Original Article

A study of segmental vitiligo treatment with hair follicle auto graft

Shankar R Savant[1*], Sunil Patel[2]

{[1]Associate Professor, Department of Dermatology} {[2]Associate Professor, Department of General Surgery}
Teerthanker Mahaveer Medical College & Research Center, Moradabad-244001
Email: drshankarsawant@gmail.com, sunilpatel6575@yahoo.in

Abstract

Introduction: Vitiligo is an acquired pigmentary disorder presenting as hypopigmented or depigmented macules and affects 0.5-2% of the population worldwide. Segmental vitiligo has depigmented macules arranged in a dermatomal or quasi-dermatomal distribution, which does not cross the midline and is usually unresponsive to medical treatment. There are two clinically recognized distinct variants of vitiligo based on distribution of depigmented areas; generalized and localized. Generalized or bilateral symmetrical form of vitiligo is a disease that destroys skin and mucosal membranes melanocytes progressively, and in some cases could involve ears and eyes **Aims and Objective**: To study effect of follicle auto graft in the treatment of segmental vitiligo. **Methodology:** After approval from Institutional Ethical committee This clinical trial was carried out at tertiary care hospital in 30 patients Diagnosed of segmental vitiligo who suffered from persistent form of segmental vitiligo for more than 3 years in the year 2014. The patients were not in the progressing phase of their disease at the time of enrollment. Patients were enrolled after their informed written consent. **Result:** In this study was no re pigmentation around the segmental vitiligo but this re pigmentation after the treatment goes on increasing at, 2 wks. Mean repigmentation area was 1±0.93mm, 4 wks. -2±1.12mm,8wks-4±1.23mm,12wks-5±1.54mm,16wks-6±.94,20wks-8±1.21,24wks-9±1.32 which were highly significant if compared between previous and after weeks mean re-pigmentation area. (P<0.001,t=9.78,df=29, P<0.001, t=6.585,df=57, P<0.001, t=3,df=47, P<0.001,t=7.14,df=54 respectively) **Conclusion:** As repigmentations was significantly higher at the end of six month and more than the before the treatment so this method is useful for regimentation in segmental vitiligo, so this method should be used whereEver possible in the treatment of segmental vitiligo.

Keywords: Segmental Vitiligo, Hair follicle autograft.

[*]**Address for Correspondence:**
Dr. Sunil Patel, Staff Quarters, Mahaveer Medical College & Research Center.Moradabad-244001, Uttar Pradesh, INDIA.
Email: sunilpatel6575@yahoo.in

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INTRODUCTION

Vitiligo is an acquired pigmentary disorder presenting as hypopigmented or depigmented macules and affects 0.5-2% of the population worldwide.[1] Segmental vitiligo has depigmented macules arranged in a dermatomal or quasi-dermatomal distribution, which does not cross the midline and is usually unresponsive to medical treatment.[2]. There are two clinically recognized distinct variants of vitiligo based on distribution of depigmented areas; generalized and localized[3,4]. Generalized or bilateral symmetrical form of vitiligo is a disease that destroys skin and mucosal membranes melanocytes progressively, and in some cases could involve ears and eyes[5,6]. Localized form of vitiligo is further divided into segmental and focal form. Segmental vitiligo is an uncommon form of localized vitiligo, characterized by dermatomal distribution. It is often unilateral and asymmetrical that never crosses the midline of body[3,6,7] In this form of the disease, depigmentation spots spread quickly in the affected dermatomes and then stop growing. It is believed that in the vast majority of the patients with segmental vitiligo melanocytes of the hair follicles are as well affected, resulting in leukotrichia[8].The latest non-medical option in treatment of vitiligo and management of melanocyte distribution s surgical intervention that has been described first by authors like Behl and Falabella and colleagues[9, 10].Hair follicular transplant is one of these various surgical modalities that are followed to re-pigment the vitiligo patches. This procedure is based on the concept of existence of undifferentiated stem cells in

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the hair follicle, which forms a good source of melanocytes for repigmentation. After few weeks of grafting, the melanocytes spread to surrounding depigmentedepidermis and the skin appears re-pigmented. When compared to other modalities, except the color match and tiny scars, the appearance of re-pigmentation area was much more acceptable in this method. This method is effective in focal vitiligo, vitiligo in hairy and non-glabrous areas and in those patches with leukotrichia. In this study it was studied; the hair follicular transplantation effect on re-pigmentation of affected areas in segmental vitiligo.

AIMS AND OBJECTIVE

To study effect of follicle auto graft in the treatment of segmental vitiligo.

MATERIAL AND METHODS

After approval from Institutional Ethical committee This clinical trial was carried out at tertiary care hospital in 30 patients Diagnosed of segmental vitiligo who suffered from persistent form of segmental vitiligo for more than 3 years in the year 2014. The patients were not in the progressing phase of their disease at the time of enrollment. Patients were enrolled after their informed written consent. *Hair follicle auto graft transplantation*[11]*:* After cutting hair of occipital area just by scissors and sterilization, local anesthesia was performed. 3 to 5 punch biopsies with the diameter of 5mm were harvested from the scalp and the donor site were sutured using nylon 0.3. Grafts were irrigated with normal saline, and separated into follicular units, which then reimplanted into the recipient sites created by 19- and 20-scalpel or Nokor needles. Then the recipient sites were dressed. Patients were followed-up every two weeks for a month, then every month for 6 months evaluated for presence of re-pigmentation around the follicles. Diameters of re-pigmented area were measured as millimeter. Photographs of all patients were taken before and after procedure.

RESULTS

Table 1: Distribution of the Patients as per the Re-pigmentation area after weeks of the treatment

Time after Treatment	Re-pigmentation area (mean ±SD)	P-value (t-paired)
Before treatment	0mm	P<0.001,t=9.78, df=29
2 wks	1±0.93mm	
4 wks	2±1.12mm	P<0.001, t=6.585, df=57.
8wks	4±1.23mm	
12wks	5±1.54mm	P<0.001, t=3, df=47,.
16wks	6±.94mm	
20 wks	8±1.21mm	P<0.001,t=7.14, df=54
24 wks	9±1.32mm	

From the Table 1: It is clear that there was no re pigmentation around the segmental vitiligo but this re pigmentation after the treatment goes on increasing at, 2 wks. Mean repigmentation area was 1±0.93mm, 4 wks. -2±1.12mm,8wks-4±1.23mm,12wks-5±1.54mm,16wks-6±.94,20wks-8±1.21,24wks-9±1.32 which were highly significant if compared between previous and after weeks mean re-pigmentation area.(P<0.001,t=9.78,df=29, P<0.001,t=6.585,df=57, P<0.001, t=3, df=47, P<0.001, t=7.14, df=54 respectively)

DISCUSSION

Hair follicle transplantation is also more effective than the other treatment options, as transformation of depigmentedhairs into the pigmented ones become evident and grafted hairs could retain the pigmentation even in cases of unresponsive or treatment-resistant [3].Staricco[13] demonstrated that there were two types of pigment cells in the hair follicle, inactive and active melanocytes and the inactive melanocytes could migrate along with regenerated epidermis and would mature gradually. Cui and colleague [14] demonstrated that during the re-pigmentation of vitiligo the number of inactive melanocytes in the outer sheath of hair follicles significantly increased and some active melanocytes appeared in the outer root sheaths, hair follicle orifices and around the perifollicular epidermis. The hypothesis of stimulation of melanocytes migration from the hair follicle reservoir by phototherapy is now a well-established fact. Melanocytes spread centrifugally from the infundibulum to the basal layer and recolonize the epidermis with active and functional melanocytes. Regardless of the mode of treatment, re-pigmentation in vitiligousually begins in the perifollicular area. Transplant of hair follicle in order to stimulate re-pigmentation in vitiligo affected areas has been reported earlier by some authors [15,16,17]. Pigmentation starts appearing at 4thto 5th week and continues up to 6 months or even longer [18]. In our study we found there was no re pigmentation around the segmental vitiligo before treatment, but this re pigmentation after the treatment goes on increasing at, 2 wks. Mean repigmentation area was 1±0.93mm, 4 wks. -2±1.12mm, 8wks-4±1.23mm, 12wks-5±1.54mm, 16wks-6±.94, 20wks-8±1.21, 24wks-9±1.32 which were highly significant if compared between previous and after weeks mean re-pigmentation area. (P<0.001,t=9.78,df=29, P<0.001, t=6.585,df=57, P<0.001, t=3,df=47, P<0.001, t=7.14, df=54 respectively), so here repigmentation which was always statistically always differed from its previous repigmentation and the maximum repigmentattion achieved at the end of 6 months was 9±1.32mm so definitely this method is useful for the treatment of

segmental vitiligo as there no any drugs are used so this method is also free from the side effects of the drugs.

CONCLUSION

As repigmentations was significantly higher at the end of six month and more than the before the treatment so this method is useful for regimentation in segmental vitiligo, so this method should be used where Ever possible in the treatment of segmental vitiligo.

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