Are Psoriatic Patients at Risk of Heat Intolerance?

Comments from a Neuroscientist

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In a recent paper, Leibowitz et al. [1] studied psoriasis as a possible risk factor for heat intolerance. Rectal temperature, mean skin temperature, heart rate and heat storage were measured in 16 psoriatic patients (mean skin surface area involvement = 4.9%) and in 10 healthy controls during a 2-hour heat exercise test (40° C; 40% relative humidity). A sharper rise was found for all parameters in the psoriatic patients as compared with the control subjects. At the termination of the test, the two groups also significantly differed in their final levels of these parameters. Finally, sweat rate was claimed, at the 95% confidence level, to be lower in the psoriatic patients (590 + 49 g/h) than in controls (691 ± 42 g/h), even when corrected for healthy skin area. The authors suggest that psoriatic patients have a reduced ability to dissipate extra heat during exposure to exercise in the heat, and, thus, psoriasis should be considered as a risk factor for heat intolerance.

The authors discuss their interesting findings in conjunction with the well-known fact that differences in heat storage may result either from excessive heat accumulation or reduced ability to dissipate it. Psoriatic patients have a decreased capacity for sweat secretion from the involved skin. In addition, the patients have a decreased 'clinically healthy' body surface area. The capacity of secreting and evaporating sweat could therefore be highly decreased, especially if the involved skin is widespread. Also, one has to consider the possibility of the uninvolved skin being abnormal. Thus, in the present study [1], the sweat secretion was not found to be increased as compared to normal controls, pointing to a disturbed compensatory function of the uninvolved skin, such being reported in other conditions, e.g. burns.

However, in summary, the authors point out that the psoriatic patients, generally having a small diseased skin area (4.9% of total body surface), respond near-normally under normal-to-moderate environmental temperature conditions. Only such extreme conditions (40° C; 40% relative humidity) used in their own study [1] could provoke results revealing the patients' problems to dissipate the extra heat generated during the physical strain. Hence, one should, as physician or experimental dermatologist, be careful when exposing these patients to e.g. different UV light treatments, natural sunlight and/or a hot climate or physical exercise.

In the following, I would like to direct the attention to another observation recently being done by us, namely the finding that psoriatic involved skin has a significant reduced number of intra-epidermal nerve fibre profiles [2]. The mean number ± SEM of intra-epidermal nerve fibre profiles in involved skin was 134 ± 55/mm², in uninvolved skin 478 ± 140/mm² and in normal skin from healthy volunteers 581 ± 128/mm²; thus, the reduction of innervation in involved skin

was down, on average, to 23% of normal (at the 99% confidence level). The uninvolved skin was not statistically significantly different to skin from healthy volunteers. No differences at all could be seen between the dermis of involved, uninvolved and normal skin, respectively. It is, of course, tempting to speculate that the abnormal response of psoriatic patients to heat exposure may be dependent on a reduced possibility of the skin to even objectively record the correct change in temperature.

Although Leibowitz et al. [1] did not speculate about the exact underlying difference of the psoriatic skin, resulting in this abnormal temperature tolerance, this finding regarding the number of certain nerve fibres in involved versus uninvolved psoriatic skin/ normal skin, should perhaps put our focus on a possible neuronal malfunction? Also psychophysical studies ought to be of great interest, since one main question must be if the patients also have a disturbed subjective sensation of heat.

Only future studies can solve these questions, and I strongly look forward to the publication of further papers from Leibowitz and colleagues and congratulate them to their highly intriguing and interesting observations!

References

Leibowitz E, Seidman DS, Laor A, Shapiro Y, Epstein Y: Are psoriatic patients at risk of heat intolerance? *Br J Dermatol* 1991;124:439-442.

Johansson O, Han S-W, Enhamre A: Altered cutaneous innervation in psoriatic skin as revealed by PGP 9.5 immunohistochemistry. *Arch Dermatol Res* 1991;283:519-523.