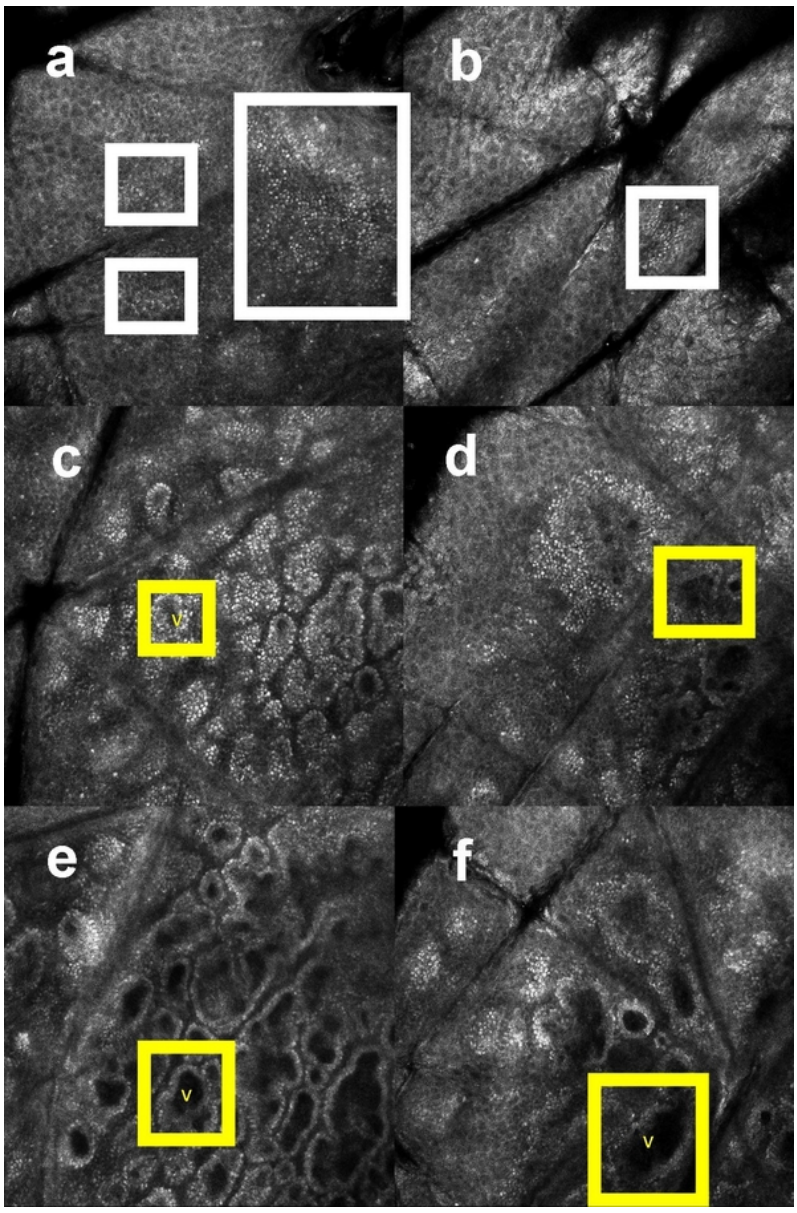
118x92mm (300 x 300 DPI)



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