Prolonged nerve blockade in a patient treated with lithium

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Abstract: We report a case of a patient, chronically treated with oral lithium, who presented with an extremely prolonged (42-hour) duration of sensory and motor paralysis following an uneventful infraclavicular block for hand surgery that was performed under ultrasound guidance using bupivacaine and lidocaine. Due to its direct effect on nerve conduction of action potential, we propose that lithium may have had a role in the unusually prolonged duration of a peripheral nerve block.

Keywords: nerve blockade, lithium, duration, anesthesia

Introduction
Peripheral nerve blocks are of great importance in anesthesia and may provide painless, safe, and inexpensive anesthesia with long-lasting analgesia. Numerous systemic and local effecting medications, many of which are still in daily clinical use, may alter the onset, analgesic effect, and duration of peripheral nerve blocks. Here, we describe the case of a patient, chronically treated with oral lithium, who had an extremely prolonged (42-hour) duration of sensory and motor paralysis following an uneventful infraclavicular block for hand surgery that was performed under ultrasound guidance using lidocaine and bupivacaine.

Case report
A 46-year-old woman was scheduled for elective hand surgery. Her medical history was significant for bipolar disorder, chronically treated with oral lithium carbonate 750 mg/day during the 4 years prior to the surgery. Blood lithium levels 2 days prior to the surgery were 0.45 mEq/L (therapeutic values usually considered are between 0.6 and 1.2 mEq/L). She had had no previous surgery, except minor dental procedures under local anesthesia, and no known allergies.

Due to patient preference for regional anesthesia, an infraclavicular block was performed under ultrasound guidance using a 22 G stimulating needle (Polymedic®; te me na SAS, Carriers-sur-Seine, France). Each one of the three cords of the brachial plexus was separately visualized using an in-plane short axis approach and concomitantly electrically stimulated by nerve stimulator, after which a local anesthetic “cuff” was injected individually around each cord, using 10 mL of plain bupivacaine 0.25% (Kamada, Beït-Kama, Israel) and lidocaine 1.5% (Rafa Laboratories Ltd, Jerusalem, Israel) solution (0.1 mg/kg and 0.075 mg/kg, respectively, totaling 30 mL). Neither paresthesia nor pain was elicited during the injection. Sensory block was evaluated...
centrations of Na\textsuperscript{+} channel TTX-S INa in the presence of physiologic con-

In the present case, the motor and sensory block lasted 42 hours, although the literature and our experience show that using this dose of local anesthetic usually provides an effect that lasts 10–16 hours\textsuperscript{o} or less.\textsuperscript{8} We suggest that lithium could have elicited the prolonged duration of the peripheral nerve block. This relation may exist, despite subtherapeutic levels of lithium, due to different effects of the ion on the central and peripheral nervous systems.

Since the length of analgesia is of great significance when a single-injection nerve block is applied, further studies are needed to evaluate the effects of lithium on the duration of motor and sensory nerve block in humans.

Discussion

The authors report no conflicts of interest in this work.

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