Case Report

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A Case Report of Perioperative Jerks in a Patient undergoing Cranioplasty under General Anaesthesia

Anaesthesia Section

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ABSTRACT

After neurosurgical procedures, perioperative seizures are relatively common. It is extremely rare for a patient to experience intraoperative jerky movements while under General Anaesthesia (GA). The authors, hereby presented a 25-year-old male who was scheduled for cranioplasty. The routine investigations within normal limits and there were no preoperative morbidities. He was taking phenytoin. The procedure began with a routine GA with controlled ventilation using sevoflurane and vecuronium. After 45 minutes of uneventful intraoperative course, perioperatively, involuntary jerking movements of his arms and legs were observed, which resolved on their own. A muscle relaxant was given to prevent further episodes of muscle jerks, but they persisted for a few minutes. Except for a slight increase in blood pressure, all other parameters were normal. Following a smooth extubation around 90 minutes later, he was shifted to postoperative high dependency unit with stable vitals. Supplemental oxygen was administered via a simple facial mask. The patient had another episode of persistent jerky movements of his foot lasting for 30 seconds after 10 minutes with no loss of consciousness. One mg of intravenous midazolam was administered. The complete absence of a loss of consciousness goes against a seizure. The postoperative course was uneventful and a follow-up for two months was non contributory. It can be concluded that a combination of sevoflurane and phenytoin in a setting of a neurosurgical intervention could have possibly caused a jerky motion. This case is presented for its rarity.

Keywords: Neurosurgery, Phenytoin, Seizures

CASE REPORT

A 25-year-old male patient was posted for left cranioplasty with titanium implant. He had undergone a left fronto-temporo-parietal decompressive craniectomy and evacuation of acute subdural haemorrhage following a traumatic brain injury few weeks ago. There was no seizure, vomiting, ear, and nasal bleeds, weakening of limbs at the time of accident. He did not have any co-morbidities. He was not on any oral anticoagulants or antiplatelet medication. He was on empirical 100 mg thrice a day phenytoin medication on discharge. On readmission after three weeks, the patient was conscious with preserved vitals. Patient weighed 52 kg and had a height of 164 cm with Basal Metabolic Index (BMI) of 19.33 Kg/m^2. All routine investigations including an electrocardiogram, a chest X-ray was within the normal range. The premedication was oral pantoprazole. The treatment plan was to do a cranioplasty under controlled GA and extubate on table and possibly continue short course of antiepileptics.

After routine standard monitoring, the patient was induced with Inj. midazolam 1 mg intravenously (i.v.), Inj. morphine 6 mg i.v., Inj. thiopentone 175 mg i.v., Inj. vecuronium 6 mg i.v. The patient was intubated with 8 mm sized cuffed tracheal tube. The induction, intubation and ventilation were uneventful. Sevoflurane was the inhalational anaesthetic at 2% with 50% oxygen and 50% air used for maintenance at a Minimum Alveolar Concentration (MAC) of 0.8-0.9 throughout the procedure with a total flow of 2L. After 45 minutes of uneventful intraoperative course, involuntary jerking movements of his arms and legs were noticed perioperatively which subsided on its own. The muscle relaxant vecuronium 1 mg in two shots with a gap of two minutes was administered to prevent further episodes of muscle jerks but it continued to persist for a few minutes. In view of a surge in blood pressure, (up to 200 mm Hg of systolic blood pressure) dexmedetomidine infusion was started to control the same for 10 minutes and weaned off slowly. The perioperative haemodynamics were later normal and there were no hypoxic episodes. There were no further such episodes in the course of a 150 minute surgical time. The patient was extubated after complete recovery with obeying commands. He was shifted to postoperative high dependency unit with stable vitals and supplemental oxygen was administered via a simple facial mask. The patient had one episode of persistent jerky movements of his foot lasting for 30 seconds, 10 minutes after complete recovery from anaesthesia, with no loss of consciousness. One mg of intravenous midazolam was administered. The patient was easily arousable and unaware of the movements. No further episodes were noticed thereafter.

The postoperative brain imaging did not give any clues. There were no further episodes. All other follow-up investigations were normal. Phenytoin was changed to clonazepam and discharged from the hospital. The drug phenytoin was discontinued and levetiracetam was initiated on an outpatient basis. The postoperative course was uneventful and a follow-up for two months was non contributory.

DISCUSSION

Management of perioperative complications especially sudden and severe are a nightmare to the attending anaesthesiologist. Some complications are related to the cardiovascular system, such as hypotension and tachycardia, while others are related to the respiratory system, such as respiratory depression and upper airway obstruction. Other common side-effects include pain, postoperative nausea, vomiting, and shivering [1]. The majority of neurologic issues involve emergence agitation, delirium, or postoperative cognitive disorder. In the immediate postoperative period, myoclonic movements or seizures are uncommon. However, there have been some reports indicating a link between various anaesthetic agents and neurologic disorders [2]. Authors observed a case of myoclonic movement both intraoperatively and in the recovery room after the patient received GA for an elective neurosurgery procedure. The described event in our case was a jerky movement with either a possibility of seizures or myoclonus. Seizure-like movements can occur in association with GA more so with propofol [3], but in this case thiopentone was used. The use of skeletal muscle relaxants

was completely not the answer in this case, suggesting a central role. A transitory sympathetic surge can happen either in epilepsy or myoclonus which happened in our case. The further course during and after the surgery was completely uneventful while the same jerks happened in the postoperative period. Even though, he responded at the time of jerks, the event was forgotten. The sedation followed cannot be commented because of administration of sedatives.

Phenytoin use has reported with such jerks [4]. In the present case, a clear seizure was not evident after the earlier surgery to initiate phenytoin. On further looking into the details, it was noted that the seizures were due to sevoflurane. The possibility for sevoflurane to cause epileptic activity and produce clinical evidence of seizures such as an isolated clonus with or without tremor or frank tonic-clonic motor activity in patients with or without a history of epilepsy [5,6] has been recognised. A normal conscious status during the episode was against seizures. In this case, a thorough evaluation was not conducted to completely decipher the event and electrical monitoring of the neuromuscular junction and muscle potentials could have given a clue.

Jeon HW et al., have described propofol induced myoclonic jerks but the event was in the postoperative period and was resistant to antiepileptics [7]. The brain imaging and electroencephalography were normal. Etomidate, an induction agent with better haemodynamic preservatory ability, is known to cause myoclonic jerks but we did not use either propofol or etomidate [8]. There are reports of opioids being used for prevention of myoclonus wherein they have reported oxycodone to be superior to fentanyl. In the present case, fentanyl was used prior but not after the onset of jerks [9].

CONCLUSION(S)

The presented case was about transient myoclonic jerks under GA which persisted after muscle relaxants, but recurred in the postoperative period without loss of consciousness. It can be concluded that a combination of sevoflurane and phenytoin in a setting of a neurosurgical intervention could have possibly caused a jerky motion. Hence, the authors would like to throw a word of caution in using phenytoin in such undiagnosed movement disorders. To note, in this case propofol or etomidate was not used.

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