

Inhalation Anaesthesia a Cause for Delirium? A Case Report

Ayhan Kaydu¹, Ebru Tarıkçı Kılıç^{2*}, Erhan Gökçek¹

¹Anesthesiology Department, Diyarbakır Selahaddin Eyyubi State Hospital, Diyarbakır, Turkey

²Department of Anaesthesiology and Reanimation, Ümraniye Training and Research Hospital, İstanbul, Turkey

*Corresponding author: Ebru Tarıkçı Kılıç, Department of Anaesthesiology and Reanimation, Ümraniye Training and Research Hospital, İstanbul, Turkey, Tel: +05063306640; E-mail: ebru.tarkc@yahoo.com

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Abstract

Inhalation anaesthesia has been cause emergence delirium and agitation. Sevoflurane is the induction agent of choice for children and offers better clinical outcomes but on the other hand the most common vapour based anaesthesia with sevoflurane is associated with the highest incidence of delirium. We report an occurrence of agitation after sevoflurane anaesthesia in an adult patient for whom dexmedetomidine was used to treat emerge agitation. His agitation, disorientation lasted for hours and under sedation infusion transferred to the intensive care unit (ICU). After 4 h later in ICU he remained calm and cooperative. A day later he was discharged to the ward uneventful.

Keywords: Sevoflurane; Delirium; Adult patient

Introduction

Agitation after general anaesthesia is a challenging event. The incidence of emergence agitation ranges between 4.7% and 18% [1,2], and it is more commonly observed in patients who are younger and have lower ASA scores patients may demonstrate haemodynamic instability, vomiting, respiratory compromise and occasionally, uncooperative, aggressive behaviour [3]. Severe life threatening emergence agitation requires prompt attention and usually sedation.

Case Presentation

A 24 year old, ASA physical status I presented for right foot deformity surgery. He had no medical and surgery history. According to our local department protocol, premedication of 3 mg demizolam was administered before the surgery. The patient was taken to the operating room where general anaesthesia was induced with fentanyl 100 µg, propofol 200 mg and 40 mg vecuronium intravenously (IV) then an endotracheal tube was placed without any complication. General anaesthesia was maintained with sevoflurane 2% [50% O₂-50% N₂O].

Duration of the surgery was 150 min. At the end of the surgery, anaesthesia was discontinued; analgesic was administered. Inspiratory oxygen was increased to 100% and the patient was transferred to the PACU under spontaneous breathing.

Upon admission into the PACU, arterial oxygen saturation was 98% (without oxygen supplementation), heart rate 110/min, arterial blood pressure 180/100 mmHg. In five minutes he was agitated, kicking screaming, needed physical restraint to avoid self-injury. He wasn't calm and oriented within the 30 min and sedation of dexmedetomidine was started. Due to the persistent agitation he was transferred to the ICU unit under sedation and continuous monitoring was administered.

Hemodynamics was stable. 4 h later he was cooperating and calm. The sedation was stopped. The next day he was discharged from the ICU.

Discussion

Emergence of agitation can be identified as a combative, disoriented behaviour which requires restraint. Sevoflurane is a good inhalational agent with its stable hemodynamic properties but can induce excitation during the induction and even awakening.

Delirium associated with sevoflurane is observed frequently in children. Here we present an unusual case of an adult patient with prolonged agitation after sevoflurane anaesthesia. The mechanism is not clear and difficult to predict. This behaviour can be explained as a cause of response to pain. Possible mechanism of agitation may be the rapid recovery of sevoflurane anaesthesia and inadequate postoperative analgesia. But for our patient pain was not significant. At the end of the surgery additional analgesic regimen was also administered. Postoperative pain control is important to prevent emergence delirium but the results are contradictory [4,5].

Sevoflurane has neuro-physiological properties. In the animal model, sevoflurane anaesthesia produces a dual effect: suppression of background EEG activity and enhanced somatosensory-evoked responses to stimuli [6].

Types of the surgeries also have a role in postoperative agitation-delirium. In a study, evaluating of 1359 adults patients and determined breast surgery and abdominal surgery were the surgeries with the highest risk of developing delirium.

In severe cases as ours emergence agitation can be associated with significant morbidity including physical injury and a prolonged stay in the post-anaesthesia care unit [1].

Conclusion

In summary, severe emergence agitation is a potentially dangerous situation requiring an urgent response from anaesthetic team.

Potentially reversible conditions must be detected, sedation is usually needed and treatment must be started to avoid cardio-respiratory failure.

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