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Non traumatic transfemorl amputation in critically ill patient – a case report

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Abstract

Non traumatic transfemoral amputation is associated with considerable morbidity and mortality. Patients who are posted for emergency operative procedure, such as non-traumatic above knee amputation, generally present with comorbidities such as cardiac disorders, diabetes and peripheral vascular disease. There is significant lack of data describing the use of particular safe anesthetic approach. Here we present a case having multiple comorbidities to be taken up for Above Knee Amputation (AKA).

Keywords

Amputation, Transfemoral, High risk patient.

INTRODUCTION:

Non traumatic transfemoral amputation is often an emergency treatment used when all other limb salvage procedures have failed. Patients who are posted for such emergent operative procedure, generally present with co-morbidities such as diabetes and cardiac disorders having component of CHF with ECHO showing global akinesia, poor ejection fraction. Moreover, these patients often have severe sepsis due to bone/soft tissue infection which in conjunction with the underlying co-morbidities predisposes the patient to perioperative as well as postoperative mortality.(1)

These kind of surgeries have to be taken up and one cannot afford to postpone them to stabilise cardiac status as benefits of surgery outweigh the perioperative risks involved. Patients with low EF posted for surgery require proper perioperative anaesthetic management to prevent associated morbidity and mortality.

The main role of an anaesthesiologist in such a high risk case is to maintain hemodynamic stability as well as meet the surgeon's requirements. This includes proper use of pharmacological agents as well as optimal anaesthesia techniques to maintain a sinus rhythm and prevent peri-operative tachycardia, avoid fluid overload and any increase in pulmonary vascular resistance which can predispose the patient to an adverse cardiac event.(2) Peripheral nerve blocks and selective spinal anaesthesia can be used so that the nerve roots supplying only the procedure area are anaesthetized. The use of adjuvants has also shown to decrease the dose of local anaesthetic and associated adverse effects. However, there is significant paucity of evidence to demonstrate the success rate of any particular safe anaesthetic technique for patients with low EF posted for surgery.

Case Description

A73 year old heavy chronic smoker, 70kg, 177cm and ASA PS-IV was scheduled for emergency transfemoral amputation after he was found to have left lower limb gangrene associated with osteomyelitis. He was a known case of hypothyroidism, bronchial asthma, CVA, rheumatoid arthritis, CAD with an estimated EF of 38% with moderate TR with LAD akinesia. His medical history was significant, for hypothyroidism he was taking Tab Thyrox 75 mg, bronchial asthma for which he was taking seroflow inhaler. Electrocardiography analysis showed sinus tachycardia, left axis deviation. Bedside examination of transthoracic

echocardiography prior to surgery estimated left ventricular EF of 38 %, moderate tricuspid regurgitation, mild to moderate mitral regurgitation, LAD akinesia. Bilateral lower limb arterial duplex ultrasonography was suggestive of atherosclerotic changes along the large vessels of right lower limb and left Superficial Femoral Artery (SFA) is filled with echogenic material till midthigh region suggestive of thrombus for which thrombolectomy was performed by cardiothoracic surgeon under local anaesthesia. NCCT head showed acute infarct involving grey and white matter interface in right temporal region and ageing brain with microangiopathic changes. Other organ function and biochemical disturbances included, hyperglycaemia, anemia and leucocytosis. HIS MEDICATIONS on admission included aspirin, atorvastatin, frusemide, dabigatran, diltiazem and sildenafil.

After informed consent, he was taken to the operating room where standard monitors were placed, and supplemental oxygen was administered via nasal cannula. Infusion NORAD was started to maintain MAP >65mmHg. A urinary catheter was placed to monitor urine output. The patient was then placed in a sitting position for combined spinal epidural anesthetic administration.

The combined spinal epidural block was performed by a consultant anesthetist between the level of L3 and L4 interspace using the midline approach. The skin was anesthetized with 3 mL of lidocaine 2%, Tuohey's needle inserted and advanced till epidural space confirmed by loss of resistance technique. Lumber puncture done by 27G spinal needle. A mixture of heavy bupivacaine 5 mg in 1.0 mL volume and fentanyl 25 μg in 0.5 mL volume was administered. Immediately after the intrathecal injection, the patient was placed in the lateral position for 15 minutes, with the operative side down and the head 15°up. Then, he was turned supine and properly positioned for surgery. The sensory assessment revealed a loss of pinprick sensation to the level of T11 dermatomes and extending to both posteriorly and anteriorly.

Heart rate, oxygen saturation, and blood pressure were recorded before spinal anesthesia (baseline: mean blood pressure, MAP 87 mmHg; heartrate, HR 92 bpm; and SpO2 at room air, 90%), just after spinal anesthesia, and then every 5 minutes till the end of surgery. Hemodynamic stability was maintained throughout surgery (ie, MAP, 75–92 mmHg; HR, 80–100 bpm; and average hourly urine output, 50 mL). His SpO2 between 95% -99% and normothermia were maintained

The surgical procedure was done by an orthopedic surgeon with 6 years of experience and lasted 60 minutes without any apparent complications. The patient received a total of 950 mL crystalloid, 500ml colloid and 350 mL packed red blood cells (PRBCs). The total estimated blood loss (EBL) was 850 mL, and the urine output was 210mL. The patient was transferred to the ICU for further monitoring and then transported to the medical ward. He did not experience any side effects of perioperative therapy, including nausea, vomiting, pruritus, hypotension, or postdural puncture headache during his postoperative course.

TEST	RESULT
CBC	6.8
TLC	48000
Platelets	2.5 lakh
S. bilirubin	0.5
RFT	22/ 1.1
S. Electrolytes	138/4.5
TSP	8.2
DSP	4.0/4.2
RBS	180
PTI	92.8%
INR	1.07
D-DIMER	9.31mg/l
S. cholesterol	134

DISCUSSION

Even today, In case of severely sick patients having multiple comorbidities, we look for anesthetic interventions that impact the patient's homeostasis less without compromising the quality of anesthesia. There is still a lack of data to encourage us to opt for A PARTICULAR ANAESTHETIC technique in critically ill or healthy patients. General anesthesia can be catastrophic in septic patients with fragile hemodynamics due to systemic vasodilation and myocardial depression caused by the drugs to the cardiac functions which are already compromised.[3]

On search of literature, we found some studies encouraging the use of ultrasound guided peripheral nerve block approach. But ultrasound machine is not always available. There is always a fear of incomplete or partial block using nerve stimulator or landmark guided parasthesia approach. Even a slight pain of surgical stimulus due to partial block can lead to fatal arrhythmias and hence hemodynamical instability to the sick patient.

The neuraxial anesthesia in the form of a subarachnoid block has always been considered as the gold standard technique for lower extremity surgeries. [4-7] However, it is unsafe to perform neuraxial blocks on high-risk patients with deranged coagulation secondary to sepsis or the use of anticoagulant/antiplatelet medications.[8,9] Further, anesthesiologists may choose to avoid subarachnoid blocks in patients with limited cardiovascular reserve due to the risk of significant hemodynamic instability. [10]

But the introduction of adjuvants with local anesthetics has definitely brought a revolution in neuroaxial block. Similarly combined spinal epidural technique is also a big arrow in anaesthesiologist quiver, where the catheter introduced in the epidural space is always a backup.

In the present case we used combined spinal epidural technique using a very low dose of local anaesthetic 1ml bupivacaine 5 mg with fentanyl 25 µg in 0.5 mL volume. so total of 1.5 ml of drug was injected into intrathecal space . This low level subarachnoid block was given under the coverage of noraderanaline , beforehand we started a drip of 0.03 – 0.05 µg/kg/min to avoid hemodynamic instability and prevent the situation go haywire. It was an uneventful surgery and patient was shifted to ICU for 24 hrs supervision.

CONCLUSION

Combined spinal epidural technique using low volume of local anesthetic along with adjuvant can be considered as safe technique for non traumatic above knee amputation in critically ill patients.

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