

A Nurse's Perspective

Liposomal doxorubicin extravasation

Dear Editor:

In the July 2007 issue of *Community Oncology*, Laufman, Sickle-Santanello, and Paquelet reviewed a report of extravasations of liposomal doxorubicin (Doxil) that occurred during the agent's clinical trials.¹ The article they reviewed describes the use of scalp vein needles to administer the drug.² However, Laufman et al wrote that the agent was administered using "scalp veins in the upper extremity." Metal needles, such as scalp vein or butterfly needles, are not appropriate for administering chemotherapy.³ They can easily puncture the back wall of the blood vessel during insertion, or if the needle or patient moves, leading to extravasation.

Further, in describing their own case of extravasation of liposomal doxorubicin, Laufman et al wrote that their policy allowed the administration of chemotherapy into an implanted venous access device even though it "never had an adequate blood return." This is extremely dangerous, and as a clinical nurse specialist with an interest in the prevention and management of extravasation, I would not want any reader to think this is an acceptable practice.

All central lines must have a blood return prior to administering IV fluids or medications such as chemotherapy into the central line.⁴⁻⁶ If there is no blood return, efforts must be made to obtain it and to verify placement and patency of the device. The patient can be repositioned from sitting to supine, or the port can be reaccessed with a new Huber point needle. Should these efforts be unsuccessful, a medication such as alteplase (Activase) should be instilled to restore the blood return.⁷ If two doses of alteplase are not effective in restoring a blood return, the central line cannot be used until it is proven safe to use.

Central lines without a blood return must always be checked for structural or placement problems using a diagnostic

imaging study, such as a port flow study with contrast, before they are used.^{4,5} In the absence of a good blood return, using an infusion of IV fluid into the port to test for evidence of extravasation does not provide proof of port and catheter patency or structural integrity. As the case study showed, this "fluid infusion test" did not prevent extravasation when the port was used.

The chest wall can accept a large volume of fluid without evidence of local swelling or other signs of extravasation.⁴ So, continuing to use this procedure as a way to check the structural integrity of an implanted port is not a sound practice. Ports need to flush easily and without resistance and have a good blood return, not only prior to use but during and after as well. Drug administration must stop if the blood return is lost during administration and cannot be restarted until the blood return is restored or a diagnostic study confirms the integrity of the device. Doing anything less is a disservice to patients and places them at risk for a poor outcome.

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References

1. Laufman LR, Sickle-Santanello B, Paquelet J. Liposomal doxorubicin extravasation. *Commun Oncol* 2007;4:464-465.
2. Madhavan S, Northfelt DW. Lack of vesicant injury following extravasation of liposomal doxorubicin. *J Natl Cancer Inst* 1995;87:1556-1557.
3. O'Grady NP, Alexander M, Dellinger EP, et al. Guidelines for the prevention of intravascular catheter-related infections. Available at: http://www.guideline.gov/summary/summary.aspx?doc_id=3387&nbr=2613. Accessed July 30, 2007.
4. Schulmeister L, Camp-Sorrell D. Chemotherapy extravasation from implanted ports. *Oncol Nurs Forum* 2000;27:531-538.
5. Polovich M, White JM, Kelleher LO. Chemotherapy and Biotherapy Guidelines and Recommendations for Practice. 2nd ed. Pittsburgh, Pa: Oncology Nursing Society; 2005.

6. Infusion Nurses Society. Policies and Procedures for Infusion Nursing. 3rd ed. Norwood, Mass: Infusion Nurses Society; 2006.

7. Semba CP, Deitcher SR, Li X, et al. Treatment of occluded central venous catheters with alteplase: results in 1,064 patients. *J Vasc Interv Radiol* 2002;13:1199-1205.

Dr. Laufman's reply:

In her letter, Ms. Held-Warmkessel lists classic textbook guidelines for chemotherapy administration—already well known to physicians, nurses, and clinical nurse specialists who administer chemotherapy. Unfortunately, she does not recognize that clinical practice sometimes requires practical choices, adjusting for real-world situations.

Chemotherapy patients do not always receive their treatment in a textbook-perfect world, ie, in tertiary hospital settings, and therefore may not have immediate access to x-ray machinery or interventional radiology. In fact, the majority of chemotherapy is administered in alternative settings, which is the *raison d'être* for this journal. Community oncology often requires subtle practical adjustments in patient care to fit the clinical setting. In the absence of interventional radiologists, a simple bedside test (such as the rapid administration of a large fluid bolus) may allow patients to receive their chemotherapy on schedule. It may also allow them to avoid a port flow study with intravenous contrast, with the attendant dangers of dye sensitivity and renal failure. Some ports are finicky enough that they require a contrast study before each use.

We hope that the purpose of our report—whether liposomal doxorubicin is an irritant or vesicant—is not lost in this discussion. The proper treatment of drug extravasation, however it occurs, is of great importance to us all.

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