

## Minimal erythema dose to targeted phototherapy in vitiligo patients in Indian skin

Sir,

Conventional phototherapy is useful in patients with extensive disease, but unnecessary exposure of uninvolved skin to radiation occurs in patients with limited disease. Targeted phototherapy is a hand-held device, which can deliver UV radiation over specific areas.

Minimal erythema dose (MED) is defined as the UV dose required to elicit just perceptible erythema 24 h after a single UV-exposure.<sup>[1]</sup> There are no strict guidelines regarding the determination of MED in vitiliginous skin before starting conventional phototherapy. As vitiliginous skin is akin to type 1 skin, it is natural to believe that the dosimetry should be uniform irrespective of the skin phototype. Many patients with vitiligo have leathery skin over exposed areas induced by UVB. In few patients, the degree of depigmentation may vary, and they are likely to show different MED's at different sites. Since targeted phototherapy involves delivering high doses for faster therapeutic effect, determination of MED becomes pivotal before starting therapy.

Thirty-two patients with localized vitiligo were selected for the study. The machine used was non-excimer UVB lamp emitting light in the range of 300 to 320 nm with a peak emission of 305 nm (Levia targeted phototherapy machine Figure 1). The patients back was exposed to increasing radiation starting from 100 mj with increments of 50 mj over 6 sites during each sitting, and the MED was determined after 24 hours [Figure 2]. We have used arithmetic series instead of geometric series, as it is easy to compute for MED determination. Treatment was started at 1 MED, and increments were made by 0.5 MED every sitting

The results are tabulated in Table 1. Out of 32 patients, there were 20 females and 12 males. The youngest patient was 4-year-old, and the oldest was 60-years-old. The patients belonged to type IV- VI Fitzpatrick skin type. The lowest MED recorded was 200 mj, and the highest was 1500 mj. The mean MED was 656 mj,



Figure 1: Levia targeted phototherapy system

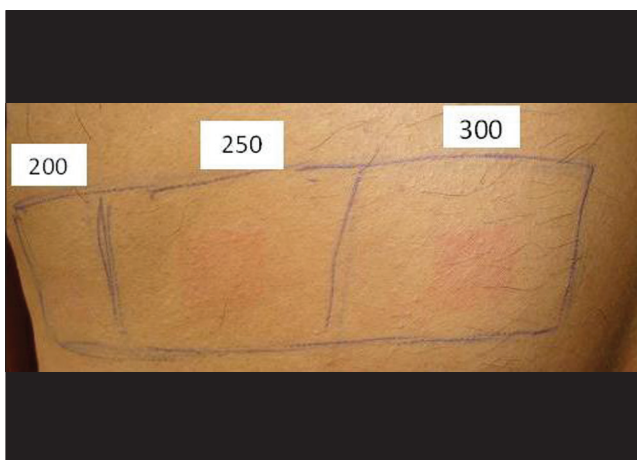


Figure 2: MED determination (200 mj)

and the median and mode were 600 mj and 400 mj, respectively.

Pai *et al.*<sup>[2]</sup> reported average MED for NB-UVB for type IV to be 600 mj and type V skin to be 1100 mj. Tejaswi *et al.*<sup>[3]</sup> reported average MEDs to be 1000 mj/cm<sup>2</sup> for type IV and 750 mj/cm<sup>2</sup> for type V skin and concluded that the median MED for type V skin was lesser than that for type IV skin. Serish *et al.*<sup>[4]</sup> calculated the MED using broad band and narrow band UV light and found the mean MED to be 21 mj for BB-UVB and 300 mj for NB-UVB light.

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**Table 1: Minimal erythema dose determination**

Sl.No.	Age	Sex	MED in mj
1	26	M	750
2	30	M	850
3	20	M	750
4	35	F	750
5	10	F	450
6	60	F	1000
7	58	M	1500
8	33	M	550
9	18	M	600
10	18	F	1000
11	43	F	600
12	32	F	800
13	21	F	300
14	47	M	400
15	16	F	400
16	25	F	1500
17	16	F	600
18	24	M	200
19	19	M	300
20	4	M	200
21	42	F	400
22	35	F	300
23	10	M	900
24	51	F	700
25	30	F	700
26	21	F	1000
27	9	F	700
28	40	F	1000
29	6	M	400
30	8	F	500
31	8	F	500
32	50	F	400

The Fitzpatrick classification is not reliable in Indian skin since many patients with fair skin involved in outdoor occupation were reported to have high MED.<sup>[5]</sup> Similarly, women have low MED irrespective of skin pigmentation when compared to men of the same Fitzpatrick type (personal communication). Treating all patients as Fitzpatrick type 1 is acceptable when whole body is treated with NBUVB. However, when treating with targeted phototherapy, the idea is to deliver erythmogenic doses. In our experience, many patients have received up to 6 MEDs without blistering, and these patients will not respond if treated

using low MED as starting point. The question arises as to how reliable MED determination over normal skin is useful in delivering treatment for vitiliginous skin. The practical difficulty of determining MED in vitiliginous skin is the degree of depigmentation may vary, and most patients needing targeted phototherapy do not have lesions large enough to permit MED determination over affected skin.

To conclude, MED determination is important before starting treatment with targeted phototherapy. This paper is not meant to provide guidelines for the treatment of vitiligo but to highlight that MED can vary, and hence treatment should be individualized

Coherent systems provided equipment for the study.

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