

Low-Molecular-Weight Heparin for DVT Prophylaxis in Patients with Renal Insufficiency

A study showed no excessive anticoagulant effect of prophylactic LMWH in critically ill patients with severe renal insufficiency.

Treatment with low-molecular-weight heparins (LMWHs) is sometimes avoided in patients with renal insufficiency because of risk for drug accumulation and bleeding, although prescribing information for enoxaparin (Lovenox) provides a reduced-dose schedule for patients with severe renal impairment. In this multicenter Canadian study partially funded by industry, 138 critically ill patients with severe renal insufficiency (mean creatinine clearance, 19 mL/minute) received dalteparin (Fragmin; 5000 IU, once daily) for deep venous thrombosis (DVT) prophylaxis. Trough levels were monitored twice weekly by measuring factor Xa inhibition (anti-Xa levels; patients with normal renal function have trough levels of ≤ 0.20 IU/mL; levels >0.40 IU/mL are associated with excess bleeding risk). Patients who required treatment-dose anticoagulation were excluded.

Dalteparin was administered for a median of 7 days. No patients had bioaccumulation: 99% of anti-Xa trough measurements were ≤ 0.20 IU/mL, and the highest level (0.40 IU/mL) was recorded only once. Peak levels — about 4 hours after dalteparin administration — were between 0.29 IU/mL and 0.34 IU/mL. Among patients with major bleeding, none had anti-Xa trough levels >0.20 IU/mL).

Comment: In this single-arm study, dalteparin was not associated with drug accumulation in critically ill patients with renal insufficiency. In another ongoing study with clinical efficacy and safety endpoints (the [PROTECT study](#)), researchers are comparing prophylactic unfractionated heparin and dalteparin in intensive care unit patients with or without renal insufficiency.

— [Jamaluddin Mooloo, MD, MPH](#)

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Douketis J et al. Prophylaxis against deep vein thrombosis in critically ill patients with severe renal insufficiency with the low-molecular-weight heparin dalteparin: An assessment of safety and pharmacodynamics: The DIRECT study. *Arch Intern Med* 2008 Sep 8; 168:1805.