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Case Report

An unusual case of hoarseness of voice after left supraclavicular brachial plexus block

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ABSTRACT

Supraclavicular brachial plexus block (SBPB) is a commonly used regional anesthetic technique for upper limb surgeries in orthopaedic patients. It provides intraoperative anesthesia and postoperative analgesia. SBPB can be administered using either a landmark approach or ultrasound guidance (USG). The use of ultrasound has reduced the complications associated with the block by providing excellent real-time visualization of the pleura, vessels, and plexus in relation to needle insertion. However, complications can still arise even with USG-guided block if a large volume of local anesthetics is used. In fact, a large volume is not necessary when performing USG-guided blocks.

We report a case of a 25-year-old male who presented with hoarseness of voice after receiving a USG-guided supraclavicular block (left side) due to recurrent laryngeal nerve (RLN) block. While RLN block is more common in interscalene blocks, it is a rare complication in SBPB, with very few reported cases of hoarseness of voice due to RLN block after SBPB.

1. Introduction

SBPB is a regional technique used as an alternative to general anesthesia (GA) for upper limb surgery up to the elbow. It is used for providing anesthesia and for relief of perioperative pain. It has various advantages over GA in terms of excellent pain control, reduced side effects and shortened hospital stay. Patient can remain awake, can be sedated or fully anaesthetized during surgery. Various side effects noted with SBPB are pneumothorax, local anesthetic systemic toxicity(LAST), hoarseness of voice, arterial puncture or hematoma.[1] Use of USG has reduced incidence of these side effects but complications can even arise after USG guided SBPB.RLN block causing hoarseness of voice is rare complication in SBPB and is more common in Interscalene block. We report a case of 25 years old male with hoarseness of voice developed after giving left sided USG guided SBPB.

2. Case Report

A 25years old male, ASA (American society of Anesthesiologists) grade1 (weight- 60kg, height-174cm), case of Galeazzi fracture was posted for open reduction and internal fixation of left distal radius. We planned to give USG guided SBPB. All investigations were within normal limits and there were no significant findings in pre anesthetic check up. Consent was taken, and procedure was explained to the patient.

Patient was taken into OT. All ASA standard monitors were attached. Vitals were within normal limits (BP-130/76mmhg, PR-86/min, SpO2-100%). Patient positioning was done and under strict aseptic condition, local infiltration of skin was done with 2% lignocaine using 27G needle.

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SBPB was given using a high frequency linear transducer just above clavicle at its midpoint. By in plane technique, a 50mm, 22G Stimuplex needle was introduced from lateral to medial direction and 30ml 0.5% Bupivacaine with 50microgram fentanyl was given at corner's pocket after confirming negative aspiration. Massage was done after giving the drug with gauze over the needle insertion site. After around 15minutes patient started complaining of change in voice. All his vitals were normal and there were no other complaints like breathlessness except for hoarseness of voice which was not present before the block. We assessed sensory and motor level and that was adequate. We asked the patient for tinnitus, blurring of vision or any perioral numbness to rule out LAST. We also checked for bilateral air entry which was equal to rule out pneumothorax. Saturation was also 100%. Patient's anxiety was increasing with time. So, we decided to sedate the patient with 1mg i.v midazolam and induced patient with 100micrograms i.v fentanyl, 100mg i.v propofol. I-gel no. 3 was secured, and bilateral air entry checked. Patient was put on ventilator in SIMV mode and surgery was started. Anesthesia was maintained with 50% O2 with 50% N2O and sevoflurane. Intraoperative period was uneventful.8mg i.v dexamethasone and 4mg i.v ondansetron were given as antiemetic. The surgery finished in approximately 2hours. Inhalation agent stopped and the patient was taken into 100% oxygen. We were suspecting for RLN block causing hoarseness of voice. Hence, I-gel was removed and videolaryngoscopy was done to visualize vocal cord movement. Movement of left vocal cord was less than right vocal cord. Patient had spontaneous breathing but sedated. Hence, 100% O2 continued with facemask until patient was awake. Hoarseness of voice was still present. There was no other complaints by patient and his vitals were stable. So we counselled the patient and shifted to post anesthesia care unit for monitoring. After approximately 8hours of surgery his voice became normal as it was before.

3. Discussion

Supraclavicular brachial plexus block is associated with many complications like pneumothorax, LAST and vascular puncture.[2] Similarly diaphragmatic paralysis and Horner's syndrome are common with the interscalene brachial plexus block. Although experienced hand and use of USG machine has reduced the incidence of such complications, there are a few reports of these complications. Hoarseness of voice because of RLN block is common complication of the interscalene brachial plexus block and is quite rare in supraclavicular brachial plexus block. The incidence of hoarseness of voice following supraclavicular brachial plexus using the landmark technique is 1.3%.[3] Due to difference in anatomical relation of right and left RLN to subclavian artery,[4] RLN block is more common in the right supraclavicular block as compared to left supraclavicular block.[3] Right RLN runs close to the right brachial plexus as it hooks around the right subclavian artery. On the other hand, left RLN is more medial, winds around the aortic arch and runs very close to trachea and esophagus. It is vagus nerve that lies close to left brachial plexus. Left RLN branch of vagus nerve can be accidentally blocked if large volume of drug is given in left supraclavicular block which occurred in our case. Brachial plexus is enclosed in a sheath which is a continuation of the prevertebral fascia that covers the scalene muscles. It continues to axilla in a neurovascular bundle.[5] After injection, the local anesthetic spreads up and down the nerves in a longitudinal manner and this fascial sheath limits the circumferential spread. Few reported cases of RLN block following the right supraclavicular block are there. Gupta et al. and Sahu et al. reported hoarseness of voice following ultrasound guided right supraclavicular block.[6,7] Balaji et al. also reported RLN block and Horner's syndrome in a same patient following peripheral nerve stimulator (PNS) guided right supraclavicular block.[8] The RLN block due to left supraclavicular block is very rare. Similarly, Naz, et al. reported RLN block after left supraclavicular block.[9]

In this case, due to large volume and massage for long time the drug might have been deposited more medial and outside of the brachial plexus sheath which caused medial spread of local anaesthetics. Unilateral RLN block does not causes any serious deterioration in patient's condition clinically except causing anxiety to the patient. However, if a patient has pre-existing contralateral RLN palsy due to any neck surgery or other reason it can cause complete airway obstruction. Hence, it is advisable to get indirect laryngoscopy done prior to brachial plexus block if patient has any such history.

4. Conclusion

To avoid complications like recurrent laryngeal nerve block and subsequent hoarseness of voice, utmost care should be taken while administering local anesthetics during ultrasound-guided supraclavicular brachial plexus block. It is crucial to visualize the needle tip throughout the procedure to ensure accurate drug deposition. Additionally, a smaller volume of local anesthetic should be used when employing ultrasound guidance, and the massage time should be minimized.

5. Source of Funding

None.

6. Conflict of Interest

None.

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