



### Case Report

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## Total spinal blockade after Interscalene brachial plexus block- A rare but possible complication

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### Abstract

Interscalene block is a commonly done regional anesthetic technique for shoulder and upper arm surgery. It has been used regularly as it is simple and achieves good and satisfactory block, but still it is not completely devoid of complications. In our case we have given interscalene block to a 45 year old male patient of ASA grade-I. Immediately after injecting the local anesthetic drug the patient became unconscious and unresponsive due to total spinal blockade. The patient was resuscitated and shifted to ICU where he regained his consciousness after few hours and shifted to the ward without any neurological deficit.

**Keywords:** Interscalene block, Intrathecal injection, Local anesthetics, Total spinal blockade.

### INTRODUCTION

Interscalene brachial plexus block is a common method of regional anesthesia for the surgery of shoulder and arm. There are various complications which are mainly due to the proximity of the stellate ganglion, phrenic nerve & recurrent laryngeal nerve near the plexus [1]. There have been certain case reports of inadvertent spinal & epidural blockade during interscalene brachial plexus block [2]. Among these, total spinal blockade is far less common but still there are few cases been reported [3-6]. We report a case of total spinal blockade following interscalene block.

### CASE REPORT

A 45 year old male patient of ASA grade I was scheduled for right sided fracture humerus surgery. The patient was cooperative so it was decided to give interscalene brachial plexus block.

An 18 gauge (G) intravenous (IV) cannula was secured in the left forearm & Ringer lactate infusion was started. ASA standard monitors were attached. The preoperative vitals were within the normal limits with no history of any co-morbidity, previous anesthetic exposure or allergic reaction to any drug.

After taking informed consent, the patient was positioned supine with the head turned about 30° to the left side. Under all aseptic precautions the skin over the right side anterior and middle scalene muscle at the level of cricoid cartilage was infiltrated with lignocaine 2% with adrenaline. Then a 1.5 inch 22 G needle was advanced gradually in downward, medial and posterior direction at the same level between anterior and middle scalene muscle (Winnie method) [7]. As the needle was advanced, the patient was asked for paraesthesia. When paraesthesia was elicited, 10ml of lignocaine 1% with adrenaline (2.5µg/ml) was injected slowly after negative aspiration. A total of 30ml of local anesthetic (three separate prefilled 10ml syringe) with the same concentration in 10ml of incremental dose was given and repeated negative aspiration, after every five ml, was done to rule out any intravascular or intrathecal placement.

During injecting the last 10ml local anesthetic, the patient complained of dizziness and numbness in the whole body. Within ten seconds the patient became unconscious & apnoeic with complete loss of muscle tone. Blood pressure (BP) & heart rate (HR) gradually decreased from 133/70 mm Hg to 110/64 mm Hg & 96 to 74/min respectively. Then the oxygen saturation started falling, so immediately a classical LMA size four was inserted without using any induction agent or neuromuscular blocking agent. Mechanically ventilation was started and within two minutes the saturation was restored to 99%. The pupils were fixed and dilated with stable vitals for around 30 min. After 30 minutes BP and HR decreased to 90/55 mmHg

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and 48/min respectively for which inj. mephentermine 5 mg IV and inj. atropine 0.5 mg IV was given. There were some flickering movements seen in the eye lids and face, so in suspicion of seizures inj. midazolam 2 mg IV stat, inj phenytoin loading dose 1000mg and intralipid 20% 100 ml IV was started. LMA was exchanged with 8.5 size endotracheal tube and patient was shifted to intensive care unit (ICU) for further management.

Gradually after one hour in ICU the muscle tone improved and spontaneous efforts were seen so the mode was changed from synchronized intermittent mandatory ventilation (SIMV) to continuous positive airway pressure (CPAP). After a span of two hours, the patient gained full consciousness, adequate muscle strength and was able to follow commands so extubation was done. The patient was kept under observation for 12 hours. No neurological deficit or any recall of events was found.

## DISCUSSION

The major acute complications/side effects associated with interscalene block are respiratory depression (ipsilateral phrenic block), Horner's syndrome (ipsilateral cervical sympathetic block) <sup>[8,9]</sup>, hoarseness and dysphagia (ipsilateral recurrent laryngeal nerve block), pneumothorax, epidural/spinal anesthesia and intravascular injection that may lead to seizures and cardiac arrest. In any cardiac/respiratory arrest occurring during or after regional block, the most common cause to be considered is local anesthetic toxicity.

In case of local anesthetic toxicity, the typical features comprise of CNS (tinnitus, disorientation & frank seizures) & CVS (rapid hypotension, dysrhythmia and cardiac arrest) <sup>[10]</sup>. As the signs & symptoms in our case were not typically that of intravascular local anesthetic toxicity so it may be due to intrathecal injection. It has been mentioned in literature that local anesthetics can enter the subarachnoid space through three different routes. First, the drug may be injected directly into the intrathecal space. Second, a dural cuff sometimes may accompany a nerve root distal to the intervertebral foramen, which may be accidentally punctured, making direct intrathecal injection possible <sup>[11]</sup>. And finally, local anesthetics injected intraneurally could spread in a central direction to the spinal space <sup>[3]</sup>. As negative aspiration was done intermittently to minimize the possibility of intravascular or intrathecal injection and also the signs & symptoms didn't favour for being intravascular, but there are still chances of being intrathecal during injecting the drug because of the force applied to the syringe to push the plunger and the proximity of the subarachnoid space to the nerve sheath. The presence of fixed & dilated pupil is due to loss of efferent parasympathetic activity of Edinger Westphal nucleus <sup>[7,12]</sup>, whereas the slight decrease of pulse rate is due to blockade of cardio-accelerator fibres (T1-T4) <sup>[7]</sup>.

## CONCLUSION

In our case the most probable cause of intrathecal injection might be due to the last injection given after negative aspiration the needle may have been inserted inward unknowingly even after firm fixation. To avoid such complication we should use 1.5 inch 22 G needle along with an extension tubing so that one person should hold the needle firmly whereas the other person injects the drug through the extension line. In this method the force of injection will not be transmitted to the needle. Regarding this, to rule out the exact incidence of total spinal during interscalene block, a prospective randomised controlled trial should be planned in which one group the drug should be given via extension tubing attached to the syringe and in the other group (control) the drug should be given directly through the syringe.

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## REFERENCES

1. Morgan GE, Mikhail MS, Murray MJ. *Peripheral Nerve Blocks*. Clinical Anesthesiology, 4th ed. New Delhi: Tata McGraw Hill Education Private Limited Chapter 17;2006. p. 331-2.
2. Kumar A, Battit GE, Froese AB, Long MC. Bilateral cervical and thoracic epidural blockade complicating interscalene brachial plexus block: Report of two cases. *Anesthesiology*. 1971;35:650-2.
3. Aramideh M, Van den Oever HL, Walstra GJ, Dzoljic M. Spinal anesthesia as a complication of brachial plexus block using the posterior approach. *AnesthAnalg*. 2002;94:1338-1339.
4. Dutton RP, Eckhardt WF 3rd, Sunder N. Total spinal anesthesia after interscalene blockade of the brachial plexus. *Anesthesiol* 1994;80:939-41.
5. Ross S, Scarborough C. total spinal anesthesia following brachial plexus block. *Anaesthesiology*, 1973;39:458.
6. Passannante A. spinal anesthesia and permanent neurological deficit after interscalene block. *Anesthesia and Analgesia* 1996;82:873-4.
7. Winnie AP. Interscalene brachial plexus block. *AnesthAnalg*. 1970;49:455-66.
8. Urmey W, Talts K, Sharrock N. One hundred percent incidence of hemidiaphragmatic paresis associated with interscalene brachial plexus anesthesia as diagnosed by ultrasonography. *Anesth and Analg* 1991;72: 498-503.
9. Al-Khafaji JM, Ellias MA. Incidence of Horner syndrome with interscalene brachial plexus block and its importance in the management of head injury. *Anesthesiol* 1986;64:127.
10. Albright GA. Cardiac arrest following regional anesthesia with etidocaine or bupivacaine. *Anesthesiol* 1979;51:285-7.
11. Tetzlaff J, Yoon H, Dilger J, Brems J. Subdural anesthesia as a complication of an interscalene brachial plexus block. Case report. *RegAnesth* 1994;19:357-9.
12. Wilhelm B, Wilhelm H, Moro S, Barbur J.L. Pupil response components: studies in patients with Parinaud's syndrome. *Brain* 2002;125:2296-2307.