

# Editorial

## Vitiligo. From *Babechi* to lasers.

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Vitiligo is an acquired depigmentary disorder which affects 1-3% of world population without any age, sex, or racial predilection. The disease has a great negative psychological impact, particularly, in coloured skin. The history of disease is as old as that of mankind. Treatment of vitiligo still remains challenging as it was in the past. Due to genetic predisposition, immune-mediated injury, or other unidentified toxins, melanocytes in the affected epidermis disappear whereas those in the hair follicles are spared. The treatment of vitiligo is based on the principle of repopulating the vitiliginous patches with active melanocytes.

Photochemotherapy, in its crude form, was practiced for the treatment of vitiligo as early as 1500 to 1000 B.C. in India. *Babechi* (in Urdu) or Bavanchi/Bavachi (in Hindi), *Psoralea corylifolia*, is an indigenous plant of Indian subcontinent.<sup>1</sup> Different parts of the plant especially seeds are rich in different psoralens. The seeds in powdered form (1-3g/day) or essential oil (oral as well as topical) have been the mainstay of treatment for leukoderma in the Eastern (Unani/Ayurvedic) systems for centuries. The first modern use of light therapy in combination with purified topical and/or oral psoralens was by El Mofty in 1948.<sup>2</sup> Later, in 1976, high intensity sources for UVA radiation were developed for the treatment of vitiligo. Even today when a number of other drugs (topical/oral steroids, levamisole, immunosuppressants)

are available, the photo(chemo)therapy retains the pivotal role. The modern phototherapy aims at stimulation of adjacent melanocytes. Phototherapy comprises of topical and systemic photochemotherapy (PUVA) and narrow-band UVB. In the conventional photochemotherapy, 8-methoxypsoralen is administered in a dose of 0.5mg/kg, followed by UVA irradiation at intervals of 2 to 3 times weekly. Treatment has to be continued for months to more than a year. Partial repigmentation is seen in 30-40% of cases and complete repigmentation in fewer than 20% of patients.<sup>3</sup> Systemic PUVA is associated with a number of acute and chronic hazards like increased risk of cutaneous malignancies. In topical PUVA, used for localized disease, 0.05%-0.1% 8-methoxypsoralen is applied, followed by UVA radiation at intervals of 2-3 times weekly. Repigmentation is seen in about half of cases. Few researchers used other photosensitizers e.g. khellin (*Ammi visnaga*), phenylalanine, and melagenina with UVA or infrared light, as well.

Narrowband UVB phototherapy with a spectrum of 311nm to 312nm and a peak emission of 311nm has recently been shown as effective as PUVA photochemotherapy. Njoo *et al.*<sup>4</sup> demonstrated 75% repigmentation in 535 patients and stabilization of the disease in 80% of patients with only minimal side effects. However, UVB phototherapy and PUVA, both modalities require regular

phototherapy sessions several times a week for up to a year.

Based on the efficacy and safety of narrowband UVB therapy, Spencer *et al.*<sup>5</sup> embarked on a study of targeted phototherapy using a single-wavelength 308nm UVB laser to treat focal areas of vitiligo. The 308nm excimer laser has the advantage of having increased precision and the ability to deliver higher energy to the target tissue in less time. In a pilot study, they treated 29 patches of vitiligo from 18 patients, using this laser with 120nanoseconds and 20Hz pulse, a 10x10-mm spot size and a power output of 60mW. Lesions were treated 3 times a week for a maximum of 12 treatments. Some degree of repigmentation was noticed in 57% and 82% of treated patches after 6 and 12 treatments, respectively. The degree of repigmentation in 2-4 weeks achieved with laser therapy was much higher than that achieved with other available modes of vitiligo therapy. Further studies are required to determine the exact role of 308nm laser in vitiligo treatment. Similarly, a larger spot size will be required to make feasible the treatment of larger body areas.

In case of localized, stable/fixed vitiligo various surgical techniques like autologous minigrafts, punch grafts, suction blister grafts, autologous thin thiersch grafts have been used. These procedures are associated with variable degree of scarring. The addition of PUVA therapy can expedite the process of repigmentation. Ahmad *et al.*<sup>6</sup> (in this issue of *JPAD*) punch grafted 207 vitiliginous patches over different body sites in 40 patients and added topical PUVA, once the grafts were taken. They reported >75% repigmentation in >85% of patches after 6-12 months follow up. The

focused (cutting) mode CO<sub>2</sub> laser has also been used for punch grafting. Melanocyte transplants, using either autologous pure melanocyte culture or autologous melanocyte and keratinocytes co-cultures are another experimental approach to treat larger areas. However, the complexities of the technique and required equipment are the limiting factors.

The story of treatment of vitiligo does not end here. Another area recently under experimentation is the use of various inflammatory mediators<sup>7</sup> which will stimulate melanocyte migration proliferation e.g. receptor tyrosine kinase growth factor, tumour growth factor along with stem cell factor, leukotrienes especially LTC<sub>4</sub>, LTD<sub>4</sub>, and G-protein coupled with endothelin-1 insulin-like growth factor etc. These mediators are required for melanocyte proliferation, chemokinesis and haptaxis. If successful, these therapies will not require phototherapy.

## References

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