



A CASE REPORT ON ULTRASOUND GUIDED NERVE BLOCKS IN A PATIENT WITH MOBILE LEFT VENTRICLE APICAL CLOT AND POOR EJECTION FRACTION FOR OPEN HERNIOPLASTY

Anaesthesiology

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ABSTRACT

It is challenging to administer anaesthesia in patients with poor ejection fraction. The presence of a left ventricular apical clot adds to the challenge. We present a case of Right indirect inguinal hernia for open hernioplasty in a patient with an incarcerated hernia with poor ejection fraction and mobile apical clot in left ventricle. Ultrasound guided multimodal nerve blocks with right paravertebral block T10-L2, right ilioinguinal, iliohypogastric and right genitofemoral nerve blocks were performed leading to good perioperative analgesia and smooth post operative outcome. Regional anesthesia techniques provide the potential perioperative benefits of stress response attenuation, shorter hospital stay, and intense postoperative analgesia. Regional anaesthesia is not just limited to neuraxial techniques and it is a lot beyond that. Adding ultrasound approach to the nerve blocks provides safe approach for the nerve blockade technique. In view of these benefits we have used ultrasound guided nerve block techniques like paravertebral block, ilioinguinal, iliohypogastric and genitofemoral nerve blocks for good perioperative analgesia and smooth post operative outcome.

KEYWORDS

Heart Failure, Reduced Ejection Fraction, Embolism And Thrombosis, Multimodal Treatment, Nerve Blocks.

Case

A 60 year old male presented with scrotal swelling Rt side and was diagnosed to have Incarcerated Right indirect inguinal hernia. Previous history was significant for Left CVA in 2008 had been managed conservatively and a history of smoking for 40 years. Currently the patient had no neurological sequelae. Physical examination yielded an averagely built and nourished individual with a pulse rate of 74/min and blood pressure 130/80mmHg. There was no increase in IJV and no pedal oedema. Investigations showed an ECG with poor R wave progression from V1-V6 and Echocardiography was significant for an EF 40% with Regional wall motion abnormality in Left Anterior Descending artery territory with a mobile apical clot of 2*2 cm in the apex of the left ventricle.

Anaesthesia was administered by ultrasound guided multimodal peripheral nerve blocks given by blocking right paravertebral block T10-L2, right ilioinguinal, iliohypogastric and right genitofemoral nerve blocks. A solution of 60 ml was made with 25ml of 2% lignocaine with adrenaline, 25 ml 0.5% plain bupivacaine and 10ml NS. 7ml of this local anaesthetic solution was administered at each paravertebral level from T10 to L2¹, 10 ml each was administered at the right ilio-inguinal, right iliohypogastric nerves and 10ml around right genitofemoral nerve. The last 5ml infiltrated along skin incision site. The case proceeded uneventfully with excellent intraoperative and postoperative analgesia, and stable haemodynamics.

DISCUSSION

Patients with poor ejection fraction are at risk of cardiac arrhythmias leading to sudden cardiac arrest and death. Our goal should be to maintain cardiac output by maintaining blood pressure and preventing hypotension.²

The additional presence of a Left Ventricular apical clot with a high risk of dislodgement into systemic circulation increases the requirement of preventing any sudden changes in haemodynamics or rhythm which may lead to dislodgement and embolization of the clot.³

In this patient, general anaesthesia may cause a stress response to intubation and risk of sudden increase in ventricular activity which could have led to dislodgement of the thrombus and this is the reason general anaesthesia is considered to be inadvisable.⁴

A spinal anaesthesia was also considered risky to the patients with low ejection fraction due to risk of hypotension by sympathetic blockade.⁵

Anatomically sensory innervation of inguinal region is supplied by T12 to L2. The ilioinguinal and iliohypogastric nerves are branches of T12 and L1. For good anaesthesia for inguinal herniorrhaphy it is advisable to give anaesthesia from T10 to L2.¹

For Right Paravertebral block patient is positioned in left lateral position and ultrasound probe is placed in sagittal orientation about 5 cm away from midline on right side at the level where anaesthesia to be achieved. Identify ribs and pleura on sonography. Continuing to manoeuvre the probe medially, observe for the transition of the ribs to transverse processes (a change in shape and a slight step-up of bony image). At level of the transverse process, insert the needle from a lateral to medial direction to contact the transverse process. Once the transverse process is hit, walk the needle off the bone in a caudal direction to pierce the superior costotransverse ligament. Confirm negative vessel via aspiration then proceed with local anaesthetic delivery slowly as described above; the pleura will be seen to be pushed downward. The drug should be deposited at the red star marking level in figure 2. (Figure 1 and 2).



Figure 1: Paravertebral block Position



Figure 2: Paravertebral block Ultrasound

For blockade of right ilioinguinal, right iliohypogastric and right genitofemoral nerves patient is positioned supine. Probe is placed immediately superior to anterior superior iliac spine, ilioinguinal and iliohypogastric nerves are traced and blocked in plane between internal oblique and transversus abdominis muscles at point different from

transversus abdominis plane block (TAP) due to its more medial spread at this level than TAP plane.⁶(Figure 3 and 4)



Figure 3: Ilioinguinal, Iliohypogastric patient position



Figure 4: Ilioinguinal, Iliohypogastric ultrasound image

For blockade of genitofemoral nerve probe is placed over inguinal ligament lateral to pubic tubercle. Nerve is located between cremasteric fascia which is extension of internal oblique muscle and internal spermatic fascia which is extension of transversus abdominis muscle (Figure 5 and 6).



Figure 5: Genitofemoral nerve blockade patient position



Figure 6: Genitofemoral nerve blockade ultrasound image

CONCLUSION

Combined ultrasound guided multimodal regional nerve blocks is preferred over conventional spinal anaesthesia and general anaesthesia procedures in low cardiac performance patients and in patients with left ventricular mobile apical clot with high risk of arterial embolization.

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