Bleeding Complications from Femoral and Sciatic Nerve Catheters in Patients Receiving Low Molecular Weight Heparin

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After knee replacement surgery, the use of continuous local anesthetic infusions in femoral and sciatic peripheral nerve catheters is an effective analgesic option. Limited data are available concerning the safety of peripheral nerve infusions in patients receiving low molecular weight heparin thromboprophylaxis. We report three cases of bleeding at femoral and sciatic catheter sites in patients receiving a single daily dose of enoxaparin (40 mg). In all cases, some bleeding was noticed before catheter removal; in one case involving catheter removal 3 h after enoxaparin administration, massive thigh swelling occurred. Physical therapy and discharge from the hospital were delayed in two cases but no other complications were seen. More data are needed to determine if it is necessary to use the same guidelines for managing peripheral nerve infusion catheters in patients receiving enoxaparin as with epidurals and other types of central nerve catheter infusions.
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Adequate postoperative analgesia after total knee replacement (TKR) improves outcome and decreases hospital stay (1). Postoperative pain after this procedure can be severe, and may not be adequately treated by oral or parenteral narcotics. The use of continuous passive motion machines early in the postoperative period increases pain and analgesic demands. Although continuous lumbar epidural analgesia with infusions containing local anesthetics and opioids provides excellent analgesia, administration of low molecular weight heparin (LMWH) to prevent thromboembolism limits the use of epidural analgesia. Accordingly, we have used continuous local anesthetic infusions at the femoral and sciatic nerves. Significant bleeding with peripheral nerve infusion catheters is generally associated with deeper and more central catheter placement (2,3). Here, we describe three cases of bleeding in patients with femoral and sciatic nerve catheters after TKR.

CASE REPORTS

Case 1

A 49-yr-old 90-kg man was admitted for a right TKR. He reported no bleeding tendencies or preoperative aspirin use and denied having any major medical problems. His plasma creatinine level was normal.

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Femoral and sciatic nerve blocks and catheters were placed. The sciatic nerve was identified in the lateral, mid-femoral region at a depth of approximately 5 cm at a stimulating amplitude of 0.5 mA using a 10.2-cm, insulated 18-g Tuohy needle (CNB400 Contiplex™ Tuohy Continuous Nerve Block Set, B. Braun Medical, Inc., Bethlehem, PA). Plantar flexion was used as the anticipated response. Thirty milliliter total volume of local anesthetic (equal volumes of 1.5% mepivacaine and 0.25% ropivacaine) was injected and a 20-g polyamide nerve infusion catheter was advanced through the Tuohy needle and secured at a depth of 12 cm at the skin. The femoral nerve block was performed with a 3.81-cm, 18-g Tuohy needle (CNB150 Contiplex™ Tuohy Continuous Nerve Block Set, B. Braun Medical) and 25 mL of local anesthetic (same mixture as in the sciatic block) was injected followed by placement of a 20-g polyamide nerve catheter. The catheter was secured at a depth of about 7-cm deep at the skin. No difficulty or bleeding was encountered with either catheter placement.

The patient underwent a TKR with IV sedation and nasal cannula oxygen. Postoperatively, 0.2% ropivacaine was delivered to both catheters as a continuous infusion at a rate of 10 mL/h. On postoperative day 2, enoxaparin administration, 40 mg subcutaneously once daily, was begun. No nonsteroidal antiinflammatory drugs were given. On the morning of the third postoperative day, the nerve infusion catheters were removed about 3 h after the last enoxaparin dose. At catheter removal, swelling and discoloration were noted at both femoral and sciatic sites. On the morning of the fourth postoperative day there was massive swelling of the right thigh and extensive ecchymoses at both sites. Sensation and motor strength in the extremity were unaffected, but normal movement of the leg was impaired because of thigh tightness. No embolism or obstruction of major vessels in the inguinal and thigh regions were identified on venous ultrasound. By the fifth postoperative day, the bruising and ecchymosis had spread over nearly the entire anterior and lateral thigh (Fig. 1). Enoxaparin was discontinued, but no specific treatment for the bleeding was made. Two days later, the patient was discharged without significant neurologic sequelae. In this case, discharge was delayed by 2 days.

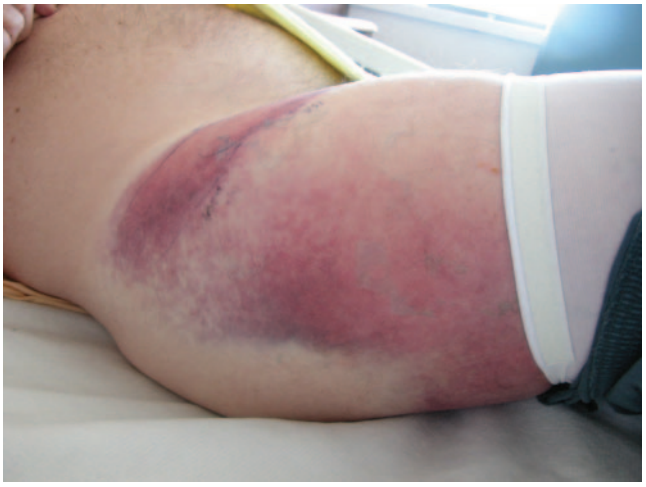

Figure 1. Photograph of the lateral thigh of the patient described in Case 1. This 49-yr-old man had received continuous femoral and sciatic nerve infusions during enoxaparin administration.

Case 2

A 78-yr-old 65-kg woman was admitted for TKR surgery. Her history included severe coronary artery disease, hypertension, and hypercholesterolemia. Her plasma creatinine was normal. There was no history of bleeding tendencies and no preoperative aspirin use. Femoral and sciatic nerve blocks and catheters were performed with the same technique as described in Case 1. After surgery under general anesthesia, a continuous infusion of 10 mL/h 0.2% ropivacaine via both the femoral and sciatic catheters was initiated. Enoxaparin administration, 40 mg subcutaneously once a day, was started on the morning of postoperative day 1 (the day after surgery). On the morning of postoperative day 2, the lateral thigh at the site sciatic nerve catheter was quite swollen and ecchymotic. The femoral nerve catheter site appeared normal. The catheters were removed but the bruising increased over the next 24 h. As a result, physical therapy was delayed by one day. No significant neurologic impairment was present at the time of discharge on postoperative day 5.

Case 3

A 48-yr-old 85-kg woman was admitted for a TKR procedure. Her history included obesity, hypertension, and severe osteoarthritis. She denied bleeding tendencies, use of aspirin, or herbal remedies. Renal function was normal. Femoral and sciatic nerve blocks and catheters were performed to facilitate postoperative analgesia. Enoxaparin administration, 40 mg subcutaneously per day, was begun the morning of postoperative day 1. On the morning of the second postoperative day, the dressings over the femoral nerve catheter insertion site were soaked with 15–20 mL of blood, although no subcutaneous hematoma was noted. The sciatic nerve infusion catheter site and surrounding tissue appeared normal. The infusion catheters were removed on the second postoperative day. The femoral catheter site continued to ooze blood and soaked another dressing. No further bleeding was noted on postoperative day 3. The bleeding did not delay physical therapy or discharge.

DISCUSSION

These cases show that bleeding complications can occur when continuous peripheral nerve infusion catheters are used in patients receiving LMWH. Although bleeding complications have been reported after the use of lumbar plexus nerve infusion catheters, it is not certain whether peripheral nerve infusions present bleeding risks during systemic anticoagulation (2,3).

The timing of enoxaparin doses relative to catheter removal may have contributed to the bleeding in the first 2 cases presented. Morning administration of LMWH may have created a period of bleeding vulnerability that was coincident with catheter removal several hours later. We now remove the peripheral nerve catheters more than 6 h after LMWH administration, and we inspect all catheters twice a day for hematomas. After initiating this policy, we have not seen bleeding problems. More data are needed to determine if it is necessary to use the same guidelines for management of peripheral nerve infusion catheters in patients receiving enoxaparin as with epidurals and other types of central nerve catheter infusions.

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