Recurrent laryngeal nerve palsy following interscalene brachial plexus block: How to manage and avoid permanent sequelae?

To the Editor,

Close proximity to significant neurovascular structures can lead to neurological damage during interscalene brachial plexus block (IBPB).[1] Meticulous attention to tactile resistance and patient response can help avoiding permanent neurological sequelae. We highlight an occasional, not so often cited, complication of recurrent laryngeal nerve paresis following IBPB. A 39 yrs old, 62 kg male with fracture proximal shaft of the right humerus, was posted for open reduction and internal fixation. We planned to get it done under right IBPB [Table 1].

While communicating with the patient for evaluating the effect by pin prick method, hoarseness of the voice gradually increasing to a stage of whispering indicated recurrent laryngeal nerve palsy (RLNP). As there was no breathing difficulty, all the vitals and SpO_2 were within normal limits, we decided to go ahead with the surgery (lasted 170 min), which was uneventful. Patient had no signs suggestive of ipsilateral stellate ganglion block, reported to occur in 50-75% of cases.[3] Comparison of postoperative chest x-ray [Figure 1] with preoperative one [Figure 2] revealed [Figure 1] elevation and ipsilateral paralysis of the diaphragm indicating "right phrenic nerve palsy (PNP)." PNP which occurs in approximately 100% of cases can be clinically significant in 10% cases with up to 25% and 15% reduction in forced vital capacity and peak expiratory flow rate respectively; however our patient did not develop any breathing difficulty.[4,5] Patient was kept under observation with stringent vitals monitoring (heart rate, noninvasive blood pressure, SpO_2, and respiratory rate) and signs of respiratory distress, all the emergency drugs and airway equipment for intubation and ventilation such as masks, laryngoscopes, endotracheal tubes, ventilator and suction etc. were kept ready throughout the perioperative period in case the need arises. Patient was assured that his voice change is a temporary phenomenon and it would recover on its own as the effect of the drug subsides. His voice gradually improved to normal over a period 11 h coinciding with the requirement of first postoperative analgesic.

Recurrent laryngeal nerve palsy is an occasional complication of interscalene block.[1] Plit *et al*. reported a case where a patient with preexisting unilateral RLNP developed contralateral RLNP following interscalene block of that side, which failed to resolve over subsequent 18 months of follow-up.[6] Most of the peripheral neurological complications with IBPB have been found to be chronic.[1] In conclusion, we are reporting this case to highlight:

How to avoid permanent neurological sequelae?

- Meticulous attention should be paid to the injection technique and patient response when ultrasound and peripheral nerve stimulators are unavailable (like ours)
- It is our practice to halt the procedure if there is significant resistance or severe pain (patient shouts or cries) to injection as it can lead to intraneural injection and permanent neurological sequelae.

Table 1: IBPB technique

Technique	Description
Position	Supine with head turned to left side
Needle	21 G hypodermic needle mounted on 10 ml syringe
Level	Interscalene groove at the cricoid cartilage level[2]
Technique	Needle inserted perpendicular to skin
Site of paresthesias elicited	Shoulder and proximal arm at 1.5 cm needle depth
Drugs used	0.5% 20 ml bupivacaine and 2% 10 ml lignocaine with adrenaline

IBPB = Interscalene brachial plexus block

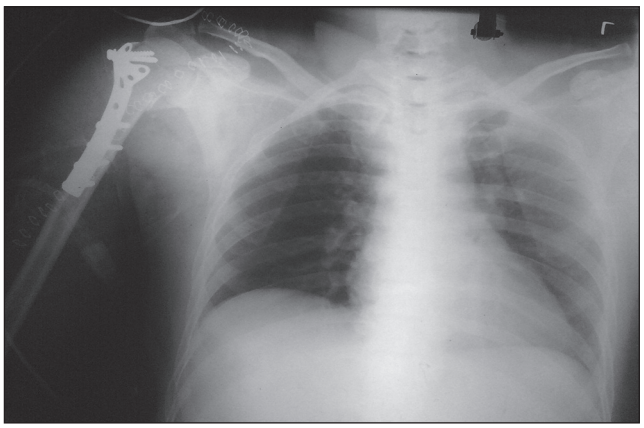

Figure 1: Postprocedure chest X-ray

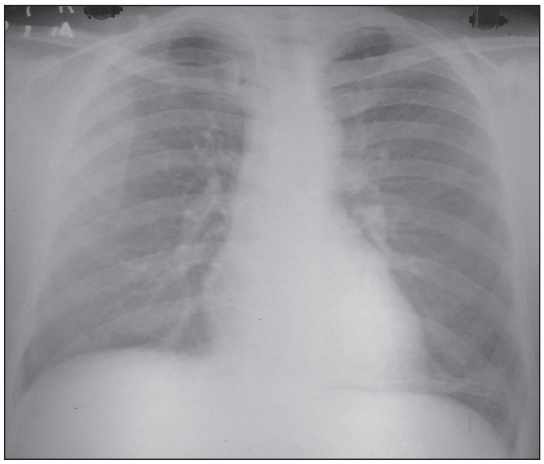

Figure 2: Preprocedure chest X-ray

How to manage unilateral RLN palsy?

- Reassurance: Even in the case that unilateral RLNP and hoarseness of voice develops, one should not panic as it is temporary and self-limiting most of the times
- Stringent monitoring in a high dependency unit so as to detect any signs of respiratory distress at its earliest
- It is of utmost importance to rule out preexisting respiratory disease or voice changes before performing IBPB
- Maintaining continuous verbal communication along with judicious use of sedatives
- Emergency drugs and airway equipment should be kept standby till the effect of block subsides.

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