Port Related Extravasation Injury in The Immunocompromised Patient

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Background

Although extravasation injuries are rare, when undiagnosed can create detrimental complications including multidrug resistant and life-threatening infections, especially in the immunocompromised patient.

Differential diagnoses can include necrotizing fasciitis, pyoderma gangrenosum, and Sweet's Syndrome.

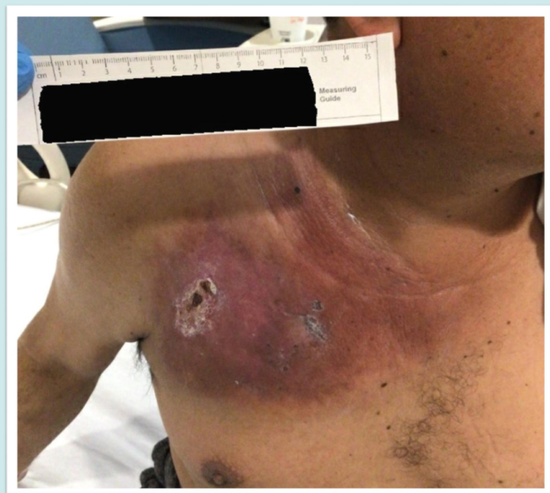
Chemotherapeutic agents pose a particularly high risk for extravasation injury due to the mechanism of cell DNA damage and long half-life in tissues.

Signs and symptoms of extravasation injury vary and may include pain, erythema, and swelling at the catheter site. Later signs may include tissue necrosis and potentially fatal secondary infections.

When a patient presents with necrosis secondary to a suspected extravasation injury, imaging, histopathological analysis of the site of injury, and wound cultures are essential components of the complete work up.

Fig. 1

Initial area of extravasation causing a semi-circular erythematous lesion around the area of the chest port



Description

Patient is a forty-four-year-old male with past medical history of B-cell acute lymphoblastic leukemia actively receiving chemotherapy. He reported pain at his right chest wall implantable port with associated dusky-colored surrounding skin.

Extravasation of chemotherapy was suspected, and the port was removed; however, systemic chemotherapy was continued via alternate vascular access. The patient was subsequently diagnosed with infectious right chest wall cellulitis and myositis requiring debridement and eschar removal with delayed closure of the wound, due to ongoing chemotherapy induced neutropenia. Deep wound cultures obtained during the debridement grew non sporulating dematiaceous mold which was treated with oral voriconazole for one month.

Several months later, the patient developed recurrent cellulitis and myositis at the primary chest wall wound site in the setting of prolonged chemotherapy induced neutropenia. Repeat wound debridement and deep wound cultures grew two strains of E. coli: one strain showed resistance patterns to ceftriaxone, trimethoprim/sulfamethoxazole, and ciprofloxacin and the second strain demonstrated resistance to cefepime and with intermediate susceptibility to minocycline.

Later, a third wound debridement was required due to suspected recurrent infection and repeat deep wound cultures grew a new multi-drug resistant E. coli strain. Due to the isolation of increasingly resistant E. coli, the patient underwent further wound debridement with no adjunctive antibiotic therapy and a wound vac at the site which healed over the span of three months.

Resources

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Conclusions

Ultimately, the patient relapsed after his initial remission, thought to be a result of the delay of his chemotherapy due to recurrent chest wall infections.

Extravasation injury from chemotherapeutic agents can present with a broad range of signs and symptoms and have the potential to cause treatment delays for malignancies. These treatment delays are often related to the primary extravasation process itself, as well as secondary complications such as increased risk for antimicrobial resistance in the immunocompromised patient.

Prevention and accurate diagnosis of extravasation complications relies strongly on proper precaution and attentive monitoring of the patient's status. Many drug classes increase susceptibility of extravasation and knowledge of these possibilities allow for timely diagnosis and reduction of complications.

Conservative management is the preferred treatment, and early diagnosis may prevent the need for debridement and management of infectious complications. This is especially important to prevent in the immunocompromised patient with central lines actively undergoing chemotherapy.

Fig. 2

Further surgical debridement of surrounding skin, fat, and fascia