Case report: Prolonged nerve blockade in patients on lithium therapy

Introduction

In a previous case report I mentioned that the use of psychotropic drugs is on the increase. The drugs are used for depression and various forms of pain e.g. chronic pain. The World Health Organization predicts that by 2012 depression will be the second biggest cause of disability. This means in effect that patients may be taking different drugs to treat depression. As sedation practitioners we need to take note of this and plan our sedation techniques accordingly.

Two recent articles published information on prolonged peripheral nerve blockade in patients using lithium carbonate 1,2.

Abstracts

- J Craniomaxillofac Surg 2013; S1010-5182 (13) 00155-158.
  
  Prolonged peripheral nerve blockade in patients using lithium carbonate. Patil PM.
  
  This article describes the occurrence of extremely prolonged anaesthesia after peripheral nerve blocks for dental procedures. Lignocaine with adrenaline was used for inferior alveolar, lingual, greater palatine and posterior superior alveolar blocks in patients taking chronic oral lithium carbonate treatment. It is postulated that tissue factors, systemic conditions, and drugs may alter the onset, depth, and duration of peripheral nerve blocks. Lithium may be one of the drugs that can prolong peripheral nerve blocks.

- Local Reg Anesth 2012; 5:15-16.
  
  Prolonged nerve block in a patient treated with lithium. Lehavi A, Shenderey B. Katz YS.
  
  A case is reported of a patient on oral chronic lithium therapy that presented with prolonged duration of nerve blockade (42-hours)
following an infraclavicular nerve block for hand surgery. Bupivacaine and lignocaine were used as local anaesthetic agents. The authors believe that lithium may play a role in the pronged duration of a peripheral nerve block.

Discussion

Local anaesthesia and sedation play a crucial role in patient comfort for operative procedures done outside the operating theater. It is routinely used in everyday practice in dental surgery where adequate analgesia is essential to complete surgical procedures uneventfully. Numerous factors may be involved in the duration of peripheral nerve blocks. The above-mentioned articles believe that lithium may play a role.

Lithium is as an anti-manic drug classified under the psychotropic drugs. It is used for the treatment of bipolar disorders, mania, and as an adjuvant for pain e.g. neuropathic pain and fibromyalgia. Its mechanism of action is not well understood. It is believed that the presence of lithium in the extracellular fluid may change the resting membrane potential and may then alter the conduction of action potentials.

The question is how do sedation practitioners approach administration of sedation for patients on lithium therapy.

The following needs to be considered before sedation,

- A typical dose of lithium is about 300 mg 3-4 x per day. This dose usually results in a therapeutic serum level of 0.4 - 1.2 mmol/litre. At this level lithium is relatively free from side effects and there should not be any adverse events during or after sedation.

  It is essential that a blood level be done before sedation. A level of 0.4 - 1.2 mmol/litre is seen as a therapeutic level. When the level of lithium is between 1 – 2 mmol/litre the patient may present with nausea and vomiting, drowsiness, lack of coordination, and muscle weakness. At a level of 2-3 mmol/litre the patient may present with giddiness, ataxia, blurred vision, slurred speech, and may even be agitated. With a lithium level of > 3 mmol/litre symptoms and signs of convulsions, arrhythmias, hypotension and even coma may be seen.

- Lithium is a drug with a narrow therapeutic ratio and is excreted by the kidneys. The non-steroidal anti-inflammatory agents (NSAIDs) should probably be avoided if a patient is on lithium therapy. If NSAIDs drugs need to be administered their use should be limited to 3-4 days. It is believed that toxic levels of lithium may develop after 5-10 days of lithium therapy. Paracetamol is the preferred analgesic if the NSAIDs need to be avoided.
Conclusion

The question remains whether one should stop lithium therapy before the operation. Some clinicians believe that lithium should be stopped at least 24 hours before the operation. I do not think that there is a definite answer to this.

One could argue that by stopping the drug the patient may become even more anxious. Personally I do not stop this drug before the operation.

References


