

A unique case of hoarseness of voice following left supraclavicular brachial plexus block

ABSTRACT

Hoarseness of voice following supraclavicular brachial plexus block is a rare complication and is seen in 1.3% of cases. It has been reported in cases of right supraclavicular brachial block exclusively. The reason for this is the course of recurrent laryngeal nerve which is not the same in the left and right sides. Here we report a case of left supraclavicular brachial plexus block following which the patient developed hoarseness of voice.

Key words: Hoarseness; recurrent laryngeal nerve; vocal cords

Introduction

Supraclavicular brachial plexus block is a nerve block frequently performed for the surgery distal to the midarm. Here, the nerve trunks are densely located, and hence it is performed with ease and there are high chances of success. Complications such as pneumothorax, arterial puncture, hematoma formation, diaphragmatic palsy, local anesthetic toxicity, and hoarseness of voice are associated with this block.^[1] Ultrasound guidance helps in performing nerve blocks with accuracy and has reduced the rates of complications. But experience and acquaintance with the anatomy is highly required. Hoarseness of voice is a rare complication of this block and has been always reported in case of right-sided block. Here, we report a case in which hoarseness of voice was complained after ultrasound-guided left supraclavicular brachial plexus nerve block which is very unlikely and has never been reported in the literature.

Case Report


A 14-year-old boy weighing 50 kg and with American Society of Anesthesiologists (ASA) grade 1 had to undergo corrective surgery for postburn syndactyly in the third and fourth finger webs. Preoperative investigations were found within normal limit. After explaining the procedure and taking consent for the supraclavicular brachial plexus block, he was taken inside the operation room. The standard ASA monitors were attached and baseline parameters were recorded. Taking all aseptic precautions, supraclavicular block was performed under ultrasonography (USG) guidance using high-frequency linear transducer of SonoSite M-Turbo ultrasound machine just above the clavicle at approximately its midpoint. By in-plane technique, a 50-mm, 22-G Stimuplex needle was passed posterolateral to the brachial plexus in a lateral-to-medial direction. Being convinced with the location of needle, 10 mL of 0.5% bupivavaine plain and 10 mL of 2%

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Naaz S, Asghar A, Jha NK, Ozair E. A unique case of hoarseness of voice following left supraclavicular brachial plexus block. Saudi J Anaesth 2020;14:109-11.

Access this article online

Website: www.saudija.org	Quick Response Code 
DOI: 10.4103/sja.SJA_440_19	

SHAGUFTA NAAZ, ADIL ASGHAR¹, NANDAN K. JHA, ERUM OZAIR²

Departments of Anesthesiology and ¹Anatomy, AIIMS, Patna, ²Department of Anesthesiology, SKMCH, Muzaffarpur, Bihar, India

Address for correspondence: Dr. Shagufta Naaz, Department of Anesthesiology, AIIMS, Patna, Bihar, India.
E-mail: drshaguftanaaz@gmail.com

Received: 12th July, 2019, **Accepted:** 14th July, 2019, **Publication:** 06th January, 2020

lignocaine with adrenaline (1:200,000) were instilled after repeated negative aspiration. The block was effective and the patient's hand was anesthetized. He also complained of difficulty in speech and there was hoarseness in his voice which was not there before. The child became very anxious because of this. He had no other problem like breathlessness or drop in oxygen saturation. His hemodynamic parameters were unaltered and there were no electrocardiogram changes. As the patient became very anxious, we decided to place supraglottic device (I gel no. 3; Intersurgical Ltd, Wokingham, UK) and ventilate him mechanically. Injection dexamethasone 8 mg was given. The surgery lasted for 3 h. After the completion of surgery, we examined the vocal cords of the patient using a fiberoptic laryngoscope. Both the vocal cords could be seen moving, the left one little less and looking smaller in length than right, though they were not adducting completely as the patient was deeply sedated. We also ruled out pneumothorax, clinically by seeing the symmetry of his chest, bilateral chest rise, auscultation, and using ultrasound where lung sliding could be seen. We took a view of the supraclavicular fossa using ultrasound [Figure 1]. The drug deposition could be seen laterally and it also seemed that either there was blood or some drug had reached to the medial of subclavian artery. Recurrent laryngeal nerve (RLN) or vagus nerve block of the side of the procedure was considered. The patient was extubated, and after that there was no hoarseness of voice or any other complication. He was pain-free for about 12 h. Again the left supraclavicular fossa of the patient was examined the next day using ultrasound and then the image was clear which indicated that there was drug deposition medially which was absorbed by that time and no hematoma formation [Figure 2].

Discussion

The complications associated with USG-guided supraclavicular block depend on the level of block although they are few and

infrequent in experienced hands. RLN block is commonly seen during interscalene brachial plexus block but is quite unusual following supraclavicular approach. According to Neal *et al.*, the incidence of the RLN block during supraclavicular approach is seen in 1.3% of patients.^[2] Gupta *et al.* reported a case of RLN block after right supraclavicular block.^[3] Balaji *et al.* reported hoarseness of voice and Horner's syndrome in a single patient following right supraclavicular brachial plexus block and attributed it to tourniquet application in that arm.^[4] Whenever reported earlier RLN block or even palsy have been reported in right-sided supraclavicular block and the reason is obvious.^[5] The right and left RLNs follow different courses^[6] [Figure 3]. The right one encircles the right subclavian artery and is in its close proximity. So there are chances of its involvement in rare cases when large amount of local anesthetic is deposited near the artery where the RLN is located. But left RLN is much medial in relation to the left subclavian artery running closer to trachea and esophagus. It is the left vagus nerve which runs near the subclavian artery. The mechanism by which the nerve block occurred in our case was the exclusive block of the fibers of RLN present in the vagus nerve or unilateral vagus nerve as the drug deposited moved medial to the subclavian artery [Figure 1] and since the RLN is located farther. Visualization of the tip of the needle throughout the procedure is of utmost importance as this prevents the puncture of unwanted structures preventing complications and increases the chances of success of the procedure by deposition of local anesthetic at exact location.^[7-9] The fascial sheath surrounding the brachial plexus which is a derivative of deep cervical fascia terminates by merging with the medial intermuscular septum of the arm. After injection, the local anesthetic spreads up and down the nerves in a longitudinal manner and this fascial sheath limits the circumferential spread.^[10] But proximal spread of local anesthetic via fascial sheath is not likely cause of RLN block because the RLN is anterior and outside this fascial sheath surrounding the brachial plexus which merges

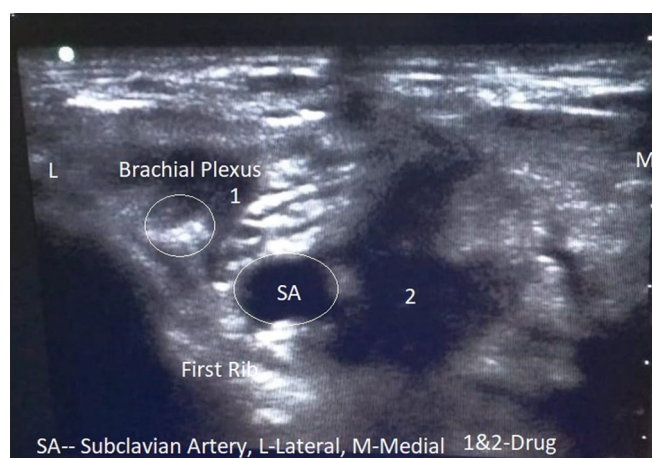


Figure 1: Ultrasound image 3 h after nerve block

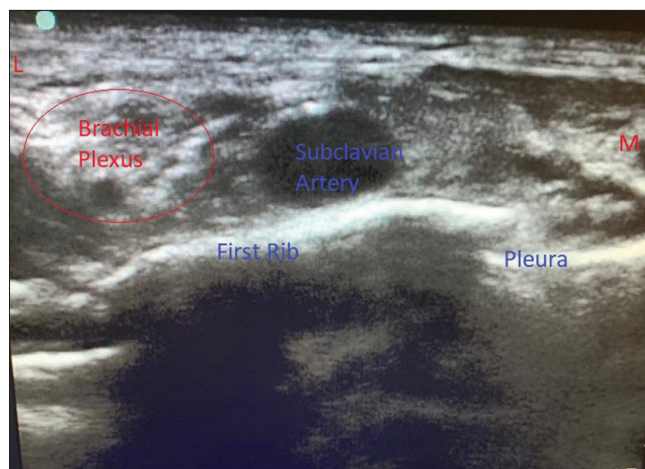


Figure 2: Ultrasound image 18 h after block

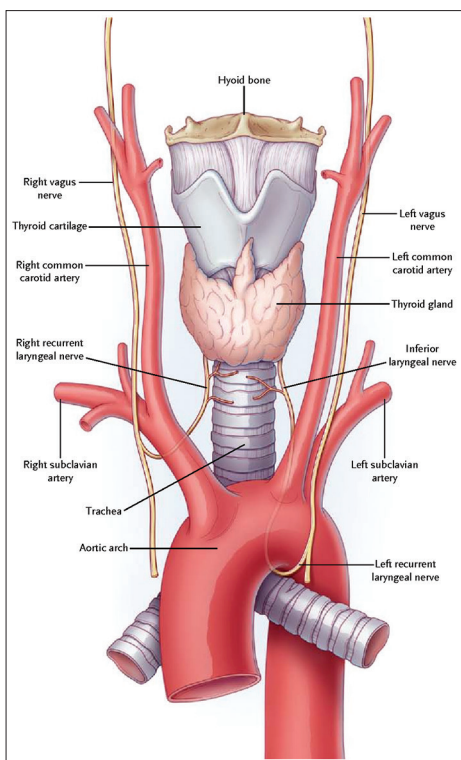


Figure 3: Anatomical relationship of recurrent laryngeal nerve right and left. Downloaded from nejm.org at BROWN UNIVERSITY on March 25, 2019

with the prevertebral fascia. Balaji *et al.* and Gupta *et al.* in two different case reports of right RLN block have attributed the hoarseness of voice to proximal spread of excessive local anesthetic.^[3,4] There is remote possibility of aberrant left RLN (incident 0.04%) when it is known as nonrecurrent inferior laryngeal nerve.^[11] It runs closer to the subclavian artery and is always associated with aberrant vessels like arteria lusoria, right aortic arch, and situs inversus. Vascular anomaly was ruled out in this case clinically, by X-ray chest and color Doppler. Unilateral RLN block is not of much clinical significance except that it leads to patient discomfort. But it is of significance in patients who already have contralateral RLN palsy either due to previous neck dissection or any other reason. Cases have been reported of respiratory obstruction as a result of unilateral supraclavicular brachial plexus block in such situation.^[12] For similar reason, interscalene brachial plexus block should be avoided.^[13]

This case can only be explained as a case of block of medial fibers of vagus nerve, that is, fibers of left RLN present in vagus nerve or unilateral vagus nerve block. When performing nerve blocks, care should be taken to inject lesser dose of local anesthetic because these days nerve blocks are performed using ultrasound and the location where the drug is deposited is more accurate. The tip of the needle should be

visualized right from introduction till the whole of the drug is injected so that drugs may not be deposited elsewhere and chances of complications are minimized.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Finucane BT, Tsui BC. Complications of brachial plexus anesthesia. In: Complications of Regional Anesthesia. New York, NY: Springer; 2007. p. 121-48.
2. Neal JM, Gerancher JC, Hebl JR, Ilfeld BM, McCartney CJ, Franco CD, *et al.* Upper extremity regional anesthesia: Essentials of our current understanding. 2008. *Reg Anesth Pain Med* 2009;34:134-70. Review. Erratum in: *Reg Anesth Pain Med* 2010;35:407.
3. Gupta M, Jain P, Bhalla S, Upadhyay N. Hoarseness of voice after supraclavicular ultrasound-guided subclavian perivascular brachial plexus block. *Indian Anaesth Forum* 2017;18:86.s.
4. Balaji RM, Sherfudeen KM, Kumar S. Double trouble: Hoarseness and Horner's after supraclavicular brachial plexus block. *S Afr J Anaesth Analg* 2017;23:24-5.
5. Sahu SK, Badole U. A rare complication in ultrasound-guided supraclavicular brachial plexus block. *Res Innov Anesth* 2016;1:30-1
6. Andersen DK, Raphael EP, Billiar T, Dunn D, Hunter J, Matthews J. In: Brunicaardi FC, editor. *Schwartz's Principles of Surgery*. 9th ed. McGraw Hill Professional; 2009. ISBN 978-0-07-154769-7.
7. Vade Boncouer TR, Weinberg GL, Oswald S, Angelov F. Early detection of intravascular injection during ultrasound-guided supraclavicular brachial plexus block. *Reg Anesth Pain Med* 2008;33:278-9.
8. Loubert C, Williams SR, Hélie F, Arcand G. Complication during ultrasound-guided regional block: Accidental intravascular injection of local anesthetic. *Anesthesiology* 2008;108:759-60.
9. Schafhalter-Zoppoth I, Zeitz ID, Gray AT. Inadvertent femoral nerve impalement and intraneural injection visualized by ultrasound. *Anesth Analg* 2004;99:627-8.
10. Thompson GE, Rorie DK. Functional anatomy of the brachial plexus sheaths. *Anesthesiology* 1983;59:117-22.
11. Kamath S, Rathnakar P, Shetty K. Nonrecurrent laryngeal nerve: Rare entity. *NUJHS*. 2012;2:42-4.
12. Rollins M, McKay WR, Eshima RE. Airway difficulty after subclavian perivascular block. *Anesth Analg* 2003;96:1191-2.
13. Plit ML, Chhajed PN, MacDonald P, Cole IE, Harrison GA. Bilateral vocal cord palsy following interscalene brachial plexus block. *Anaesth Intensive Care* 2002;30:499-501.