Pigmentary demarcation lines – report of two patients

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Abstract

Pigmentary demarcation lines (PDLs) are abrupt transition lines from areas of deeper pigmentation to less pigmented areas. They are considered to be normal variants of pigmentation. Eight different variants of PDLs have been described (A to H), with type A being the most common one. We herein describe two Caucasian children with this peculiarity of pigmentation in the upper arms.

Keywords: *Pigmentary demarcation lines, Futcher's lines, Voigt's lines.*

Introduction

Pigmentary demarcation lines (PDLs) on the upper and lower extremities were first described in Japanese patients by Matzumoto in 1913 [1]. In 1938, Futcher described the same condition in the black population [2].

PDLs, also known as Futcher's lines or Voigt's lines, are physiological abrupt transition lines that separate areas of deeper pigmentation to areas with lighter color [3]. They can occur in all ethnic groups and skin types but are more prevalent in African and Japanese populations, fairly common in East Indians, and rare in Caucasians [4]. Eight different types of PDLs (labeled A to H) have been classified according to location (Table 1) [3-5]. PDLs type A are the most common variant, occurring over the dorso-ventral aspect of the arms.

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Case report

Two unrelated patients, a 6-year-old girl (Figure 1A) and a 12-year-old boy (Figure 1B), both Caucasian and skin type III, presented with hyperpigmentation on the upper limbs that was more evident after sun exposure. The lesions evolved for about two years in the female patient and 5 years in the male.

On physical examination, both patients presented bilateral hyperpigmented patches located in the anterolateral surface of the upper limbs, between the shoulder and the antecubital region. The medial border of hyperpigmentation was abrupt and well defined, while the lateral one was poorly demarked, and blended in the surrounding normal skin. The lesions had remained stable since their identification by the parents. No associated symptomology, previous dermatosis or use of drugs was reported. Family history was negative for similar dermatosis or other pigmentary disorders. The clinical appearance was suggestive of pigmentary demarcation lines type A. The nature and course of the skin condition were explained to the parents.

Table 1. Classification of pigmentary demarcation lines which includes classical lines (A—E) and the newly added facial lines (F—H) [3-5].

Line	Location
A	Lateral aspects of upper anterior portion of the arms extending over the pectoral area
B	Posteromedial portion of the lower limbs, extending from the perineum to the ankles
C	Hypopigmented lines in pre- and parasternal areas
D	Posteromedial area of the spine
E	Bilateral hypopigmented bands on the chest in the zone between the mid-third of the clavicle and the periareolar skin
F	V-shaped patch on the lateral cheeks
G	W-shaped patch on the lateral cheeks
H	Linear bands extending from the oral commissures to the lateral aspects of the chin

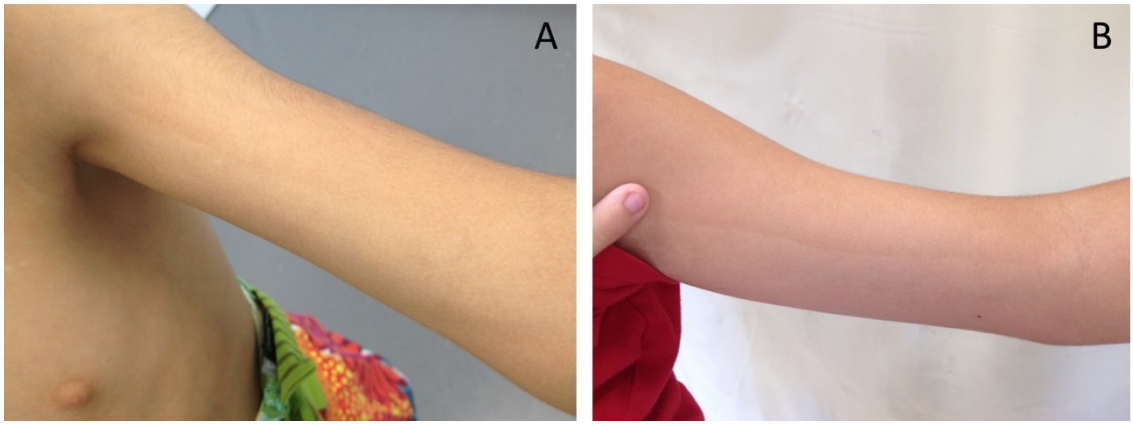

Fig. 1. Clinical appearance of the patients. Note the sharp transition between the darker skin in the anterolateral surface of upper arm and the lighter skin in the medial aspect of the limb.
(A) 6-year-old girl, (B) 12-year-old boy.

Discussions

PDLs usually become visible during the early childhood or may be apparent at birth and become more evident with age or during pregnancy [5, 6]. According to James et al. [5], 79% of black female adults have at least one type of PDL, with types A and B being present in over 50% of the cases. On the other hand, 75% percent of black male patients had at least one PDL, with type C being most prevalent. In the same study, only 15% of white women presented a PDL, while 14% of black female patients had type B lines during pregnancy. In black male patients, type B PDLs have already been observed; however, in white individuals, they are present only in women [7].

The exact etiology of PDLs is still unknown. They probably are an ancestral remnant, where the dorsal skin is pigmented more than the ventral, providing better protection against ultraviolet light and for thermoregulation [1, 3].

Genetic and hormonal influences, neurogenic inflammation, compression of

peripheral nerves and/or mosaicism have also been suggested as causative mechanisms [5-7]. Some authors consider that PDLs coincide with the axial lines of Sherrington, which are virtual lines that separate dermatomes arising from nonconsecutive dorsal roots [8, 9].

PDLs are probably an underdiagnosed and misdiagnosed condition. The distribution and symmetry of the lines allow the differential diagnosis with entities such as hypomelanosis of Ito, incontinentia pigmenti, linear epidermal nevus and lichen striatus. On the face, PDLs must be distinguished from melasma, post-inflammatory hyperpigmentation, nevus of Ota or Hori, and melanocytic nevus [3].

PDLs are mainly a cosmetic problem, and treatment may not be indicated for medical purposes. However, especially in the facial variations, the condition can be of cosmetic concern to the patient and therapeutic measures can be adopted. Q-switched alexandrite laser (755 nm) has been used with satisfactory results and no adverse effects [10].

Conclusions

With this work we intent to raise awareness about PDLs, an entity that is probably overlooked or undiagnosed. PDLs should be recognized as physiological or natural pigment variations in skin and be differentiated from other pigmentary disorders.

Conflict of interest

Authors declare no conflicts of interest.

This study was presented as a poster (Pigmentary demarcation lines – report of two patients) at the 12th Congress of the European Society for Pediatric Dermatology; June 12-14, 2014, Kiel, Germany.

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