Wilderness Medicine Training Center International

Your friend likely has a cold water immersion injury (also known as trenchfoot). If so, he is in the early stages and it's crucial to keep is feet dry and warm to avoid further damage. To find out you'll need to carefully dry his feet and fully warm them. Cold water immersion injures typicaly develop after prolonged immersion (usually greater than 10-12 hours) in cold water (32º-50º F or 0º-10º C). The constant immersion causes prolonged vasoconstriction and decreased local perfusion. Lack of oxygen to the local tissue causes increased permeability in the capillary beds resulting in local edema and swelling. The skin may be red, whitish, or cyanotic (blue). Initial symptoms include tingling and numbness. The extent of the injury is significantly increased when the limb is kept immobile below the heart (e.g.: sitting in a raft with feet immersed in cold water). Rewarming may cause extreme pain leaving the extremity hot, red, and dry; small red blisters are possible; both may last 4-10 days.

In severe cases and after rewarming, damage to the limb may be indistinguishable from frostbite and treatment is similar. Severe or repeated immersion can result in gangrene and extensive tissue loss. Complete healing takes place over a period of months to years; there is a high risk of infection during the healing process. There is also a prolonged decrease or loss of sensation as the tissue heals and the patient remains predisposed to all forms of cold injury.

Fortunately your friend is in the early stages and should be able to remain in the field if treated properly. To treat:

- Warm his feet gently then pat or air dry. Do not rub. Elevate.
- Give him 400-600 mg ibuprofen four times a day.
- Encourage him to actively move his affected limb(s) but don't manipulate or massage them. Damaged tissue is highly susceptible to infection.
- Avoid repeated exposure.
- Avoid smoking; nicotine is a strong vasoconstrictor.
- If S/Sx completely reverse with rewarming and drying, patient may stay in the field. If mild S/Sx persist after drying and rewarming, consider a Level 3 evacuation.
- If soft tissue damage (blisters, ulcers, etc.) is present after rewarming, treat as a high risk wound. Gently wash limb and apply cotton between digits. Pad all blisters; do not break. Re-clean and pad as necessary during healing phase. If blisters break, debride and treat as a high risk wound, apply topical aloe vera every six hours; consider oral antibiotics. If possible, elevate the limb and eliminate (preferably) or minimize all pressure on any damaged tissue and begin a Level 2 evacuation