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Allergy to American Football? A Case of Cold-Induced Urticaria

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An otherwise healthy 20-year-old woman presented with a recurrent pruritic rash on her buttocks and upper posterior thighs. The rash had appeared on 5 occasions, all in association with attendance at collegiate American football games in environmental temperatures below 5°C. The rash had begun with the sensation of pruritus of the buttocks within 30 minutes of sitting on the metal bleachers.

Upon self-inspection and palpation, the patient discovered multiple erythematous papules and plaques on her buttocks and upper posterior thighs (**Figures 1 and 2**). After approximately 20 to 60 minutes in a warmer environment (approximately 21°C), the symptoms disappeared. During the

episodes, the patient experienced no other symptoms such as rhinorrhea, tongue or throat swelling, or respiratory distress.

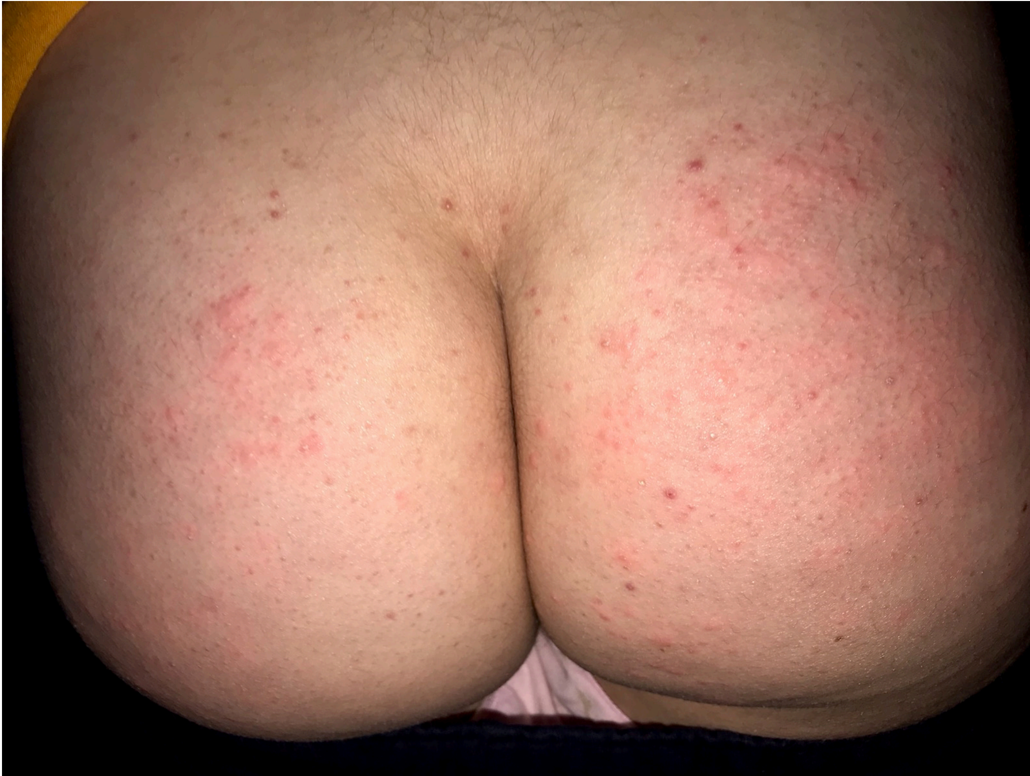

Figure 1. *Buttocks rash, which appeared within 30 minutes of cold exposure.*

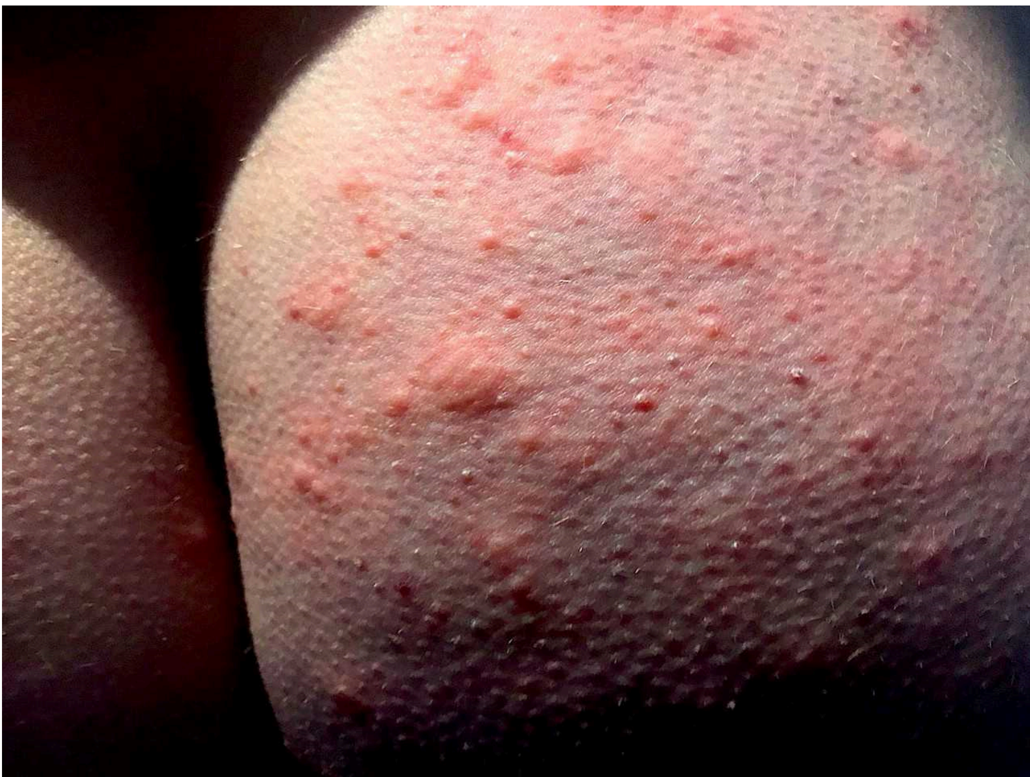

Figure 2. *Urticaria on the right buttock.*

The differential diagnosis included allergic urticaria, pressure urticaria, and cold urticaria. The history and clinical presentation were most consistent with the diagnosis of cold-induced urticaria. The patient was instructed to wear a better-insulated coat and leggings under her trousers and to avoid sitting

directly on the metal bleachers by using a seat cushion. By avoiding cold exposure to the buttocks and thighs, the rash no longer appeared at subsequently attended sporting events.

Discussion. Cold urticaria is rare, comprising only 1% to 3% of all types of urticaria.[1] The disorder can be inherited or acquired and is a subtype of physical urticaria that results upon exposure to cold.[2] The acquired form typically presents in young adulthood, with remission or improvement in approximately half of patients after a few years following diagnosis. The familial form typically presents in early childhood and features more lifelong symptoms. Prevalence is highest among young adults and in colder climates.[2]

Upon exposure to cold, symptoms can occur within minutes to hours and include the development of erythema, pruritus, and hives in the exposed body area. The lesions can progress to angioedema or anaphylaxis. The diagnosis can be made based on the condition's typical history and clinical presentation, and it can be confirmed with a cold stimulation test, in which an ice cube is placed on the skin for 3 to 5 minutes while monitoring for hive formation during the subsequent 10 minutes. The pathophysiology is immunoglobulin E-mediated mast-cell degranulation, which is triggered upon exposure to the cold.[3]

Management includes maximal protection from the cold, and avoidance if possible, including avoiding swimming in cold water. Second-generation antihistamines (H_1 receptor blockers) are the recommended treatment.[1] More aggressive treatment may include a combination of H_1 and H_2 receptor blockade, omalizumab, cyclosporine, leukotriene receptor antagonists, methotrexate, and cold desensitization.[2] Prescription of subcutaneous epinephrine is necessary, especially when systemic symptoms have accompanied the skin findings. Recognition of this disorder is crucial, since it can be life-threatening.

References:

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3. Torabi B, Ben-Shoshan M. The association of cholinergic and cold-induced urticaria: diagnosis and management. *BMJ Case Rep.* 2015;2015:bcr2014205258.