



PROLONGED BRACHIAL PLEXOPATHY AFTER ULTRASOUND-GUIDED SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK IN A MAN UNDERGOING VASCULAR SURGERY : A CASE REPORT

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ABSTRACT

We present a case of unexpectedly prolonged motor and sensory block following a successful single injection ultrasound-guided supraclavicular block with Ropivacaine(13cc 0.75%), Lidocaine(13cc 2%). Normal Saline(13cc), epinephrine 0.2mg mixed solution. Ultrasound guidance and safety measurement such as injection of the local anesthetic at a slow rate and verifying that usual resistance was felt throughout the injection has been applied. It took 48 hours for the block to go away. Although there was no evidence of neurologic injury but we should always be prepared to consider the possibility of nerve injury and take appropriate measures.

KEYWORDS :

INTRODUCTION

Peripheral nerve blocks enjoy great importance in anesthesia practice. They can provide safe and effective anesthesia with long-lasting analgesia.(Amiri 2012) Brachial plexus block(BPB) is a widely employed regional nerve block of the upper extremity. Various approaches have been described to block the brachial plexus. Supraclavicular approach represents a reliable and safe approach for the hand, forearm, and the elbow surgeries. We describe the case of a patient whose Atrio-Venous Fistula(AVF) surgery was performed under ultrasound guided supraclavicular block using Ropivacaine and lidocaine. He had a very prolonged sensory and motor blockade for 48 hours. His recovery was uneventful.

Case presentation

A 37 years-old male who has end stage renal disease(ESRD) was scheduled for Lt. arm AVF surgery. His physical examination was normal. The patient took cholecystectomy (7/26, 2022). and hemodialyzed every Monday, Wednesday, Friday. The patient was somewhat anxious about having surgery under general anesthesia and requested the regional anesthesia. Standard monitoring including non-invasive blood pressure(NIBP) recording, pulse oximetry and electrocardiography were applied and a single injection ultrasound guided supraclavicular block was implemented for the procedure. Midazolam 2mg was given intramuscular (IM) 30 minutes before the start of the block. We used a linear ultrasound probe. The patient assumed a semi-sitting position and turned his head to the opposite side.

With the probe placed in superior to the clavicle, we obtained a clear short-axis image of the subclavian artery.(Figure 1) The entry point of the needle was anesthetized with 1% lidocaine(3ml). Then using an in-plane approach, Sonoplex 22G 80mm needle was advanced and placed anterior to the subclavian artery. After reassuring that the needle tip is in correct location, and confirming a negative aspiration for blood, we slowly injected Ropivacaine(13cc, 0.75%), 2% Lidocaine(13cc), N/S(13cc), epinephrine 0.2mg mixed solutions and then withdrew the needle.

During the injection, no adverse effect was noticed. And we also used peripheral nerve stimulator. Five minutes after the injection muscle coordination in the extremity was lost. After

15 minutes the surgery was allowed to start. The surgical procedure lasted 160 minutes. After the end of surgery the patient was monitored for an hour in the post anesthetic care unit(PACU) and then transferred to ward.

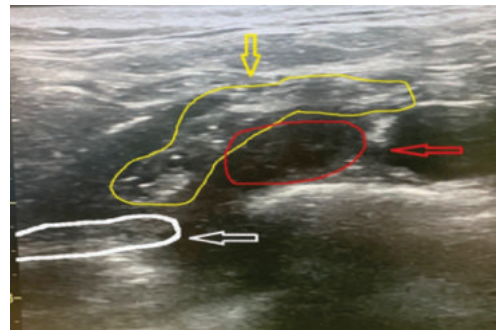


Figure 1 : Ultrasonography image during BPB.

(1) Yellow arrow is Brachial Plexus. (2) Red arrow is Subclavian artery. (3) White arrow is 1st Rib.

The next morning we were informed that the patient had not recovered completely from the motor and sensory blockade. Examination of the patient proved the same. The patient's condition was reassessed once more 24 hours after the performance of the block. His radial and medial nerve site was recovered but ulnar nerve site's motor and sensory didn't. Despite that the patient had no complaint about pain or parasthesia during injection of the local anesthetic and that we did not notice any unusual resistance to injection, a motor and sensory block in C8, and T1 had remained, and the possibility of damage to nerves emerged.

The patient's condition was reassessed once more 48 hours after the performance of the block. His motor and sensory recovered 95% compared with before of the BPB, so we discussed with surgeon and decided to be discharged and out patient clinic(opd) follow up.

DISCUSSION

Ropivacaine is used regularly for Brachial plexus block. It's advantage include extended period of surgical anesthesia and considerable postoperative analgesia. Prolonged neurological impairment has been reported after both interscalene and supraclavicular techniques.(Rockway MS

1989) The cause of injury or palsy are usually direct trauma, excessive stretching of the plexus from external pressures or combination of these. (Lim EK, 1984)

Many additives are used in conjunction with local anesthetics for regional and neuraxial anesthesia to quicken onset, prolong duration and enhance analgesia. we couldn't find a reason that could explain the prolonged sensory and motor block. The dose of Ropivacaine was less than what is routinely used for supraclavicular block. The block was performed under ultrasound guide which permitted direct visualization of the target cords, the needle and subclavian artery. Single injection ultrasound guided technique and lack of paresthesia and pain during procedure were further evidence that no direct trauma to the cords has happened. Total doses and concentration of the drug used in the procedure, did not justify the duration of motor and sensory block. It is believed that the incidence of neuronal injury in ultrasound guided regional anesthesia procedures is around 0.04%. (Etezadi 2013)

There are a few reports of prolonged blockade following seemingly flawless technique of performing block. Complete recovery in those case reports varied from 40 to 84 hours after the block. (Brockway 1989, Dureja J 2009) None of the papers have clearly stated the reason behind the long blockade. Injecting the local anesthetic too close to the nerves and chronic treatment with lithium has been proposed as reasons behind these unusually prolonged blocks. Luduena believed that causes of prolonged blockade are often unknown and if the duration is longer than 24 hours then probability of nerve damage should be considered. (Luduena FP. 1969)

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