



The Arctic Tundra

## PIC QUESTION OF THE WEEK: 3/5/07

**Q:** Are there any recommended alternatives for maintaining the patency of dialysis catheters in patients with heparin-induced thrombocytopenia?

**A:** Heparin-induced thrombocytopenia (HIT) is a well-recognized complication of this commonly used anticoagulant. It occurs in approximately 3-5% of those administered the drug and can be observed regardless of the route of administration. Possibly 30-50% of those with HIT develop a heparin + platelet factor 4 *antibody complex* that results in thrombosis. This is generally known as heparin-induced thrombocytopenia with thrombosis (often referred to as HIT). In some cases, this adverse effect has been documented in patients receiving heparin to maintain the patency of intravenous catheters and other intravascular/intraarterial access devices. It can be initiated by exposure to even small concentrations of heparin found in flush solutions. HIT may develop in venous or arterial sites and is responsible for ischemic events such as stroke, pulmonary embolism, myocardial infarction, and gangrene. Systemic alternatives to heparin in patients with documented HIT are the direct thrombin inhibitors lepirudin (Refludan), argatroban (Argatroban), and bivalirudin (Angiomax). Fondaparinux (Arixtra), a selective, indirect inhibitor of factor Xa, has also been used safely in patients with HIT. There is little basis for recommending an alternative to heparin as a flush solution in dialysis patients with a history of HIT. The efficacy of lepirudin (*3 ml of a 100 mcg/ml solution in saline*) and heparin (*3 ml of 100 U/ml solution*) to maintain the patency of central venous catheters has recently been evaluated in a small clinical trial. None of the 25 patients receiving lepirudin had a history of HIT. Although lepirudin treated catheters required somewhat more frequent clearance with alteplase, the authors concluded that higher concentrations might provide better results. They also cautioned about the systemic effects of excess lepirudin. A case report published several years ago described a dialysis patient with HIT whose catheter was flushed with lepirudin (*1.3 ml of a 0.5 mg/ml solution in each port*). The catheter remained patent and the patient displayed no evidence of HIT during use of lepirudin. A review discussing the management of renal patients with HIT also provided support for the safety and efficacy of lepirudin (*5 mg/ml and sufficient volume to fill the catheter*) to maintain patency of dialysis catheters. The authors cautioned that the solution be withdrawn prior to the subsequent dialysis procedure to reduce the risk of systemic effects. At this time, one of the few documented options for maintaining patency of dialysis catheters in patients with HIT appears to be lepirudin.

### References:

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