

Rhythmic movement disorder after general anesthesia

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Abstract

Dystonic movements after general anesthesia are very rare. The differential diagnosis includes adverse drug reaction, local anesthetic reaction, emergence delirium, hysterical response, and shivering. We present a case of a 10-year-old, otherwise healthy girl undergoing outpatient foot surgery. Involuntary jerking movements of her arms and torso every time she would drift off to sleep started about 2.5 hours after emergence from general anesthesia. The patient was easily arousable and absolutely unaware of the movements. These movements lasted for several days before they resolved completely. We believe to present the first case of sleep-related rhythmic movement disorder after general anesthesia, considering the nature of the movements in our patient.

Key words: Dystonic movements, general anesthesia, Ondansetron, postoperative, Propofol, sleep-related rhythmic movement disorder

Introduction

Dystonic movements after general anesthesia are rare. The differential diagnosis of dystonia includes: adverse drug reaction, local anesthetic reaction, emergence delirium, hysterical response, and shivering.^[1] Summaries of case reports of dystonic reactions following propofol or ondansetron have been published.^[2,3] However, to our knowledge, there has been no case report of a patient demonstrating delayed dystonic movements after general anesthesia occurring only when falling asleep, with no additional symptoms and the patient being totally unaware of the movements. Therefore, we also consider the diagnosis of a sleep-related movement disorder.

Case Report

A 10-year-old, 35 kg, American Society of Anesthesiologists physical status I girl was scheduled for outpatient foot surgery. Her past medical and surgical history was unremarkable.

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After premedication with midazolam 10 mg per oral, an uneventful induction of anesthesia was performed with sevoflurane, followed by placement of an intravenous (IV) line. Propofol 30 mg and alfentanil 0.125 mg were given to facilitate the placement of a laryngeal mask airway (LMA). General anesthesia was maintained with sevoflurane. IV medications administered during the 60 minute procedure included: fentanyl 0.01 mg, morphine 4 mg, ketorolac 15 mg and dexamethasone 4 mg. At the completion of surgery, the surgeon infiltrated the operative site with 4mL of 0.5% ropivacaine. Emergence from anesthesia was uneventful. The patient was transported to the post anesthesia care unit (PACU), where she recovered quickly. After about 45 minutes in the PACU, the patient was returned to the same day surgery unit where she received acetaminophen with codeine for pain control. Approximately two hours after emergence from anesthesia, the patient complained of nausea and ondansetron 3 mg was administered IV. Approximately 30 minutes later she started having jerking movements of her arms and torso every time she would drift off to sleep. Initially the movements lasted for several seconds but during the course of the day these movements developed into shaking, seizure-like movements of her upper body and head lasting several minutes. She was easily arousable and while awake she was asymptomatic. She was oriented to person, place, and time.

Diphenhydramine 25 mg IV was given as an attempt to treat a dystonic reaction but did not result in any improvement. The

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patient was discharged to home at 0930h on postoperative day one. The symptoms persisted at home (Video 1 - provided by the patient's parents and oral and written consent to publish pictorial content of the procedure was obtained). Over the next four days the symptoms improved slowly and the patient returned to her normal preoperative self.

Discussion

The differential diagnoses of postoperative dystonic movements include adverse drug reaction, local anesthetic reaction, emergence delirium, hysterical response, and shivering.^[1] Emergence delirium was ruled out because of the delayed apparition of symptoms. The diagnosis of hysterical response is unlikely although a psychogenic reaction could not absolutely be ruled out. The remaining diagnoses refer to adverse drug reactions related to propofol or ondansetron.

In most of the reported cases of abnormal movements induced by propofol, the phenomena occurred during induction, emergence or shortly thereafter, while the patients^[2,4,5] were awake and fully aware of the involuntary movements. In some of these cases there was the appearance that the patients were non-responsive when in all reality the patient was able to hear and see the world around them.^[2] Our patient however was unconscious and totally unaware of the symptoms. There have also been reports describing delayed onset of propofol induced neuro-excitatory symptoms starting more than 60 minutes after emergence from anesthesia.^[2,5] Islander and Vinge^[2] reported 5 out of 44 cases and Saravanakumar^[5] reported 6 out of 12 cases of postoperative dystonic movements with delayed onset of symptoms (85 min to 44 hours after emergence). All 11 cases were subsequently diagnosed with epileptic seizures. Our patient had received 30 mg of propofol during induction and the time from propofol injection to

dystonic reaction was more than 3 hours. Seizures are highly unlikely because the symptoms immediately subsided when awakening the patient and there were no postictal symptoms. The patient was never diagnosed with seizures, however, this diagnosis cannot entirely be ruled out.

Ondansetron has been reported to result in extra pyramidal side effects. The onset of symptoms after ondansetron has been reported to start in close proximity to the administration of the drug.^[1,6,7] In our case the symptoms started 30 minutes after ondansetron administration. These movements include jerky movements of the head, neck, torso, and limbs,^[3,8] similar the movements in our patient. However, unlike in the previously described cases, our patient was not aware of the dystonic movements that only occurred after falling asleep.

Rhythmic movement disorder (RMD) is classified as a sleep-wake transition disorder according to the International Classification of Sleep Disorders (ICSD).^[9] RMD is seen most frequently in infants and usually will disappear by four or five years of age, with a few cases^[10] presenting later in childhood and rarely in adulthood. Using the flow chart shown in Figure 1, other movement disorders including dystonia, which occurs primarily during wakefulness, can be ruled out.

The movements most commonly seen with RMD include head banging, head rolling, body rocking and body rolling, exactly like the movements in our patients (Video 1). The origin and cause of these movements is not yet known though it has been shown that this phenomenon is relatively benign. These rhythmic movements occur most frequently upon falling asleep or between sleep stages.^[9,10] The symptoms in our patient are very consistent with RMD.

We want to raise the awareness of these rare events of

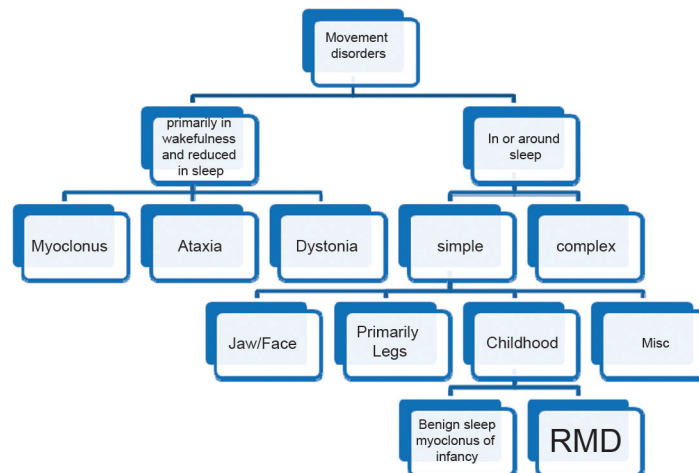


Figure 1: Modified after Walters, A.^[10] Flow chart for the differential diagnosis of sleep-related movement disorders.(Complex: movements seem goal directed, purposeful. Simple: stereotypic movements. RMD: Rhythmic movement disorder)

postoperative dystonic movements. If they occur, they can be very disturbing and threatening for the patient, their families as well as their healthcare providers. Because of the nature of the movements observed in our patient, we believe to present the first case of sleep-related RMD after general anesthesia.

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