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A Unique Case of Hoarseness of Voice following Left Sided Supraclavicular Block: A Case Report

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ABSTRACT
Supraclavicular brachial plexus block is popular for surgeries distal to the level of mid-arm. Though rare, recurrent laryngeal nerve palsy can occur in 1.3% of cases. It has been reported mostly in cases of right-sided block and only one case has been reported on the left side. We present a case of 50-year-old-female patient, who developed hoarseness of voice following a left-sided classical supraclavicular block.

Keywords: *Brachial Plexus; Recurrent Laryngeal Nerve; Supraclavicular*

INTRODUCTION
The supraclavicular brachial plexus block (SCB) is performed at the level of trunks formed by C5-T1. The surgeries distal to mid humerus can be performed using this block.[1] The principal complications associated with this procedure are pneumothorax and arterial puncture.[2] The recurrent laryngeal nerve palsy is an occasional complication mostly reported on the right-sided blocks and one case of left RLN palsy has been reported using USG for SCB.[3,4,5,6] We report a case of a 50-year-old-female patient, who developed hoarseness of voice following a left-sided classical supraclavicular block.

CASE REPORT
A 50-year-old-female patient weighing 55 kg, ASA Physical Status I, 150 cm, presented for a split-thickness skin graft over the dorsum of the left forearm for necrotizing fasciitis. We planned to conduct the case

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under supraclavicular brachial plexus block supplemented with sedation while taking graft from the lower limb. The written and informed consent was obtained.

She was shifted to the operation theatre. The standard ASA monitors were attached and baseline parameters were recorded. Taking all aseptic precautions, a left-sided supraclavicular block was performed using the classical landmark technique. After elicitation of paresthesia, 15 ml of 0.5% bupivacaine plain and 15 ml of 2% lignocaine with adrenaline (1:200,000) was deposited after repeated negative aspiration for blood. The head end of the bed was raised by 30°and a massage of the area was done.

After four to five minutes patient developed hoarseness of voice indicating the involvement of recurrent laryngeal nerve. Her vitals were stable. It was not associated with desaturation or difficulty in breathing. Hence, we proceeded with the surgery. The graft was harvested from the dorsum of the left thigh, for which injection midazolam 1mg, fentanyl 50µg, ketorolac 30mg and propofol in aliquots of 40mg, a total of 160mg was given. She was maintained on spontaneous ventilation on a face mask with O_2 at 5L/minute.

The effect of the block was adequate. The surgery lasted 120 minutes and there was complete recovery of voice by the end of surgery. We continued to monitor the patient in the ward for any alteration in voice, dyspnea or desaturation for the next six hours, which was uneventful.

DISCUSSION

The supraclavicular brachial plexus block (SCB) also referred to as "spinal of the arm" is popular for surgeries of the upper limb.[1] Ultrasound has gained popularity in regional anaesthesia as it is safe, reliable and precise.[2] However, in developing countries like Nepal, due to the unavailability of resource, we continue to rely on the blind surface landmark technique of SCB. The most feared complication of this technique is pneumothorax with a prevalence of 0.5-6%.[2] Although rare, recurrent laryngeal nerve (RLN) palsy has been documented in 1.3% of cases of classical SCB.[3] It has mostly been reported in the right sided block which is well explained by its relationship with the right subclavian artery (SCA). The right RLN encircles the right SCA. Hence, when the drug is deposited near SCA there remains the possibility of involvement of RLN due to close proximity of the neurovascular structure, and more so when a large volume of the drug has been deposited.[4]

Whereas, on the left side RLN runs in the trachea-oesophagal groove, much medial to left SCA. It is the left vagus nerve that runs near SCA.[4] The mechanism by which RLN block can occur on the left side is due to blockade of fibres of RLN present in the vagus nerve or unilateral blockade of the vagus nerve. A similar case has been reported by Naaz S et al. where they reported RLN palsy following USG guided left-sided supraclavicular block and attributed it to the blockade of RLN fibres of the left vagus nerve as the drug had spread medially to the left SCA.[5]

The fascial sheath surrounding the brachial plexus is a determinant for the spread of local anaesthetic (LA). The sheath is a derivative of the deep cervical fascia and terminates by merging with the medial intermuscular septum of the arm. The local anaesthetic injected spreads up and down the nerves in a longitudinal manner and circumferential spread is limited by the fascial sheath.[7] When the large volume of LA is injected there is a possibility of proximal spread of drug involving RLN as previously reported.[3,6]

Various techniques have been described to limit the spread of injected LA into the brachial plexus. These include the use of tourniquet position of the arm, use of massage, multiple injection techniques and digital pressure.[8] Digital pressure has proven to be effective in containing LA into areas of brachial plexus during brachial plexus block.[3] In our case though we had not provided

digital compression we had elevated the head end of the bed by 30° and massage of the area was done for around 5- 10 minutes.

This manoeuvre also seemed to be partially effective as the hoarseness of voice our patient experienced lasted for only two hours in contrast to 48 hours in patient of Naaz S et al.[5] Hence, we would also like to propose that in addition to digital compression, elevating the head end of the bed have an added advantage of restricting the injected drug within the fascial sheath. However, further studies are needed to support or refute this hypothesis.

The volume of the drug users might have been an additional contributing factor for the excessive spread. We would like to suggest the use of lower volume to avoid such complication.

CONCLUSION

Recurrent laryngeal nerve palsy is an occasional complication of the supraclavicular block. It is temporary and self-limiting most of the time but it is distressing for the patient for being unable to phonate. The digital pressure, the elevation of the head end of the bed, using a lower volume of drugs and use of USG might mitigate the complication.

CONFLICT OF INTEREST

None

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