

Combined femoral and sciatic nerve blocks for lower limb anaesthesia in a patient on anticoagulation with severe cardiac valvular lesions

¹Dr Aayushi Tomar, MD Anesthesia, Dr. Yashwant Singh Parmar, Government Medical College, Nahan, Sirmaur, Himachal Pradesh

Corresponding Author: Dr Aayushi Tomar, MD Anesthesia, Dr. Yashwant Singh Parmar, Government Medical College, Nahan, Sirmaur, Himachal Pradesh

Citation this Article: Dr Aayushi Tomar, “Combined femoral and sciatic nerve blocks for lower limb anaesthesia in a patient on anticoagulation with severe cardiac valvular lesions”, IJMSIR- September - 2022, Vol – 7, Issue - 5, P. No. 171 – 173.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Peripheral nerve block (PNB) in patients receiving anticoagulant therapy is controversial and there are no guidelines. We report a patients with severe heart valve lesions who underwent emergency lower extremity surgery. The patients was taking anticoagulants aspirin and clopidogrel. A combination of femoral block and sciatic nerve block was used as the sole anesthesia technique. Postoperatively, the patient was examined for bleeding complications at the injection site. Patient had anuneventful surgery and recovery. Patients receiving anticoagulant therapy require close postoperative monitoring after PNB.

Keywords: Anticoagulation, Lower Extremity Anesthesia, Peripheral Nerve Block.

Introduction

Patients with severe valvular lesions present problems with anesthesia due to fixed cardiac output. General anesthesia (GA) and local anesthesia with central nerve axis block (CNB) have potential risks. This is further complicated by the fact that local anesthesia of any kind is contraindicated as these patients are commonly on

anticoagulants. Often these patients are prone to peripheral thromboembolism requiring emergency limb-sparing surgery. There are no specific anesthesia guidelines for management in such situations. The use of peripheral nerve blocks in cardiac patients receiving anticoagulant therapy is also controversial. We report on a patient with heart disease treated with anticoagulants who successfully underwent emergency lower extremity surgery for peripheral nerve block (PNB). A combination femoral and sciatic nerve block was used as the sole anesthesia technique.

In life-threatening emergencies, PNB should be considered when administered with great care and closely monitored to detect postoperative hematoma.

Case Report

A 64-year-old, 60-kg male patient with hypertension and diabetes with peripheral vascular disease (PVD) underwent emergency amputation of the lower leg below the knee due to gangrene of the leg. The patient was a known alcoholic and smoker (26 pack years) with symptoms of syncope, dyspnea, and fatigability. The patient was on the tab. Atenolol 25 mg OD, tab. Aspirin

75 mg or clopidogrel 75 mg tab once daily, pentoxifylline 400 mg tab 3 times daily for the last 3 months. Laboratory tests revealed a serum creatinine level of 1.5 mg/dl, a blood sugar level of 212 mg/dl, a bleeding time of 3'40" minutes, and a clotting time of 5.5 minutes. An electrocardiogram showed an enlarged left ventricle and T wave inversion. A combined femoral sciatic nerve block was planned. In supine position, a 22-G, 2.5-inch nerve locator needle was used for femoral block; posterior branch of femoral nerve was located. A mixture of 20 ml local anaesthetic (15 ml of 0.5% bupivacaine + 5 ml of 2% lignocaine) was injected into the femoral sheath with a firm distal digital pressure. Fifteen minutes later, the patient had adequate pain relief. The patient repositioned laterally to perform sciatic block with the classic approach of Labat. 25 ml of 0.25% bupivacaine was injected into the sheath of sciatic nerve using 22-G 10-cm needle to identify the nerve eliciting motor responses of plantar flexion. Adequate occlusion was achieved in 30 minutes. The operation was completed without complications. Complete sensory and motor recovery was observed in the patient after 10 hours in the postoperative period. Ultrasound-guided evaluation was performed to rule out injection site hematoma.

Discussion

Severe mitral and aortic stenosis with severe pulmonary hypertension are a high risk group for CNB or GA. Hypoxia, hypercapnia, acidosis, tachycardia (due to pain, sympathetic stimulation, or GA) can exacerbate pulmonary edema or ischemia. The most commonly used anesthesia technique for lower extremity procedures is CNB, either spinal or epidural. However, sympatholytic blockade frequently causes hypotension, limiting its use in worsening heart conditions. [2] In addition, administration of CNB is contraindicated if these patients are receiving cardioprophylactic anticoagulants, leaving

few options if emergency surgery is required. This patients who required emergency lower extremity surgery had severe cardiac output impairment. Patients condition was potentially life-threatening. Administration of GA and CNB is not without risks. Considering the above factors and available techniques, a combined femoral and sciatic nerve block for lower extremity anesthesia [3] was planned. Administration of heparin in vascular surgery alters coagulation during surgery. There is a known risk of bleeding complications with continuous peripheral nerve catheters. Guidelines for administration of regional PNBs in patients with anticoagulation therapy are not specifically defined. Several cases of serious bleeding complications associated with PNB and following psoas compartment (lumbar plexus) block have been reported in patients with perioperative heparin, Low Molecular Weight Heparin (LMWH) or warfarin.[4,5] Bleeding-related complication like large retroperitoneal haematomas[6] was seen more frequently than neural deficits. Delayed (>9 hours) haematoma formation was reported even when antithrombotics were stopped 3 days prior to the blocks.[7] Contrary to this, Buckenmaier III et al., reported lumbar plexus continuous peripheral nerve block (CPNB) in patients on LMWH therapy without any catheter-related bleeding complications.[8] However, the authors agree that the study population included young and otherwise healthy trauma patients and were of insufficient number to conclude safety of the procedure. American Society of Regional Anaesthesia and Pain Medicine (ASRA)[9] has defined guidelines for placement and removal of catheter for continuous plexus blocks or for deep blocks in anticoagulated patients. They advice the same guidelines to be applied on PNBs admitting that, if applied, the restrictions may become more than necessary[9] Clinical practice should assess

the benefits and risks of nerve blocks according to the urgency of surgical intervention. Therefore, it may be justified to attempt local block despite anticoagulation, especially in potentially life-threatening limb salvage situations. In contrast to CNB, the hematoma is easily detected both clinically and radiologically (ultrasound) due to the relatively superficial nerve level in PNB. Nevertheless, the extremities should be carefully monitored for sensory and motor recovery. Persistent pain at the site, decreased hemoglobin levels, morphological changes in the skin, and neurological deficits may indicate an underlying hematoma. If in doubt, more frequent ultrasonography at regular intervals and rarely computed tomography (CT) can help rule out a nerve-compressing hematoma. If the hematoma is enlarging, withdrawal of anticoagulant therapy should be considered. Thus, given the capability, ultrasound can be used both to perform nerve blocks and to improve postoperative safety and accuracy.

References

1. Goldstein S, Taragin MS. Chapter 7, Mitral valve disease. In: Simpson JJ, editor. Anesthesia and the patient with co-existing heart disease. Boston: Little, Brown and Co; 2003. p. 145-6.
2. Fanelli G, Casati A, Aldegheri G, Beccaria P, Berti M, Leoni A, et al. Cardiovascular effects of two different regional anaesthetic techniques for unilateral leg surgery. *Acta Anaesthesiol Scand* 1998;42:80-4.
3. Baddoo H. A preliminary report on the use of peripheral nerve blocks for lower limb amputations. *Ghana Med J* 2009;43:24-8.
4. Klein SM, D'Ercole F, Greengrass RA, Warner DS. Enoxaparin associated with psoas haematoma and lumbar plexopathy after lumbar plexus block. *Anesthesiology* 1997;87:1576-9.
5. Bickler P,

Brandes J, Lee M, Bozic K, Chesbro B, Claassen J. Bleeding complications from femoral and sciatic nerve catheters in patients receiving low molecular weight heparin. *Anesth Analg* 2006;103:1036-7.

5. Weller RS, Gerancher JC, Crews JC, Wade KL. Extensive retroperitoneal haematoma without neurologic deficit in two patients who underwent lumbar plexus block and were later anticoagulated. *Anesthesiology* 2003;98:581-5.
6. Maier C, Gleim M, Weiss T, Stachetzki U, Nicolas V, Zenz M. Severe bleeding following lumbar sympathetic blockade in two patients under medication with irreversible platelet aggregation inhibitors. *Anaesthesiology* 2002;97:740-3.
7. Buckenmaier CC 3rd, Shields CH, Auton AA, Evans SL, Croll SM, Bleckner LL, et al. Continuous peripheral nerve block in combat casualties receiving low-molecular weight heparin. *Br J Anaesth* 2006;97:874-7.
8. Horlocker TT, Wedel DJ, Benzon H, Brown DL, Enneking FK, Heit JA, et al. Regional anaesthesia in the anticoagulated patient: Defining the risks (the second ASRA Consensus Conference on Neuraxial Anesthesia and Anticoagulation). *Reg Anesth Pain Med* 2003;28:172-97.