Ultraviolet Radiation Sensitivity in Vitiligo and Adjacent Normal Skin

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Sir,

We were fascinated to read the paper by Caron-Schreinemachers and colleagues (1) in which they showed, by elicitation of the minimal erythema dose (MED) on areas of vitiligenous skin, that ultraviolet radiation (UVR) sensitivity varied with total body skin type even in skin without pigment. We have been interested in similar issues and present our experimental data below. Although our patient series is much smaller we believe our results are germane to their work.

We studied seven persons with a range of skin types (2–5) and body-sites and, unlike Caron-Schreinemachers et al., assessed blood flow with a contact-Doppler after irradiation with three doses of UVB (28, 56, and 112 mJ/cm^2, from a xenon arc lamp with an interference filter) on each area of vitiligo, and on the immediately adjacent normal skin. On all these individuals, we also estimated epidermal thickness by the use of transmission spectrophotometry on blister roofs for both the area of vitiligo and the adjacent skin (experimental details for this method are provided in our recent publication (2)).

The results were computed as the arithmetic difference between the blood flow in the area of vitiligo and the adjacent area of skin for each of the three doses of radiation administered (Fig. 1). It can be seen that the difference between the area of vitiligo and normal skin varies with dose, i.e. the difference attributable to pigmentation is not constant but depends on the dose of UVR administered. Alternatively, if the ratio of vitiligo to normal skin blood flux, akin to the use of the sun-protection factor, is examined, our data again show that the effect varies with dose: means (and standard deviation in brackets) in ascending order for the three doses are as follows; 1.3 (0.49), 2.1 (0.84), 3 (2.1). Although our data is based on a small number of individuals, our results are compatible with a body of literature that suggests that any measure of sun protection due to pigment is dependent on the dose of UVR used. Put another way, as indeed Westerhof et al. (3) was the first to show many years ago, the gradient of the UVR dose–response curve differs depending on pigmentary status.

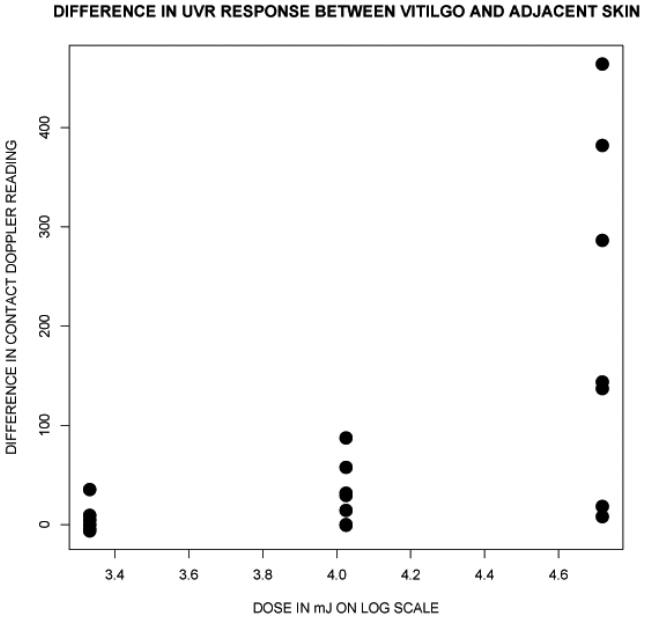

Fig. 1. The results, were computed as the arithmetic difference between the blood flow (contact Doppler reading) in the area of vitiligo and the adjacent area of skin for each of the three doses of radiation administered (n = 7).

Finally, our use of the difference in blood flow following UVR between vitiligo and normal skin, as a measure of the sun-protection factor afforded by pigmentation will underestimate the effects of pigmentation, because previous work, and our own recent work, shows that vitiligo skin epidermis is thicker than adjacent skin (4). For instance, for the present series of individuals, the vitiligo epidermis was 1.26 (± 0.15 SEM) thicker (2).

Finally, we congratulate Caron-Schreinemachers and colleagues on the elegance and power of their clinical experiment.

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