CASE REPORT

Non-cultured melanocyte/keratinocyte transplantation for the treatment of stable vitiligo on the face: report of two cases*

Transplante de suspensão celular de melanócitos/queratinócitos para o tratamento de vitiligo estável na face: relato de dois casos

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Abstract: There are many alternatives to treat vitiligo, including surgical procedures, which are recommended for patients resistant to other therapies. The melanocyte/keratinocyte transplantation consists in the separation of epidermal cells obtained from a donor site and spreading these cells on the depigmented and dermabraded recipient area. Two patients were submitted to transplantation, showing more than 70% repigmentation in the treated areas after four months, both with excellent degree of satisfaction. The method requires some laboratory skills, but represents a simple and safe procedure.
Keywords: Melanocytes; Transplantation; Vitiligo

Resumo: Existem várias alternativas para o tratamento do vitiligo, incluindo procedimentos cirúrgicos, que são indicados para pacientes refratários aos outros tipos de tratamento. O transplante de suspensão celular de melanócitos/queratinócitos consiste na separação de células da epiderme obtidas de área doadora, e aplicação destas células na área receptora despigmentada, após dermoabrasão. Dois pacientes com vitiligo estável foram submetidos ao transplante de suspensão de melanócitos/queratinócitos, apresentando repigmentação acima de 70% nas áreas tratadas após quatro meses, ambos com excelente grau de satisfação. O método requer alguma habilidade laboratorial, mas representa um procedimento simples e seguro.
Palavras-chave: Melanócitos; Transplante; Vitiligo

INTRODUCTION

Vitiligo is a dyschromia marked by the onset of lesions of different shapes and sizes, as a result of melanocyte destruction. It affects men and women of various ethnic groups equally, reaching around 2% of the global population.[1,2] There are several therapeutic alternatives for the treatment of vitiligo, including topical and oral agents, phototherapy, laser and surgical procedures. Patients who are resistant to other treatments may benefit from surgical treatments, which consist in transplantation of cutaneous tissue or cell suspension applied to the affected areas.[3] The method of non-cultured melanocytes/keratinocytes (melanocyte cell suspension) transplantation consists in the separation of epidermal cells from a donor site and their appli-

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cation to depigmented recipient areas. The results depend on some factors such as the shape and stability of vitiligo, phototype and anatomic location of lesions.

CASE REPORT

Methodology

The patients selected for transplantation presented vitiligo with a minimum stability of one year. The technique used was described by Mulekar in 2005.[4] The donor site (upper thigh region) was anesthetized and a thin skin layer was removed by shaving with a flexible blade (Crystalia), placed on a Petri dish containing 0.2% trypsin solution (Cultilab) and incubated for 30 minutes at 37^{0}C. After washing with DMEM/F-12 medium (Cultilab) the epidermis was separated from the dermis, fragmented into smaller pieces, transferred to a tube containing the same medium and centrifuged for 6 min. at 2000 rpm. The cell pellet was resuspended in an 1 mL syringe. The recipient area was submitted to low-speed dermabrasion. The cell suspension was then uniformly spread and the area was covered with a collagen dressing (Neuskin-F, Medira, UK) and Tegaderm. The patient was discharged and the dressing removed after one week. Only one session was carried out with each patient.

Case 1

A male patient, 41 years old, driver. Previously submitted to surgical reconstruction and insertion of a prosthesis to replace the eye lost in an automobile accident. After the surgery, he noticed the onset of a depigmented macule in the periorbital region, which was diagnosed as localized segmental vitiligo. Topical treatment was started with corticosteroids, viticromin and excimer laser (17 sessions), with discreet improvement (5%). He was referred for melanocyte transplantation, which was performed on the lesion in the left periorbital region (Figure 1A). Two months after the transplant a 60% improvement in repigmentation was observed during patient assessment and photographic evidence (Figure 1B). Four months later there was an increase in repigmentation (75%) of the treated area, resulting in an excellent degree of patient satisfaction (Figure 1C).

Case 2

A male patient, 35 years old, presented generalized acrofacial vitiligo, with several lesions on the hands, feet and frontal region. A previous treatment with psoralene and sun exposure did not improve lesions significantly. He was submitted to melanocyte suspension transplantation for treatment of frontal region lesions (Figure 2A). Three months later a 90% improvement in repigmentation was observed, measured by photographic assessment, with excellent uniformity of color (Figure 2B). The patient demonstrated a high degree of satisfaction and desire to have further transplant sessions to treat other affected areas.

Figure 1: A. Vitiligo lesion on the periorbital region before transplantation of melanocyte suspension; **B.** Vitiligo lesion on the periorbital region two months after transplantation of melanocyte suspension; **C.** Vitiligo lesion on the periorbital region four months after transplantation of melanocyte suspension

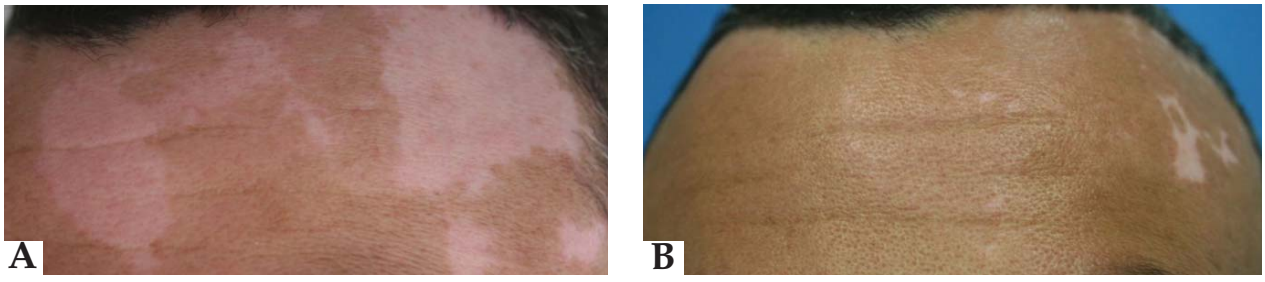

Figure 2: A. Vitiligo lesion on the forehead region before transplantation of melanocyte suspension; **B.** Vitiligo lesion on the forehead region four months after transplantation of melanocyte suspension

DISCUSSION

Surgical procedures for stable vitiligo may be an alternative for patients that did not respond to prior therapy. The transplantation of melanocyte/keratinocyte suspension allows the treatment of larger depigmented areas in practically any anatomic region, removing a relatively small and very thin skin graft from the donor site, which rarely results in hypertrophic or unaesthetic scars.[5] Dermabrasion of the recipient area is a simple, superficial and safe procedure. There is no risk of a hypochromic halo, nor of a cobblestone aspect or necrosis. The procedure may be used to treat challenging places such as eyelids, fingers, articulations and lips.[6]

Results using this technique or similar ones have been achieved by different authors. Olsson and Juhlin (1998) managed to reach 100% repigmentation in 3 patients with segmental vitiligo and 78% in 20 patients with generalized vitiligo.[7] A satisfactory response was also observed by Mulekar (2005) in patients with different forms of disease onset; the highest percentage (95%) was found in patients with segmental vitiligo and the lowest in generalized vitiligo.[4] Paul (2011) verified that 65% of the patients with segmental vitiligo presented over 90% repigmentation and Huggins and collaborators (2012) demonstrated more abundant repigmentation in patients with segmental vitiligo and less in generalized vitiligo.[5] Neves and collaborators (2010) observed progressive repigmentation with 90% improvement in achromic lesion in the pretibial region after 3 sessions of melanocyte transplantation using the punch grafting technique.[8] Machado-Filho and collaborators (2005) demonstrated moderate to intense degree of pigmentation on vitiligo lesions, by means of a curettage grafting method.[9]

In the cases reported by our group it was possible to observe excellent responses, which were expected in case 1, localized vitiligo, but also in case 2, acrofacial generalized vitiligo, suggesting good response in facial localization even for more refractory forms of vitiligo.

Vitiligo stability seems to be the most important parameter to be considered for the performance of any melanocyte transplantation technique in the treatment of vitiligo.[10] Other factors, such as the type of vitiligo, location and patient phototype also influence the response. The indication and selection of patients to undergo this procedure should be carefully done. In the reported cases, the transplantation was carried out without complications before or after surgery, in both patients. The healing process of the donor site was good and there was no depigmentation. Both patients presented good response to treatment, with a repigmentation rate above 70% and high overall satisfaction with the results of the procedure. The melanocyte cell suspension transplantation seems to be an important tool for the treatment of vitiligo in patients that do not respond to conventional non surgical treatments. In most cases, repigmentation takes place in 2 to 4 months, uniformly and with a similar color to the original skin. Patients with segmental or focal vitiligo are the ones that benefit the most from this method, which requires some laboratory skills but represents an efficient, simple and safe procedure. ❑

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