

Not everything is as it seems

ABSTRACT

We report a case of a patient operated for shoulder rotator cuff injury under interscalene brachial plexus block and general anesthesia, who developed neurological deficit in the nonoperative upper limb in the immediate postoperative period. As our patient developed neurological deficit on the nonoperative side, it was clear from the beginning that neither the nerve block nor the operative procedure was responsible for it. However, had he developed neurological symptoms on the operative side after having a peripheral nerve block, it would have possibly delayed the timely investigation and diagnosis. This case report underlines the need to keep an open mind when investigating neurological symptoms arising in the perioperative period, rather than assuming it to be secondary to either nerve block or as a complication of surgical procedure.

Key words: Cervical spine pathology; neurological injury; peripheral nerve block

Background


Often an assumption is made that perioperative neurological symptoms are either related to peripheral nerve block or as a local complication of surgery, without taking other potential and more common etiological factors into consideration like diabetes, hypertension, obesity, patient positioning, type of surgical procedure, and preexisting neuropathy.

Procedure

We would like to report a case of a patient operated for shoulder rotator cuff injury under interscalene brachial plexus block (BPP) and general anesthesia (GA), who developed neurological deficit in the nonoperated upper limb in the immediate postoperative period. The patient has approved reporting the case.

A 56-year-old male patient with body mass index (BMI) of 41 was posted for the arthroscopic biceps tenotomy and

rotator cuff repair of his left shoulder. He had no other significant comorbidities. On arrival to the theatre, standard monitoring was attached. The noninvasive blood pressure cuff and the intravenous line were placed on the right arm. We performed awake, in-plane ultrasound and peripheral nerve stimulator-guided interscalene BPB. Abolition of deltoid muscle twitch was observed at 0.4 mA current and 20 ml of 0.25% levobupivacaine was injected after negative aspiration. Good spread of local anesthetic solution was observed around the nerve roots. There was no paresthesia and injection pressure was normal. This was followed by the administration of GA with endotracheal intubation. Patient was placed in beach chair position as per the surgical requirement with proper padding in place and periodic assessment of the pressure areas was done every 30 minutes. Procedure lasted for 90 minutes and was uneventful. The patient had undergone the same procedure on the other side (Right) 3 months ago with similar anesthetic technique (Interscalene BPB and GA), without any complications.

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In the recovery, patient was found to have good working block on the left side (loss of both the sensory and motor power in shoulder/arm area, and only slightly altered sensation with normal motor power over the thumb and index finger) consistent with successful interscalene BPB. However, to our surprise he was also complaining of tingling and numbness in first four fingers on his right side (nonoperative side). On examination, he had weakness of his pinch grip on the right-hand side, without any obvious swelling or deformity. The clinical picture was consistent with C6-C7 nerve roots compression or median nerve compression at the level of forearm. As there was motor deficit present, an urgent magnetic resonance imaging (MRI) of cervical spine was done. It revealed bridging osteophytes between C4-C5 and C5-C6 levels with degenerative changes between C6-C7 and C7-T1 levels. It also showed possible congenital fusion between C5 and C6 vertebral bodies [Figure 1]. There was no significant disc lesion or significant foraminal encroachment. Patient was reassured and as his signs and symptoms were improving, he was discharged the next day. At follow-up clinic visit eight days later his signs and symptoms had completely resolved.

Discussion

The incidence of perioperative nerve injury following anesthesia (with or without nerve block) and surgery varies considerably (overall incidence is <1%) and depends upon several risk factors. This includes patient factors (age, BMI, diabetes, hypertension, smoking, and established as well as preexisting but subclinical peripheral neuropathy), anesthesia-related factors (nerve block, profound hypothermia, hypovolemia, hypotension, hypoxemia), the type of surgical procedure (higher incidence in cardiac, neurosurgery, and orthopedic procedures), and metabolic/



Figure 1: MRI of cervical spine showing bridging osteophytes between C4-C5 and C5-C6 levels with degenerative changes between C6-C7 and C7-T1 levels. It also showed possible congenital fusion between C5 and C6 vertebral bodies

electrolyte disorders.^[1] Despite having better understanding of neurological injuries associated with shoulder procedures, it is not always possible to identify the cause of nerve injury, as the etiology is likely multifactorial resulting in a “difficult to predict and prevent” phenomenon, particularly with concomitant use of peripheral nerve block (PNB).^[1,2]

Though the etiology in our patient was not clear, we consider beach chair position for surgery and most importantly newly diagnosed subclinical cervical spine pathology as the possible risk factors precipitating or resulting into perioperative neurological symptoms (PONS). Patients with preexisting spinal cord pathology are at an increased risk of new or progressive neurological symptoms in the immediate postoperative period.^[3,4] The “double crush theory” also suggests that these subsets of patients are more susceptible to secondary insult at a site remote to the original pathology.^[5,6]

Conclusion

As our patient developed neurological deficit on the nonoperated side, it was clear from the beginning that neither the PNB nor the operative procedure was responsible for it. However, had he developed PONS on the operated side after having a PNB, it would have possibly delayed the timely investigation and diagnosis, as often an assumption is made that PONS either is related to PNB or is a local complication of surgery. We are taught in medical school “When you hear hoof beats, think of horses not zebras.” However, this case highlights the need to keep zebras in mind when investigating PONS associated with PNBs.

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.

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Conflicts of interest

There are no conflicts of interest.

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