

Melanocyte transplant in piebaldism - Case report

Transplante de melanócitos no piebaldismo - Relato de caso

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Abstract: Piebaldism is a rare genodermatosis in which depigmented skin areas are unresponsive to topical or light treatment. This article describes the importance of transplant techniques using noncultured melanocytes (minigrafting) in the treatment of piebaldism.

Keywords: Melanocytes; Piebaldism; Transplantation

Resumo: O piebaldismo é uma genodermatose rara onde as lesões acrômicas não respondem aos tratamentos tópico e fototerápico. Este artigo tem como objetivo demonstrar a importância do transplante de melanócitos, usando a técnica de minigrafting no tratamento do piebaldismo.

Palavras-chave: Melanócitos; Piebaldismo; Transplante

INTRODUCTION

Piebaldism, or partial albinism, is a rare, autosomal dominant genodermatosis with no preference for color or race. ¹

The classical clinical symptoms present at birth are a white forelock of scalp hair (poliosis) in about 90% of the cases and symmetrical depigmented maculae in the skin. ¹ Depigmented hair presents as an often triangular-shaped leucodermic macula, whose base penetrates the hair scalp up to the bregma (the junction of the sagittal and coronal sutures at the top of the skull) and whose vertex extends until the eyelash line and nasal bridge causing, oftentimes, whitening of hair in the medial portion of the eyebrows. Leucotrichia can involve pubic and axillary hair.

Skin depigmentation is also very distinct. Always present at birth, white patches are characterized by rigorous symmetry and affect mostly the face,

anterior portion of the thorax and abdomen, arms, forearms, legs, and thighs. They remain stationary or show limited and discreet evolution, with proportional enlargement of the area as the patient grows.

Another significant detail is the presence of small hyperpigmented maculae in leucodermic lesions, an important differential diagnosis of piebaldism and vitiligo, and also in normal skin. Piebaldism appears to be associated with a reduced expression of the KIT receptor, a consequence of various mutations in the C-KIT gene in chromosome 4. This results in an abnormal distribution and lower proliferation of melanoblasts in embryonic life. ²⁻⁴ Therefore, there is absence of melanin in the epidermis due to lack of melanocytes. ⁵ Achromic areas show partial loss of the barrier to ultraviolet radiation and are unresponsive to topical and light treatment. ⁶⁻⁹

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CASE REPORT

Male patient, 31 years old, leucoderma, has presented since his birth a triangular-shaped achromic macula with poliosis in the frontal region (Figure 1), and an achromic lesion in the right pretibial region. His father and grandfather on his father's side suffered from a similar clinical condition. The patient did not have other lesions. He was bothered by the lesion on his right lower extremity and did not want to treat the frontal lesion.

Three sessions of melanocyte transplantation were performed, with a four-month interval between them and approximately 60 skin grafts in each session, using the punch or minigrafting technique. 1.25 mm punches were done in the suprapubic region (donor area) and 1 mm punches, at a distance of 5 mm, were done in the right pretibial region (receptor area) (Figure 2). No other previous or associated treatment was conducted. Nearly two months after the first session, we observed a repigmentation halo with a diameter 5 times larger than the original one (Figures 3A and 3B). Pigmentation increased progressively with more than 90% improvement of the right pretibial lesion (Figures 4 and 5). Unaesthetic scars were neither observed in the donor area, where microscars were covered by pubic hair, nor in the receptor area.

DISCUSSION

Several methods of autologous melanocyte transplantation have been developed to treat leucodermic lesions that are unresponsive to clinical therapy.⁷ Stable forms of leucodermia, such as segmental vitiligo and piebaldism, often respond to treatment with 100% repigmentation, regardless of the technique used.⁸ For these types of leucodermia, surgery seems to be the method of choice, but patients select-



FIGURE 1: Circumscribed poliosis in the frontal region of the scalp



FIGURE 2: Before melanocyte transplantation



FIGURES 3A: Two months after the first melanocyte transplantation session; 3B: Two months after the first melanocyte transplantation session



FIGURE 4: Four months after the second melanocyte transplantation session



FIGURE 5: Four months after the third melanocyte transplantation session

ed cannot be prone to forming hypertrophic scars or keloids.⁹ Techniques include transfer of melanocytes by total or partial skin graft, punch (minigrafting) or suction bubbles. Autologous melanocytes can also be obtained through the culture of melanocytes or of melanocytes and keratinocytes.⁴ In a study, the minigrafting technique showed the highest levels of adverse effects; however, it was the easiest and most inexpensive procedure, since it does not require special equipment or laboratory, and it takes approximately 45 minutes for 50 cm².⁵ In receptor areas, a cobblestone appearance is a considerable adverse effect of the minigrafting technique when punches larger than 1.25 mm are used. This can be avoided with a more superficial punch in the donor area and a deeper punch in the receptor site. This appearance may also improve spontaneously.¹⁰ Nevertheless, scarring in the donor area is still the greatest limitation of this technique. Based on our experience, we have

seen excellent cosmetic results when pilous areas (for instance, the pubic region) are chosen as donor sites and when punches of at most 1.25 mm are used. Falabella et al. showed that minigrafting can be an effective supplementary procedure to restore complete repigmentation (approximately 100%) when areas of achromia still remain after skin graft has been performed through other techniques.⁵

The micropunch (1 to 1.25 mm) transplantation technique is an easy and inexpensive method which, based on our observations, has excellent aesthetic results and practically no complications. This case report shows the importance of melanocyte transplantation to treat lesions of piebaldism. Dermopigmentation was the only treatment option before the introduction of this technique. It is widely known that melanocyte transplantation is the treatment of choice for lesions of piebaldism because it is a safe and effective technique.¹¹ □

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