

Venous flare reaction, a localized allergic response associated with the administration of an irritant, is one of the most common chemotherapy infusion-related reactions.

Etoposide, a drug commonly used in patients with lung cancer, has been reported to be an irritant with vesicant properties depending on the volume administered. This article presents the case of a patient who has a venous flare reaction immediately following the administration of etoposide for the treatment of diffuse large B-cell lymphoma. Managing such complications is crucial to maintaining patient safety. Proper training and education should be incorporated into nursing practice when identifying, preventing, and managing such reactions.

#### AT A GLANCE

- Etoposide is an irritant that is known to have vesicant properties in higher concentrations or larger volumes.
- One of the critical skills of a chemotherapy-competent oncology nurse is the ability to distinguish between extravasation and venous flare reaction.
- Evidence-based chemotherapy administration guidelines and institutional policies must guide nursing practice in the safe administration of chemotherapy.

#### KEYWORDS

etoposide; DLBCL; venous flare reaction; extravasation; chemotherapy

#### DIGITAL OBJECT

#### IDENTIFIER

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# Venous Flare Reactions

## A case report of reactions following etoposide infusion

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This is a case of R.P., a 74-year-old man with stage IV diffuse large B-cell lymphoma (DLBCL), admitted for his second course of RICE chemotherapy (rituximab [Rituxan®], ifosfamide [Ifex®], carboplatin [Paraplatin®], and etoposide [Etopophos®]). At the time of initial diagnosis in 2008, DLBCL affected R.P.'s spleen, bone marrow, peripheral blood, and brain. He was treated for systemic and central nervous system (CNS) disease with R-CHOP (rituximab, cyclophosphamide [Cytoxan®], doxorubicin [Adriamycin®], vincristine [Oncovin®], and prednisone) and achieved complete remission in spring 2009. The lymphoma recurred in the brain, lung, and retroperitoneum in May 2017. He underwent six cycles of high-dose methotrexate (Trexall®), leucovorin (folinic acid) rescue, high-dose steroids, rituximab, and temozolomide (Temodar®). He then declined further treatment for asymptomatic systemic disease but agreed to undergo treatment for CNS disease. In December 2017, a magnetic resonance imaging of the brain showed complete resolution of CNS disease. Unfortunately, he had been found to have a new liver lesion the month before. The patient needed therapy again, and he was treated systemically with RICE chemotherapy. His first course of RICE chemotherapy was complicated by febrile neutropenia, which required an unplanned hospitalization and daily treatment with filgrastim (Neupogen®). During the second course of RICE chemotherapy,

difficult venous access prompted a referral to establish a central vascular access device, which was firmly refused by the patient. Afterward, he developed a venous flare reaction, which was noticed only after the full dose of etoposide had been infused. The reaction resolved within an hour, with no further interventions. After the venous flare reaction, a healthcare professional discussed establishing a central vascular access device for subsequent infusions with the patient, who agreed.

#### Background

IV infusion is still the main modality of administering chemotherapy (Coyle, Griffie, & Czaplowski, 2014), even with an increase in the availability of oral agents. With the administration of these drugs comes the concern for infusion-related reactions. Two distinct infusion-related reactions consist of a venous flare reaction, which is an allergic local reaction, and extravasation, a more severe reaction ranging from skin erythema to soft tissue necrosis. Both infusion-related reactions may present with warmth, erythema, and pruritus. Extravasation can manifest as a more severe condition, presenting with pain at infusion site injection, blisters, and severe skin damage. Extravasation usually occurs with drugs known to be vesicants, which can cause tissue necrosis and blister formation because of leakage of chemotherapy from the blood vessel (Camp-Sorrell, 2018) (see Figure 1). A flare reaction occurs with inflammitants (St Luke's Cancer Alliance, 2015), drugs that cause transient mild