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Toxicology



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Extravasation Injuries

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1 CASE PRESENTATION

A 66-year-old male was admitted to the emergency department for brain trauma. The patient underwent general anesthesia preoperatively. Potassium chloride solution was given by intravenous infusion pump into a peripheral vein in the dorsum of the left hand due to severe hypokalemia of 2.8 mmol/L. The mixture of potassium chloride (10%, 50 mL) and sodium chloride (0.9%, 10 mL) was infused at a rate of 6 mL/h. However, the patient developed purplish swelling along the site of the cannula, which was not noted until half of the infusion was given. The infusion was immediately discontinued, and the cannula was removed. The hand was elevated, and Yunnan Baiyao (a Chinese herbal medicinal powder) was applied accordingly. The infusion was performed into a vein in the ankle of the left foot. After 4 hours, a similar erythematous plaque appeared. On day 7, the lesion of his hand had acquired a black swelling coloration with an irregular shape covered by Yunnan Baiyao (Fig. A). The area of the foot appeared black with crust formation (Fig. B). The patient died 8 days after presentation because his clinical condition deteriorated rapidly.

2 DIAGNOSIS: EXTRAVASATION INJURIES FROM POTASSIUM CHLORIDE

Extravasation of potassium chloride solution into the surrounding tissue can cause significant tissue necrosis and serious complications.¹ The main determining factors were loss of pain sensation, direct infusion using a pump through a peripheral vein, and lack of visibility from extravasation. Additional risk factors included incorrect visual perception and inadequate monitoring of infusions.² Extravasation can induce a chain reaction of inflammation and tissue damage.³ Prevention is always the best measure. Elderly patients with small vessels, such as atherosclerotic ones, are at increased risk. The use of an infusion pump to deliver concentrated potassium chloride solution into a peripheral vein should be avoided.

CONFLICT OF INTEREST

All authors have affirmed they have no conflicts of interest to declare.

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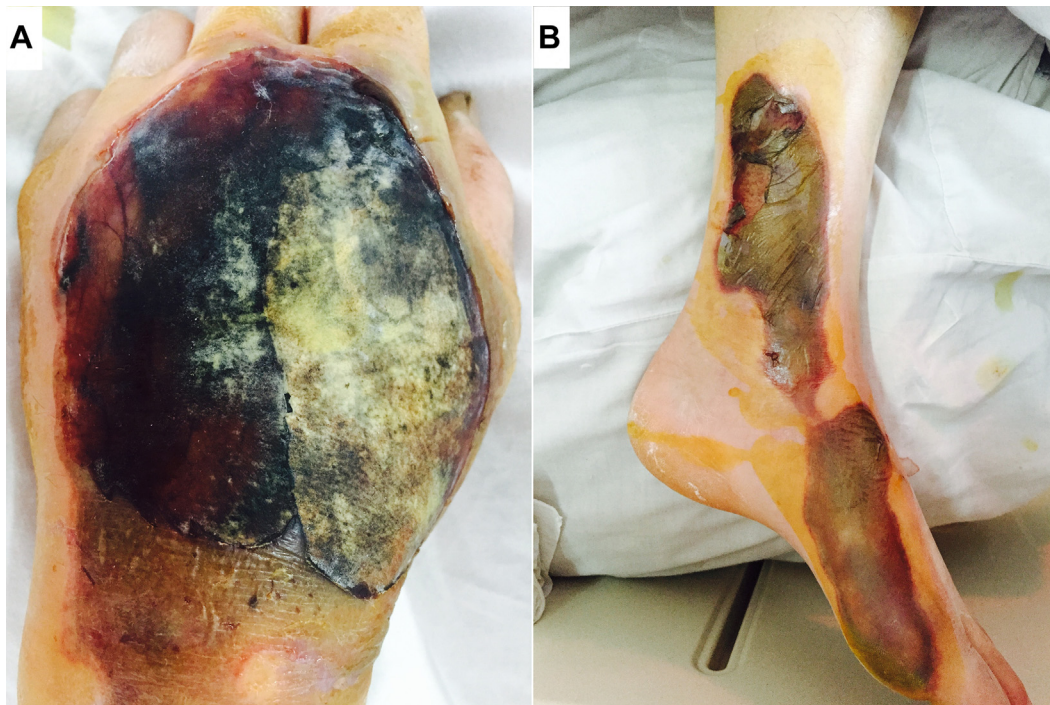


FIGURE. A, Extravasation injury of the left hand. B, Extravasation injury of the left foot.

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