

IMAGES IN EMERGENCY MEDICINE

Toxicology

Tissue injury secondary to peripheral xenobiotic administration

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1 | PATIENT PRESENTATION

A 57-year-old female with a past medical history of depression was brought in by emergency medical services after intentional ingestion of 400 mg warfarin and 200 mg amlodipine 4 hours before presentation. The patient was started on treatment for calcium channel blocker

overdose, including intubation for central nervous system depression, activated charcoal, intravenous calcium and glucagon, high-dose insulin with dextrose infusion, and vasopressor support. On day 2 of hospitalization, a rash was found on the left lower extremity (see Figures 1 and 2).



FIGURE 1 Large area of skin bruising and bullae along the left lower extremity venous tract.

2 | DIAGNOSIS*Tissue Injury Due to Peripheral Intravenous Calcium Chloride Administration*

Intravenous calcium is used to treat acute hypocalcemia, severe hyperkalemia, calcium channel blocker overdose, beta-blocker overdose, and hydrofluoric acid exposure.¹ Calcium chloride is preferentially administered via a central venous catheter due to its high osmolarity and its propensity to act as a vesicant.¹ Calcium gluconate is preferred over calcium chloride for peripheral administration, as it is less likely to cause tissue injury if extravasation occurs. Adverse effects of both formulations include local tissue injury, skin necrosis, calcium-induced vasoconstriction, and late-onset calcifications or calcinosis cutis.^{1,2,3,4}

Treatment for local tissue injury includes stopping the infusion and consideration of intradermal hyaluronidase around the site to diminish tissue injury.^{1,4} If tissue necrosis develops, wound care, surgical debridement, and skin grafting may be considered.³ Clinicians should familiarize themselves with local tissue injury, which can be mini-

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mized by using calcium gluconate as opposed to calcium chloride when peripheral access is present.

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FIGURE 2 Intravenous insertion site in left medial ankle with proximal bruising.