

Myoclonus in the Post-Operative Period: A Case Report

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Involuntary movements/myoclonus are brief, short-lived jerky movements and a complication in the post-operative period are seen following central neuraxial blockade causing distress to the patient but is usually self-limiting. We wish to bring cognizance among fellow anesthesiologists regarding this possible, extremely rare complication and also review the available work for its cause and management.

Post-spinal myoclonus was witnessed in a young adult patient in their twenties who underwent closed reduction and internal fixation for a right femur shaft fracture under combined spinal-epidural anaesthesia. The patient developed involuntary jerky movements of the right foot 8 hours after the subarachnoid block gradually reduced in the next 24 hours. After ruling out other possible causes of myoclonus, the case was followed up and discharged on postoperative day 5. Post spinal myoclonus though a rare complication can be distressing to the patient and the doctor. It is a self-limiting complication with no residual effects.

Keywords: Spinal myoclonus, spinal complication, central neuraxial blockade, bupivacaine.

Introduction

Combined spinal-epidural anaesthesia is a common technique used for surgeries below the umbilicus. Myoclonus or hyperkinetic movements are characterized by sudden, brief, jerk-like muscular contractions which could be caused by trauma, infection, inflammation, demyelination, tumours, arteriovenous malformation, ischemic myelopathy and rarely after spinal anaesthesia and are termed “spinal myoclonus”.^[1] This can cause severe distress to the patient including sleep disturbances, but is usually self-limiting, requiring no intervention with no lingering effects post this complication.^[2]

The minor complications after central neuraxial anaesthesia (CNA) are rarely reported and might go unnoticed leading to

the lack of related literature. One such complication is the transient myoclonic involuntary movements of the extremities, which develop hours after CNA. The cause, association with local anaesthetics, and predisposition for the development of this complication are unknown. There are various hypotheses to understand the pathophysiology of spinal myoclonus. Significant reporting of cases needs to be done to help anesthesiologists understand and be aware of this complication.

Case report

A young adult presented to the emergency room after sustaining an injury to the right leg due to a fall from a height of 7 feet. The patient denied a history of loss of consciousness, vomiting, headache, blurring of vision, and seizures after the fall. All vital parameters and systemic examination were unremarkable. Patient was diagnosed to have a closed comminuted fracture of the right shaft of femur and was counselled for surgery. Patient underwent a routine preanesthetic evaluation and was accepted under American society of anesthesiologist physical status (ASA PS) 1 for a closed reduction and internal fixation under combined spinal epidural anesthesia.

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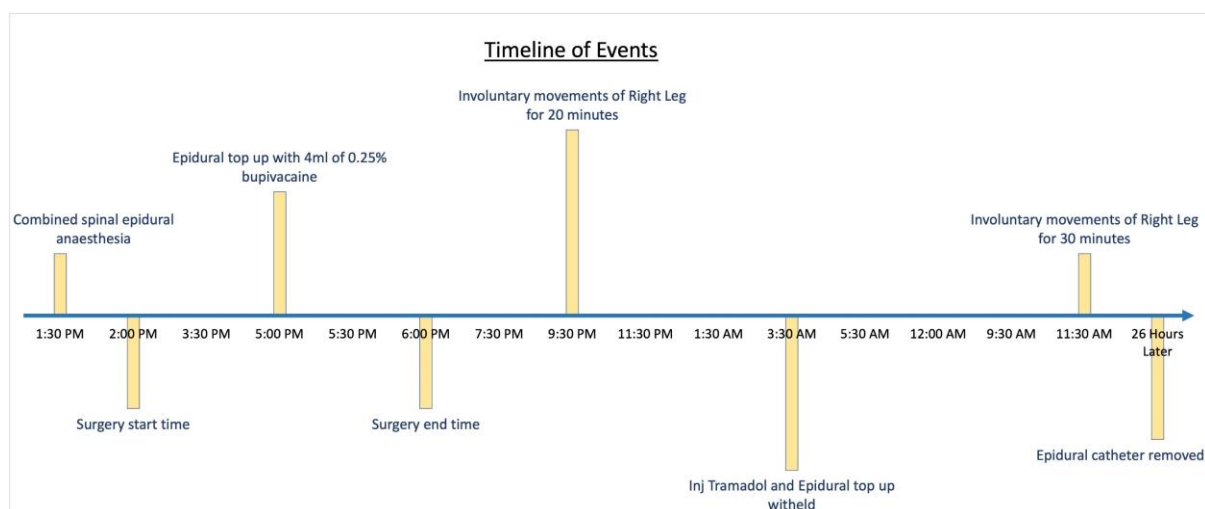
In the operating room, ASA standard monitors were connected, and intravenous fluids were started. The patient was premedicated with Midazolam 1mg iv and Fentanyl 30 mcg iv. In sitting position, under aseptic precautions epidural space was identified at the L3 – L4 level at 4 cm depth using the Loss of resistance to air technique with the aid of an 18G Touhy's needle. 20G epidural catheter threaded, fixed at 12cm and a test dose of 3ml of 2% lignocaine with adrenaline administered after negative aspiration for blood and CSF. A lumbar puncture was also performed at the L3 – L4 level using a 23G Quincke needle, after confirming clear free flow of CSF, 3cc of 0.5% hyperbaric Bupivacaine with 60mcg of Buprenorphine was administered intrathecally. A complete loss of sensation to pinprick up to T8 dermatome level and Bromage of Grade 3 was confirmed. The patient was positioned appropriately with traction for surgery which lasted for 4 hours, with the epidural being activated with 4cc of 0.25% Bupivacaine after 3 hours of starting the procedure. Intraoperative vitals were stable throughout the surgery and the patient was transferred to the ward post-surgery.

Post-operative pain was managed with Tramadol 50 mg 8th hourly and epidural top-

ups with buprenorphine. Patient received 120mcg of buprenorphine via epidural for analgesia in the ward approximately 3 hours after surgery. 30 minutes after the epidural top-up. The patient started having involuntary paroxysmal rhythmic thrusting movement in the right leg, pendulous along the vertical axis, at the ankle. This episode lasted for 30-40 minutes increasing in frequency and gradually reduced within an hour without any intervention. Patient had a similar episode in the morning, 14 hours after the first, which terminated within 1 hour spontaneously.

Patient was conscious and cooperative during these episodes, anxious but hemodynamically stable. Bromage score was 0, with normal sensation, deep tendon, and superficial reflexes in both limbs. A neurology opinion was sought, and serum electrolytes were sent which were within normal limits. Epidural top-ups and further doses of Tramadol were withheld. Tab paracetamol 650 mg 8th hourly was started for analgesia. An epidural catheter was removed on the post-operative day (POD) 1. There was no recurrence of these involuntary movements. The patient was started on physiotherapy and discharged on POD 5. (Figure 1)

Figure 1: Timeline of events



Discussion

Spinal myoclonus was first reported in 1979 and is a diagnosis of exclusion and an extremely rare complication seen after CNA. There is no textbook which includes CNA associated movement disorders or this has not been included in any etiological classification.^[1, 3] Literature articles related to spinal myoclonus due to CNA are limited. The criterion for CNA induced myoclonus was defined as transient reversible myoclonic involuntary movements following CNA where other causes were precisely excluded.^[1] Typical characteristics of segmental spinal myoclonus are rhythmic or semi-rhythmic movements involving one or two limbs,^[4] with gradually increasing frequency and amplitude like seen in this case and the mutual characteristic seen among case reports is that it was completely resolved without leaving any long-term neurological deficits.^[2]

It can be caused by epilepsy, toxicity, drug reactions, intrathecal analgesics/anaesthetics or contrast material which may irritate the spinal cord causing repetitive discharges from anterior horn cells.^[2, 5] The neurotoxic effect of local anaesthetics or opioids, local neuronal irritation by spinal needle trauma or indwelling epidural catheter may cause myoclonus by irritating the spinal cord or nerve roots.^[5, 6] Unilateral spinal myoclonus is extremely rare and involves intrathecal or epidural catheter-causing spinal myoclonus which was treated by catheter withdrawal.^[5, 6] There was no obvious neurologic trauma during the regional block procedure for our patient, and post-operative blood workup and neurological examination were normal. This could have been triggered by epidural buprenorphine or because of the nerve root irritation because of the indwelling epidural catheter. The other confounding factor here was the use of Tramadol which is known to cause myoclonus. We excluded tramadol to be the cause as it was reused in the patient

on POD 3 for breakthrough pain with no recurrence of symptoms.

Spinal myoclonus almost always spontaneously resolves, and most of the reported cases neither had symptoms lasting more than a day nor with persistent deficits. Treatment options available are Anti-seizure medications like intravenous midazolam but rarely required.^[2] Lee et al. reported a case of recurrent spinal myoclonus after repeated spinal anesthesia. CNA in a patient with a history of spinal myoclonus should be avoided.^[7]

We present this case to create awareness about this infrequent complication seen post CNA which is self-limiting and resolves without any deficits. More studies and work need to be done on the same to understand the cause for post-spinal myoclonus.

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