

Ice Pack–Induced Perniosis: A Rare and Underrecognized Association

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PRACTICE POINTS

- Ice pack–induced perniosis is a rare condition that can occur in patients using long-term ice pack therapy.
- This entity histopathologically mimics cutaneous lupus erythematosus and can present a diagnostic challenge.
- A thorough clinical history and awareness of this diagnosis is essential for diagnostic accuracy.

Perniosis, or chilblain, is characterized by skin lesions that occur as an abnormal reaction to exposure to cold and damp conditions. It can present as an idiopathic dermatosis or in association with an underlying connective tissue or autoimmune disease. Differentiation by histopathologic examination is controversial. Herein, we report a unique case of a 73-year-old woman who developed acquired perniosis on the buttocks from the use of ice packs to treat chronic low back pain.

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Perniosis, or chilblain, is characterized by localized, tender, erythematous skin lesions that occur as an abnormal reaction to exposure to cold and damp conditions. Although the lesions favor the distal extremities, perniosis may present anywhere on the body. Lesions can develop within hours to days following exposure to temperature less than 10°C or damp environments with greater than 60% humidity.¹ Acute cases may lead to pruritus and tenderness, whereas chronic cases may involve lesions that blister or ulcerate and can take weeks to heal. We report an unusual case of erythematous plaques

arising on the buttocks of a 73-year-old woman using ice pack treatments for chronic low back pain.

Case Report

A 73-year-old woman presented with recurrent tender lesions on the buttocks of 5 years' duration. Her medical history was remarkable for hypertension, hypothyroidism, and lumbar spinal fusion surgery 5 years prior. Physical examination revealed indurated erythematous plaques with areas of erosions on the left buttock with some involvement of the right buttock (Figure 1).

After a trial of oral valacyclovir for presumed herpes simplex infection provided no relief, a punch biopsy of the left buttock was performed, which revealed a cell-poor interface dermatitis with superficial and deep



FIGURE 1. Ice pack–induced perniosis presenting as indurated erythematous plaques with erosions on the buttock in a 73-year-old woman with chronic low back pain.

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perivascular and periadnexal lymphocytic infiltrates (Figure 2). Perieccrine lymphocytes were present in a small portion of the reticular dermis (Figure 3). The patient revealed she had been sitting on ice packs for several hours daily since the lumbar spinal fusion surgery 5 years prior to alleviate chronic low back pain.

Based on the clinicopathologic correlation, a diagnosis of perniois secondary to ice pack therapy was made. An evaluation for concomitant or underlying connective tissue disease (CTD) including a complete blood cell count with sedimentation rate, antinuclear antibodies (ANAs), serum protein electrophoresis, and serum levels of cryoglobulins and complement components was unremarkable. Our patient was treated with simple analgesia and was encouraged to avoid direct contact with ice packs for extended periods of time. Because of her low back pain, she continued to use ice packs but readjusted them sporadically and decreased frequency of use. She had complete resolution of the lesions at 6-month follow-up.

Comment

Perniosis is a self-limited condition, manifesting as erythematous plaques or nodules following exposure to cold and damp conditions. It was first reported in 1902 by Hochsinger² as tender submental plaques occurring in children after exposure to cold weather. Since then, reports of perniois have been described in equestrians and long-distance cyclists as well as in the context of other outdoor activities.³⁻⁵ In all cases, patients developed perniois at sites of exposure to cold or damp conditions.

Perniosis arising in patients using ice pack therapy is a rare and recent phenomenon, with only 3 other known reported cases.^{6,7} In all cases, including ours, patients reported treating chronic low back pain with ice packs for more than 2 hours per day. Clinical presentations included erythematous to purpuric plaques with ulceration on the lower back or buttocks that reoccurred with subsequent use of ice packs. No concomitant CTD was reported.⁶

Much controversy exists as to whether idiopathic perniois (IP) increases susceptibility to acquiring an autoimmune disease or if IP is a form of CTD that follows a more indolent course.⁸ In a prospective study of 33 patients with underlying IP, no patients developed lupus erythematosus (LE), with a median follow-up of 38 months.⁹ A study by Crowson and Magro⁸ revealed that 18 of 39 patients with perniois lesions had an associated systemic disease including LE, human immunodeficiency virus, viral hepatitis, rheumatoid arthritis, cryofibrinogenemia, hypergammaglobulinemia, iritis, or Crohn disease. Of the 21 other patients who had no underlying CTD or systemic disease, 10 had a positive ANA test but no systemic symptoms; therefore, all 21 of these patients were classified as cases of IP.⁸

Cutaneous biopsy to distinguish between IP and autoimmune perniois remains controversial; perniois lesions and discoid LE share histopathologic features,⁹ as was evident with our case, which demonstrated overlapping

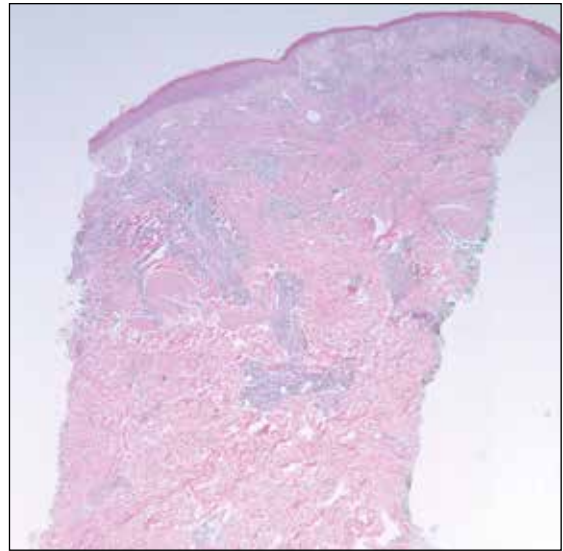


FIGURE 2. A punch biopsy revealed superficial and deep perivascular and periadnexal lymphocytic infiltrates (H&E, original magnification $\times 4$).

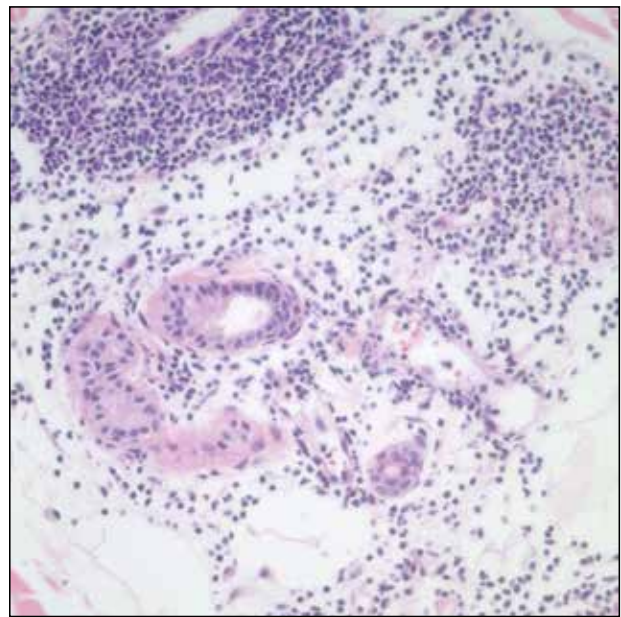


FIGURE 3. Perieccrine lymphocytes were noted in a small portion of the reticular dermis (H&E, original magnification $\times 40$).

findings of vacuolar change with superficial and deep perivascular and periadnexal lymphoid infiltrates. Typical features of IP include thrombosed capillaries in the papillary dermis and lymphocytic exocytosis localized to the acrosyringia, whereas secondary perniois has superficial and deep perivascular and perieccrine lymphocytic infiltrates with vascular thrombosis in the reticular dermis. Vascular ectasia, dermal mucinosis, basement membrane zone thickening, and erythrocyte extravasation are not reliable and may be seen in both cases.⁸ One

study revealed the only significant difference between both entities was the perieccrine distribution of lymphocytic infiltrate in cases of IP ($P=.007$), whereas an absence of perieccrine involvement was noted in autoimmune cases.⁹

Direct immunofluorescence (DIF) may help differentiate IP from autoimmune perniois. In a prospective study by Viguier et al,⁹ 6 of 9 patients with IP had negative DIF and 3 had slight nonspecific C3 immunoreactivity of dermal vessels. Conversely, in patients with autoimmune perniois, positive DIF with the lupus band test was seen in 3 of 7 patients, all who had a positive ANA test⁹; however, positive ANA levels also were reported in patients with autoimmune perniois but negative DIF, suggesting that DIF lacks specificity in diagnosing autoimmune perniois.

Although histopathologic findings bear similarities to LE, there are no guidelines to suggest for or against laboratory testing for CTD in patients presenting with perniois. Some investigators have suggested that any patient with clinical features suggestive of perniois should undergo laboratory evaluation including a complete blood cell count and assessment for antibodies to Ro, ANA, rheumatoid factor, cryofibrinogens, and antiphospholipid antibodies.⁹ Serum protein electrophoresis and immunofixation electrophoresis may be done to exclude monoclonal gammopathy.

For idiopathic cases, treatment is aimed at limiting or removing cold exposure. Patients should be advised regarding the use of long-term ice pack use and the potential development of perniois. For chronic perniois lasting beyond several weeks, a combination of a slow taper of oral prednisone, hydroxychloroquine, and quinacrine has been successful in patients with persistent lesions despite making environmental modifications.³ Intralesional triamcinolone acetonide and nifedipine also have been effective in perniotic hand lesions.¹⁰

Conclusion

We report a rare case of perniois on the buttocks that arose in a patient who utilized ice packs for treatment of chronic low back pain. Ice pack-induced perniois may be an underreported entity. Histopathologic examination is nondescript, as overlapping features of perniois and LE have been observed with no underlying CTD present. Correlation with patient history and clinical examination is paramount in diagnosis and management.

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