Letter to the Editor
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# The Challenge of Chemotherapy Extravasations

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## Dear Editor

Extravasation is the unsuitable or accidental infiltration of chemotherapy drugs into subdermal tissues that surround the IV-line site. These injuries are variable and range from less remarkable erythematous reactions to skin necrosis (Figure 1). Extravasation is only considered to be problematic with chemotherapy drugs known to have irritant or vesicant attributes.[1] The symptoms may occur immediately or several days-to-weeks after the injection. If left undiagnosed or untreated, they may result in tissue necrosis, thrombophlebitis, venous thrombosis, or severe outcomes that include functional impairment, limb disability, residual cosmetic defects, prolonged hospital stays, and increased morbidity.[2]

The incidence of extravasation is as high as 6% for chemotherapeutic drug administrations. Therefore, prevention of this phenomenon is a critical point in reducing pediatric cancer morbidities.[3] We have prepared a guideline to educate the nursing staff working in the chemotherapy wards at Amir Oncology Hospital affiliated to the Shiraz University of Medical Sciences in Southern Iran. Some known contributing factors for extravasation include expertise of the personnel; injection technique; fragility of a patient's veins and the condition of the surrounding skin; number of venipuncture attempts; specific drug characteristics such as hypertonicity, nonphysiologic pH, and high concentration; and the severity of tissue destruction.[2]

Extravasation should be suspected if one or more of the following is observed during or immediately after the injection:

1. The patient complains of burning, stinging pain or any other acute change at the injection site. With central lines the patient may experience an altered sensation at the site or along the chest wall, neck and shoulder.
2. Induration, swelling or leakage at the injection site.
3. Erythema at the injection site
4. Lack of blood backflow.
5. Resistance is felt against the

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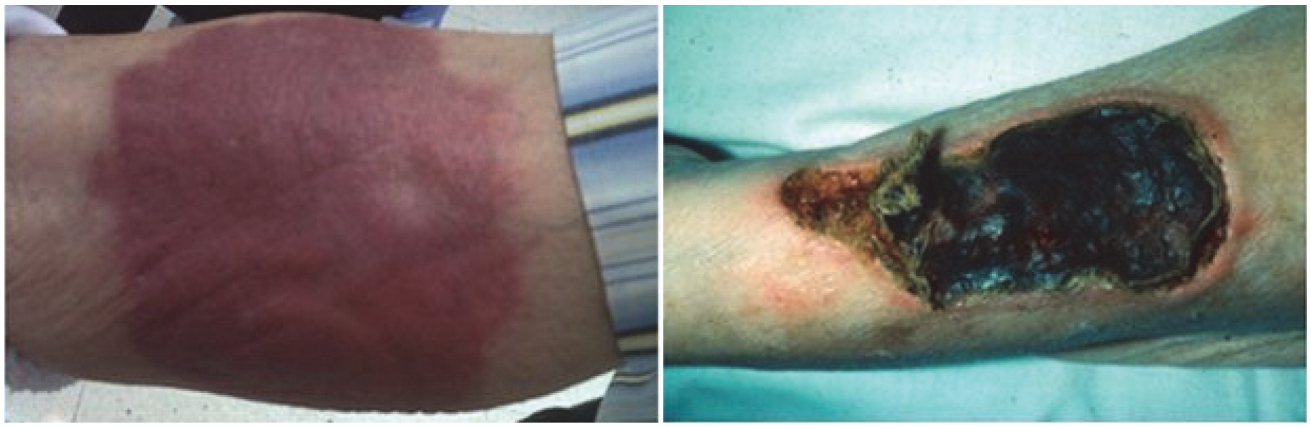

**Figure 1.** Extravasation injuries from erythema to necrosis

syringe plunger during administration.

6. The free-flowing infusion slows or stops.
7. Flare reactions and venous spasm.[4]

When extravasation occurs, prompt action is required to prevent any further infiltration and minimize tissue damage. The infusion should be stopped immediately while leaving the cannula/central line in place which allows residual drug in the tissues to be aspirated and prescribe analgesic. The limb is elevated to minimize swelling; gentle movement of the affected limb should be encouraged. Radiographs are generally taken with extravasation of all vesicants and other agents induce extravasation.

Early referral to medical personnel is essential. An extravasation in the deep tissues may require surgical management. Heat will cause vasodilation which increases drug distribution and absorption. Heat is used in non-DNA binding drug extravasations, while cold is applied in DNA binding drug extravasations. Sometimes surgical treatments such as flush-out technique are used.[5]

In conclusion, as extravasation injury can lead to life-long and sometimes irreversible sequellae, it is generally advised to adopt reasonable precautions to avoid such a disastrous phenomenon. Early surgical intervention as well as supportive care in a timely manner may reduce the extent of injury.

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