

Frostbite

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A 4-year-old boy was admitted to the emergency department because of color change and pain on fingers. Anamnesis revealed that on the previous day, he played snowball without using his gloves for approximately 1 hour with his friends. Physical examination showed a well-demarcated color change in both fingers with distal skins having milky brown color and edema (Figure 1 a, b, c). On the left hand, this demarcation was evident on the proximal interphalangeal joint (Figure 1 a, b, c). It was less evident but apparent on the distal interphalangeal joint of the right hand (Figure 1a). Doppler ultrasonography of the distal fingers showed normal arterial flow. Superficial ultrasonography presented subcutaneous edema. Burn dressings with silver sulfadiazine were applied to the fingers, and he was hospitalized in the burn unit for 3 days before discharge without any complications.

Frostbite is a severe localized cold-induced injury caused by freezing of tissues (1). It is commonly seen in mountaineers, soldiers, the homeless, those who work in the cold, and in people who are exposed to the outdoors during winter (2). Frostbite differs from frostnip because the latter refers to cold-induced localized paresthesia that resolves with rewarming. It occurs as a result of cold-induced cell death and development of localized inflammatory processes and tissue ischemia mediated by thromboxane A2, prostaglandin F2-alpha, bradykinins, and histamine (1). Frostbite is classified into four degrees (3). In the first degree, there is pallor, pain, and edema. The second degree is recognized by large blisters containing clear fluid surrounded by edema and erythema. In the third degree, the blisters are hemorrhagic. In the fourth degree, mummification as well as muscle and bone necrosis can



Figure 1. a-c. Hands of the 4-year-old boy demonstrating demarcated color change in both fingers with distal skins having milky brown color and edema

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be seen. Treatment includes wound care, tetanus prophylaxis, and thrombolysis, if severe (4). Heparin administration is not recommended. Informed consent was obtained from the parents of the boy.

In conclusion, emergency physicians should be aware of cold-related injuries and frostbite in the extremities. Missing can have detrimental effects. A close follow-up is essential.

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