



ABOVE KNEE AMPUTATION IN A HIGH-RISK PATIENT UNDER USG GUIDED PERIPHERAL NERVE BLOCKS AS SOLE ANAESTHETIC AGENT: A CASE REPORT

Anaesthesiology

Dr Yousha Muneeb Gillani* Senior Resident Anaesthesiology, Government Medical College Srinagar
*Corresponding Author

Dr Duha Qari Senior Resident Obstetrics and Gynecology, SKIMS Soura Srinagar

ABSTRACT

A combination of peripheral nerve block was used in patients to amputate a gangrenous leg who was on anticoagulants therapy and also suffering from CKD, diabetes mellitus, deranged coagulopathy and lower respiratory tract infection. Sciatic, femoral, obturator and LFCN blocks were given under USG guidance using 0.5 % ropivacaine. Patient remained stable during the intraoperative period, and the blocks also provided pain free period of 2 hours following the surgery, which helped in early recovery of the patient.

KEYWORDS

Amputation, Anticoagulation, Case Report, Nerve Block, Ultrasound

INTRODUCTION

Mostly patients who are planned for above knee amputation (AKA) are challenging for the anaesthesia teams as they have multiple comorbidities. These conditions not only limit the use of neuraxial anaesthesia but also increase the risk involved with general anaesthesia. Peripheral nerve blocks can be a good alternative in treating such patients,^[1] as its use can prove to be beneficial in achieving the required level of anaesthesia for performing the surgery without the added risk of general and neuraxial anaesthesia.^[2] Regional anaesthesia has been used for lower extremity amputation quite regularly and has been found to be associated with reduced postoperative pain and short-term need for opiate medications, shorter postanaesthetic care unit (PACU) stay, and decreased postoperative cardiopulmonary complications when compared with general anaesthesia.^[3,4,5]

Case presentation

A 75-year-old male was admitted in orthopedic department of Government medical college, Srinagar as a case of gangrenous left leg with sepsis. Patient was a known case of hypertension on ARBs, type 2 diabetes mellitus on insulin for past 10 years with CKD on dialysis on weekly basis. Patient had been hospitalized recently for lower respiratory tract infection in a tertiary care hospital for 10 days and was shifted to orthopedic department in view of the gangrene developing on his left leg. He was on injection enoxaparin 40 mg subcutaneously OD since his admission in the tertiary care hospital and completely immobilized for past 15 days, the anticoagulation agent was however withheld for 12 hours prior to the surgery. On examination GCS: E4V5M6, pallor +, respiratory examination revealed wheeze in both lung fields on auscultation. The laboratory investigations showed Hb: 6.1 g/dL, platelet count 69000, PT: 20, INR: 1.7, aPTT: 50 seconds, serum creatinine: 3.3 mg/dL, serum urea: 61 mg/dL, Na: 131 mg/dL, K: 5.6 mg/dL. Chest radiograph: Bilateral lower lobe consolidation. After considering the comorbidities and general condition of the patient, decision of ultrasound-guided PNB as the choice of anaesthesia was taken. In order to achieve adequate anaesthesia for above-knee amputation, we planned to block the sciatic, femoral, lateral femoral cutaneous nerve and the obturator nerve.

METHODS

The patient's vitals on arrival to operating room had heart rate of 112 beats/min, blood pressure of 165/85mmHg and 87% oxygen saturation on room air. Patient was shifted to the operating table and kept in supine position with the leg abducted and externally rotated. A 15 to 6 MHz high-frequency linear array transducer and ultrasound was used to trace the femoral, lateral femoral cutaneous, and obturator nerves. Sciatic nerve blockage was performed by placing the patient in lateral position with the affected thigh and knee flexed, and the sciatic nerve was traced using a 5 to 2 MHz low-frequency curved array transducer. Using real-time ultrasound guidance, a 22-gauge 60 mm stimulating needle (for femoral, lateral femoral cutaneous, and obturator nerve block) and 22-gauge 100mm stimulating needle (for sciatic nerve block) were advanced within the proximity of each targeted nerve. The nerve stimulator was used to localize the nerves with fade of electrical currents at 0.5 mA and twitch the corresponding muscles. In view of

his renal function only 30 mL volume of local anaesthetic (0.5% Ropivacaine) was used, which was slowly injected with intermittent aspiration after final confirmation and checked for the spread in the adjoining area or the intermuscular facial plane. For the sciatic nerve block (10 mL) was administered via the sub gluteal approach, for femoral nerve block (10mL) was administered lateral to the femoral vessels below the fascia iliaca, lateral femoral cutaneous nerve was blocked with (3 mL), and the anterior branch of the obturator nerve (4 mL) was blocked between the adductor brevis and longus and posterior branch of obturator nerve (3 mL) was also blocked. Patient also received injection midazolam (1 mg) IV just before the start of procedure and as the surgery continued for more than three and half hours in the later part of the procedure a combination of injection tramadol 50 mg IV and injection paracetamol 1 gm IV was infused together over a period of 15 mins. Patients had no complaint of pain or discomfort during the procedure though it last for more than 3 hours, during the intra operative period his haemodynamic remained stable, received 2 units of PRBCs and 4 units of FFP, he maintained SPO2 above 96% on the oxygen. Urine output was 500 ml in 3 hours and blood loss was around 800 ml. Patient remained pain free in the post-operative period for 2 hours after completion of the procedure and was monitored in the PACU overnight.

DISCUSSION

High risk patients with multiple comorbid conditions do pose a challenge for the anaesthetist, the conventional methods of anesthesia have proven to be more dangerous in treating these patients. The mortality is higher among patients who receive major lower-extremity amputations under general anaesthesia in comparison with regional anaesthesia (central neuraxial and PNB).^[6] Now with the use of PNB a safer and reliable method of delivering anesthesia to the patient has been achieved. PNB is reportedly associated with better hemodynamic stability and shorter hospital stays in comparison with general anaesthesia among elderly patients with lower limb fracture.^[7] When comparing to neuraxial anaesthesia, PNB demonstrates many advantages. Patients on antiplatelet or anticoagulant therapy can undergo certain regional block procedures without increased risk.^[8] It has also decreased the complications of pruritus, urinary retention, and hypotension, and reduces the risk of spinal hematoma and infection. USG guided PNB has revolutionized the field of regional anaesthesia, it has demonstrated several advantages over landmark-guided PNB techniques with or without nerve stimulation.^[9] which include quick onset time, shorter block performance time, and a higher block success rate.^[10] Thus, making regional anaesthesia more dependable. The greatest advantage by far is the post-operative effect of the nerve blocks which leads to superior postoperative pain control, decreased confusion, early recover and ambulation following surgeries and thus minimizing the risk of DVT along with dependency on anticoagulant usage.^[11,12,13]

CONCLUSION

Peripheral nerve block under USG guidance for achieving anesthesia in high risk patients planned for above knee amputation is reliable, complete and dependable modality. Further research is warranted in the same area for a better and comprehensive understanding.

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Abbreviations

CKD: Chronic Kidney Disease, LFCN: Lateral Femoral Cutaneous Nerve, IV: Intravenous, PNB: Peripheral Nerve Block, DVT: Deep Venous Thrombosis, ARB: Angiotensin 2 Receptor Blockers

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