Contact Dermatitis, 1998, 38, 184
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CONTACT DERMATITIS
ISSN 0105-1873

Short Communication

Macular hyperpigmentation in a furnace worker

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Key words: hyperpigmentation; heat; iron and steel foundry; furnace worker; occupational. © Munksgaard, 1998.

Hyperpigmentation is known to occur following inflammatory physical stimuli like heat, other radiations, trauma and friction (1). The cutaneous effects of heat exposure include erythema, urticaria, miliaria and hyperhidrosis (2).

Case Report

A 46-year-old man presented with hyperpigmentation over the medial aspects of both forearms for 3 years. He had been employed in an iron and steel foundry for the past 22 years and worked near an open furnace where ferrosilicon was produced for 2–8 h daily. He used to wear a short-sleeved cotton shirt and shoes made from tyres. No apron or other protective clothing was used. A mixture of charcoal, quartz and scrap iron was used in the furnace, which formed vapours. Hyperpigmentation developed over the medial aspects of both forearms, which spread to involve the lower 2/3 of the upper arms, including the cubital fossae. Within 6 months, similar hyperpigmentation had developed over the posterior aspects of the legs. There was associated pruritus, which increased with sweating. He had received topical corticosteroids and antihistamines, with no benefit.

A skin biopsy revealed hyperkeratosis and acanthosis with effacement of the rete ridges, overlying fibrocollagenous tissue with proliferating fibrobasts and adnexal structures. Mild mononuclear infiltration and melanophages were present in the upper dermis. Patch testing with the Scandinavian photopatch series (Chemotechnique Diagnostics AB, Sweden) revealed photocontact sensitivity to musk ambrette and contact sensitivity to hexachlorophene. The minimal erythema dose was determined using a solar simulator. Using a 305 nm filter, erythema developed at 30 J/m^2, but not with a 345 nm filter.

The patient was advised to change his job, and to use a long-sleeved shirt and gloves while working, along with applying topical hydroquinone 4% and physical sunscreens. Within 6 months, there was a 25% improvement in the hyperpigmentation and more than 50% after 14 months. He had changed to a loading job and had not been further exposed to the furnace.

Discussion

Exposure to heat and infrared radiation is known to cause erythema ab igne with a reticulate pattern of melanoderma (1). Our patient, however, had only hyperpigmentation without erythema or telangiectasia. Exposure to the heat of the furnace might have been responsible for the hyperpigmentation. The significance of the positive patch tests is difficult to ascertain.

References

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