

Eczematous dermatitis due to subcutaneous teriparatide injection

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Abstract Teriparatide, or recombinant human parathyroid hormone, is approved for the treatment of osteoporosis. Possible cutaneous adverse events of teriparatide are urticaria, injection site pain, swelling, bruising, and pruritus. However, there have been no reports of widespread eczematous reactions caused by teriparatide. A 47-year-old male was recently diagnosed with osteogenesis imperfecta and prior to teeth extractions, he was subcutaneously injected with teriparatide. The patient developed multiple pruritic erythematous papules and plaques on his abdomen, around the site of the injection. A skin biopsy was done, which showed mild spongiosis and superficial perivenular lymphocytic infiltration with a few eosinophils. Drug-related eczematous changes were most likely suspected and in addition to the discontinuation of the injection, topical steroid was prescribed, in which dramatic improvements were observed. We report the eczematous hypersensitivity reaction caused by teriparatide, which is an adverse reaction that has not been reported before.

Keywords Eczematous dermatitis · Teriparatide · Adverse drug reaction

Teriparatide, or recombinant human parathyroid hormone, is used for the treatment of osteoporosis. Its possible cutaneous adverse events include urticaria, injection site pain, and pruritus [1]. Eczematous reactions caused by teriparatide, however, have not been reported previously.

Herein, we report a novel case of a patient who developed skin lesions after the injection of teriparatide.

A 47-year-old male was referred with skin lesions on the abdomen. He had been formerly diagnosed with osteoporosis at a local clinic. Upon evaluations by an endocrinologist prior to his teeth extractions, the patient was found to have several fracture histories, low stature, poor teeth, and blue sclera. Genetic tests were done revealing mutation of COL1A2 gene, confirming osteogenesis imperfecta as the diagnosis. The patient was started with subcutaneous teriparatide injections, and after about 1 month, multiple pruritic erythematous papules and plaques developed around the injection site (Fig. 1). He visited the dermatology clinic, and suspecting drug hypersensitivity reaction, a skin biopsy was done, showing mild spongiosis and superficial perivenular lymphocytic infiltration with a few eosinophils (Fig. 2), suggesting eczematous reactions. Teriparatide was injected only until the teeth extractions, and with topical steroid, dramatic improvements were observed. Considering the alleviation of symptoms after the discontinuation of injection, drug-related eczematous eruption was most likely suspected.

Since cutaneous symptoms developed in a patient with osteoporosis, syndromes such as Wiskott–Aldrich syndrome and hyper-IgE syndrome should be ruled out. Wiskott–Aldrich syndrome is an X-linked primary immunodeficiency characterized by thrombocytopenia, eczema, and recurrent infections [2]. Hyper-IgE syndrome is also a primary immunodeficiency with generalized eczema and recurrent infections [3]. Although they may have similar morphologically, the eczematous lesions in these syndromes tend to be generalized with onsets during infancy, which can be differentiated from the features in the current case.

Teriparatide, or recombinant human parathyroid hormone, was approved for the treatment of osteoporosis. Its

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Fig. 1 Multiple pruritic erythematous papules and plaques can be seen on the patient's abdomen

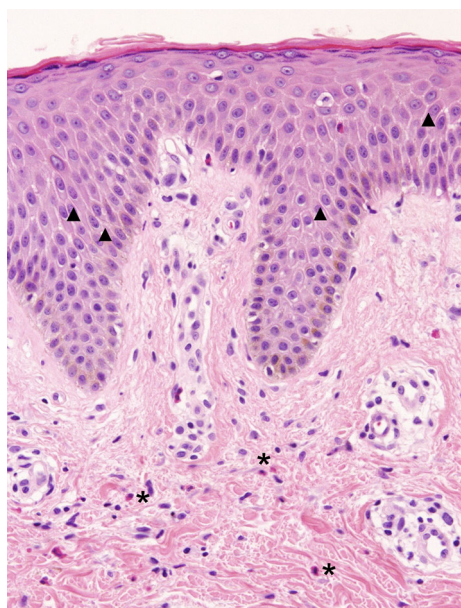


Fig. 2 Skin biopsy revealed mild spongiosis (*filled triangle*) and superficial perivenular lymphocytic infiltration with a few eosinophils (*asterisk*) in the upper dermis (H&E, $\times 400$)

adverse reactions are angina pectoris, dizziness, headache, hypercalcemia, and increased risk of osteosarcoma. In addition to those related to injection techniques, such as pain and swelling, urticaria and pruritus are known cutaneous adverse events [1].

This eczematous eruption may be related to drug hypersensitivity, specifically delayed-type hypersensitivity, considering the onset and clinical findings. These hypersensitivity reactions are associated with various drugs, in which antimicrobial agents are the most common causes. Exanthematous eruption, or generalized erythematous maculopapular rash, is the most frequent manifestation. Eczematous reactions, with erythematous crusting and scaling patches, may seldom occur, and have been mostly reported with subcutaneous heparin injections [4]. Although the exact mechanism is unknown, these reactions are thought to occur by drug-specific CD4+ and CD8+ T cells in an MHC-dependent pathway [5]. The clinical features in the current case resemble those caused by heparin, implying that similar mechanisms may be involved.

This case emphasizes the eczematous eruption caused by teriparatide that has never been reported. Because osteoporosis has not been identified as a predisposing factor of drug hypersensitivity, speculations on its associated conditions are minimal. Although the incidence of the current adverse event may be extremely low, clinicians must be aware of such reactions when using teriparatide.

Compliance with ethical standards

Conflict of interest None declared.

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