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Heparin-Induced Thrombocytopenia with Low Molecular Weight Heparin after Total Knee Replacement

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Case Presentation: A 77-year-old woman underwent right total knee replacement (TKR) under epidural anesthesia. For deep vein thrombosis (DVT) prophylaxis, she received warfarin for 2 days and then enoxaparin in addition to intermittent pneumatic compression. On postoperative day 2 she was transferred to the rehabilitation service.

The patient continued to have knee pain but was otherwise doing well and was scheduled for discharge. On postop day 12 she complained of increased pain in her right knee and leg; a venous duplex study revealed an acute proximal DVT, and she was transferred to the medical service.

She was initially treated with enoxaparin and warfarin, which were discontinued after 1 dose when the patient's platelet count was noted to be 98,000. Hematology was consulted for possible heparin-induced thrombocytopenia (HIT), heparin antibody study was requested, and argatroban was started. The dose was adjusted, and when the patient's platelet count was 139,000, warfarin was restarted. When the international normalized ratio (INR) was therapeutic, argatroban was discontinued. The patient was discharged home on postop day 36 (**Table, next page**).

Discussion: HIT is a complication more commonly associated with unfractionated heparin (UFH) than low molecular weight heparin (LMWH). After stopping heparin therapy, thrombosis (arterial or venous) may occur in up to 50% of cases, and alternate anticoagulant therapy is indicated. In retrospect, this patient had relative thrombocytopenia as early as postop day 7 (< 50% of baseline) but definitely by day 8 (absolute thrombocytopenia < 150,000); however, it was not recognized, possibly due to the feeling that HIT is rare, especially with LMWH. Earlier recognition and discontinuation of LMWH might have prevented the DVT, although the risk of DVT after TKR is significant (up to 20% even with appropriate prophylaxis).

Key Points: (1) Recognize that HIT can occur with LMWH as well as with UFH. (2) Stop the offending agent (UFH/LMWH) immediately once HIT is suspected.

TABLE
HIT and LMWH after TKR

| Hospital day | Comments | Platelet count (thousand) | Treatment |
|--------------|---|---------------------------|--|
| -1 | Preop (baseline) | 631 | Warfarin 5 mg |
| 0 | Day of surgery | 604 | Warfarin 5 mg |
| 1 | Postop day 1 | 596 | Enoxaparin 30 mg q12h |
| 2 | Transfer to rehab | 570 | Enoxaparin 30 mg q12h |
| 4 | — | 749 | Enoxaparin 30 mg q12h |
| 6 | — | 338 | Enoxaparin 30 mg q12h |
| 7 | Relative thrombocytopenia | 168 | Enoxaparin 30 mg q12h |
| 8 | Absolute thrombocytopenia | 118 | Enoxaparin 30 mg q12h |
| 9 | Friday | 98 | Enoxaparin 30 mg q12h |
| 12 | DVT Dx – transfer to med service; enoxaparin treatment dose started | | Enoxaparin 100 mg q12h + warfarin 5 mg |
| 13 | Enoxaparin/warfarin stopped; HIT Dx | 44 | Argatroban |
| 14 | — | 50 | Argatroban |
| 15 | Heparin Ab reported as + | 95 | Argatroban |
| 16 | Warfarin restarted | 139 | Argatroban + warfarin |
| 17 | — | 184 | Argatroban + warfarin |
| 18 | — | 221 | Argatroban + warfarin |
| 25 | — | 534 | Argatroban + warfarin |
| 28 | Argatroban stopped | 591 | Warfarin |
| 36 | Discharged home on warfarin | 855 | Warfarin 14 mg daily |