Childhood Lichen planus in a Patient Receiving Growth Hormone for Dwarfism

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To our knowledge, lichen planus has not been previously reported in association with growth hormone (GH) treatment. We describe an exacerbation of lichen planus in a boy receiving human recombinant growth hormone (hrGH) for dwarfism.

A 9-year-old boy had been examined in the department of pediatrics for dwarfism. On physical examination, the height of the patient was 119.8 cm (below the 3rd percentile) and his weight was 21.8 kg (within normal limits). L-Dopa, glucagon and clonidine stimulation tests revealed a deficiency in the release of GH. The plasma T4 level was 12.1 µg/dl and the T3 level was 1.72 ng/ml. The release of gonadotropin to luteinizing hormone was in the normal range. The patient was diagnosed as having pituitary dwarfism. Weekly intramuscular injections (0.5 U/kg body weight) of hrGH were initiated on June 10, 1994. The boy was referred to our clinic on June 10, 1994, for examination of three brownish pruritic papules on the neck. The mother of the boy reported that the lesions had appeared 3 days before the consultation.

At the follow-up visit 1 month later, the eruption had rapidly spread over the trunk and extremities. Examination of the skin revealed pinpoint-to-pinhead-sized, skin-colored, discrete round papules mainly on the trunk and flexor aspects of the forearms (fig. 1 a). Flat-topped, violaceous, polygonal plaques were observed on the flexor aspects of the extremities and the glans penis (fig. 1 b). The mouth, nail and scalp were not involved.

Two biopsies, from a polygonal, violaceous plaque and from a pinpoint, skin-colored papule, were taken. Both specimens showed orthokeratotic hyperkeratosis, hypergranulosis and liquefaction degeneration of the basal cell layer. A band-like lymphocytic and histiocytic infiltration was observed in the upper dermis. Degenerated keratino-cytes and epidermal-dermal separation were also observed, as were a few eosinophils (fig. 2). Histologic findings from both specimens led to a diagnosis of lichen planus, including pinpoint lichen-nitidus-like lesions. A more potent topical steroid was prescribed; however, the lesions proved to be resistant to conventional therapy. During the course of hrGH treatment, no apparent regression of the lesions was seen. Some pinpoint discrete papules enlarged or coalesced into flat-topped, violaceous papules or small plaques with central depression.

The presence of a few eosinophils in the infiltrate in this case may suggest the diagnosis of lichenoid drug eruption. However, all other findings were typical of lichen planus.
Although lichen planus affects younger people in tropical countries, it is rarely seen in children [1, 2]. The cause of lichen planus is unknown. Recent evidence [3] suggests that the disorder is due to a cell-mediated immune response, the pathogenesis of which involves

Fig. 1. a Skin-colored, discrete pinpoint papules on the forearm, b Violaceous, polygonal plaque on the glans penis.

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presentation of antigens by Langerhans cells to helper T cells, elaboration of cytokines from activated T cells and induction of cytokine production by keratinocytes [3].

Although Endo et al. [4] and Rogers et al. [5] reported on the occurrence of leukemia in a patient treated with GH [4,5] and Mercola et al. [6] reported evidence of the direct effect of GH on normal T lymphocytes and some neoplastic T lymphocytes, to our knowledge the association of lichen planus and GH treatment has not previously been reported. Since lichen planus is rare in children and the eruption spread rapidly in our patient immediately after initiation of hrGH treatment, we believe that hrGH treatment may have at least aggravated the skin disease in our patient.

Additionally, another experiment [7] has shown that the GH receptor is expressed in human skin, indicating that GH can influence cutaneous inflammatory processes not only through hepatic synthesis of insulin-like growth factor 1 but also directly through GH receptors expressed in the skin. Direct cutaneous effects of GH may also have played a role in the exacerbation of lichen planus in our patient. To confirm the role of hrGH treatment in lichen planus, accumulation of further cases will be necessary.

References

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