

Delirium in immediate postoperative period in a patient operated for laparoscopic cholecystectomy: a case report

Abstract

Emergence delirium is a frequent occurrence following general anaesthesia, especially in paediatric population. However it is less frequently described in adult patients. There are various factors which can lead to its etiology and have to be timely detected so as to prevent the serious mishaps to the patients. We will be describing a patient, operated for laparoscopic cholecystectomy, who developed severe agitation following extubation, and which was relieved on removing the nasogastric tube. We will be discussing the other potential causes of emergence delirium and its pathophysiology.

Keywords: emergence delirium, agitation, postoperative period, nasogastric tube

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Introduction

The phenomenon of emergence delirium is well described in the pediatric population but infrequently addressed in adults.¹ Various drug related factors, patient factors as well as anaesthesia related factors contribute to the etiology of delirium during emergence from anaesthesia.^{2,3} We will be describing a patient operated for gall stone disease, who developed delirium upon extubation. We will be discussing the various causes as well as pathophysiologies related to it, with reference to literature review.

Case report

We were presented with a patient 45 years old female, weighing 65kg, diagnosed with gallstone disease, for anaesthesia clearance. After getting her preanaesthetic checkup clearance done, where her routine investigations and general examination were normal, she was posted for laparoscopic cholecystectomy under general anaesthesia.

On the night before the surgery, she was given tablet ranitidine 150mg and tablet alprazolam 0.5mg, as per our routine protocol. On the day of surgery, she was wheeled to the operation theater, her intravenous line was put and ringer lactate infusion was started. Monitoring included 5-lead electrocardiography, pulse oximetry, non-invasive blood pressure and end-tidal carbon-di-oxide concentration. She was premedicated with injection glycopyrrolate 0.2mg, injection ondansetron 4mg and injection fentanyl 100µm intravenous. She was induced with injection propofol 100mg and injection vecuronium 0.8mg intravenous, followed by intubation with 7.5mm endotracheal tube. 16F nasogastric tube was put nasally. After confirming the position, surgery was allowed to start. Maintenance of anaesthesia was done with oxygen:nitrous (50:50), isoflourane and intravenous vecuronium injection. Intra-peritoneal insufflation was done using carbon-di-oxide gas and intra-abdominal pressure was maintained at around 12mmHg. Towards the end of surgery which lasted for 60minutes, injection diclofenac 75mg infusion was started. Patient was reversed with injection neostigmine 2.5mg and injection glycopyrrolate 0.4mg. Patient was extubated after adequate return of spontaneous tidal volume.

Immediately after extubation, patient became restless. We repeated injection neostigmine 1mg and injection glycopyrrolate 0.2mg intravenous so as to have full antagonism of suspected residual muscle paralysis. Though oxygen saturation was maintained, patient was still restless. Thinking that nasogastric tube might be irritating the passages, we removed it. Immediately after removing it, the restlessness was settled. Patient was shifted out of Operation Theater to the observation area in a satisfactory condition.

Discussion

Emergence delirium occurs in 8 to 20% of the patients after awakening from general anaesthesia, especially in younger ages. The current definition of delirium describes as acute and fluctuating disturbance of consciousness with reduced ability to focus, maintain, or shift attention, accompanied by change in cognition and perceptual disturbances secondary to a general medical condition.¹ It must be differentiated from emergence delirium (ED), which occurs immediately following extubation. Both the definition of emergence delirium and the phrasing (delirium, confusion, excitement, agitation) vary, as does its onset interval (upon awakening, within the few hours, days or weeks). Another difficulty is the quantification of this agitation as there is no specific scale.² A study by Lepouse found that probable etiologies of emergence delirium most often included existence of tracheal tube, pain, and anxiety.² Another study reported male sex, volatile anaesthetics and endotracheal tube were the factors significantly related to ED.⁴ In awake patient, tracheal tube can be stressing, and therefore should be removed as early as possible.^{2,5} Pain is one of the main cause of postoperative agitation. Incidence of agitation was 80.2% in patients who had postoperative pain. Hence pain should be anticipated and treated preventively. More infrequent causes of delirium are the overwhelming need to urinate despite the presence of indwelling catheter, bladder distension and urinary retention.^{2,3} Better information should be given to the patients before surgery concerning the use of various catheters (gastric tube, oxygen catheter, urinary catheter) to limit the surprise upon emergence. The use of ultrasound measurement at patients' bedside gives a rapid diagnosis of urinary retention. Residual neuromuscular block can be frightening. Therefore proper monitoring is required.²

Residual neuromuscular block can manifest as restlessness and agitation. Hence we repeated the reversal again to counteract any remaining neuromuscular block. In our patient, pain was adequately covered with analgesics administered during the end of surgery. After ruling out other causes of delirium and agitation we decided for the nasogastric tube removal. Though our patient was catheterized, we thought of nasogastric tube removal as patient was not able to speak.

Other risk factors for ED include benzodiazepine premedication, and those undergoing lengthy invasive surgeries.^{2,3} Burden of delirium may be reduced by substituting benzodiazepines with another class of sedative- alpha adrenergic agonists. Lepouse found that breast and abdominal surgery are also risk factors of postoperative delirium. However, Yu et al.,⁵ found that operations on the oral cavity and ENT surgery were associated with a higher incidence of agitation.⁵ Antidepressants are protective factor for delirium, probably because they are anxiolytic.² The pathophysiology of postoperative agitation after general anaesthesia remains unknown. It is seen that general anaesthesia causes non-uniform inhibition of the different parts of the central nervous system. As patient recovers from general anaesthesia, parts of cerebral cortex and reticular activating system remains inhibited. This situation can be expressed in different ways: most patients are quite and drowsy, but some experience low grade disorientation and vague cerebral function. These patients may develop emergence agitation to uncontrolled stimuli. Pain was the main cause of postoperative agitation. Hence it should be anticipated and treated preventively.⁵

Different scales for describing agitation exist, such as Riker agitation-sedation, the Richmond sedation-agitation scale, the motor activity assessment scale, and the New Sheffield sedation scale. Although these scales are validated in the intensive care unit, none of them is validated in the recovery room.⁵ Emergence delirium is costly in several senses: in terms of morbidity, in human resources and on a financial level. Self-extubation and removal of catheters can lead to aspiration pneumonia or emergency surgery.² The most notable clinical consequence was the need of additional staff to restrain the agitated patient.⁴ Postoperative agitation can be reduced by providing continuous analgesia, and by removing the tracheal tube and urinary catheter as early as possible. For patients who remain agitated after the elimination of obvious cause, a rapidly acting sedative of short duration, such as propofol, clonidine, or midazolam can be administered.⁵

Besides the above mentioned causes, one should not forget the hypoxia, hypercarbia, electrolyte imbalance can also lead to delirium and these have to be managed accordingly.^{6,7} Our case reflects that

simple things like nasogastric tube placement can lead to delirium and agitation, and can be serious if not detected in time. We did not find any similar case like this, though there were cases reports describing difficulty in removing nasogastric tube in the postoperative period.^{8,9}

Conclusion

Emergence delirium is a challenging event to manage. Due to its varied etiologies, it becomes difficult to reach at a definite conclusion in a short time. Simple things as nasogastric tube insertion can lead to unexpected problems. Hence meticulous attention should be given to every detail in the perioperative period.

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Conflicts of interest

Authors declare that there is no conflict of interest.

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