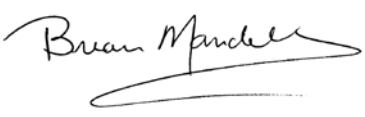
# The battle of the clot

Preventing and treating thromboembolic disease remain vexing challenges for both physicians and patients. Warfarin has withstood the test of time as an inexpensive and effective anticoagulant, but it provokes angst in many prescribers because of its very narrow therapeutic window and many significant drug interactions. Low-molecular-weight heparins are easy to administer and have greatly simplified the acute and chronic treatment of thromboembolic disease, but they are quite expensive. Thus, it has been important to define the situations in which these drugs have the most to offer.

In this issue of the *Journal* we review two special situations in which low-molecular-weight heparins have special advantages. On page 129, Babu and Carman discuss patients with cancer and thromboembolic disease. These patients are particularly difficult to manage since they tend to have recurrent thrombosis, sometimes even while on anticoagulant therapy, and they tend to have more bleeding complications from warfarin therapy. Inanition, drug interactions, and organ dysfunction make warfarin titration problematic, and the possibility of vascular metastases is always a concern. Low-molecular-weight heparins—which, unlike warfarin, work primarily by antagonizing factor Xa activity—have proven to be as effective as warfarin in reversing the many hypercoagulable effects of malignancy, although it wasn't obvious at first that they would be.

On page 113, Gibson and Powrie review the issues we face when pregnant patients need anticoagulation. While drug interactions and organ dysfunction are rarely problems in this setting, warfarin is teratogenic and is therefore strongly contraindicated early in pregnancy, and its peripartum use has been associated with bleeding complications. Furthermore, unfractionated heparin is associated with the development of osteoporosis, and it requires frequent injections. The low-molecular-weight heparins thus have a definite niche in the management of pregnant women, but with a caveat: dosing of these agents by weight alone in this setting is fraught with the potential for underdosing. Catastrophic outcomes have been reported in pregnant patients with older mechanical cardiac valves who were switched from warfarin to low-molecular-weight heparin therapy. Plus, if the patient is to receive neuraxial regional anesthesia, low-molecular-weight heparins should be discontinued at least 12 hours before catheter placement if prophylactic doses have been given, or 24 hours if therapeutic doses have been given.

Low-molecular-weight heparins have greatly enhanced our ability to treat thromboembolic disease. But, as the authors of these two papers discuss, many management nuances still must be noted.



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