

Postoperative delirium after partial laryngectomy in a middle-aged patient

A case report

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Abstract

Rational: Postoperative delirium is a common occurrence in older patients. However, reports of postoperative delirium in middle-aged patients are limited, and the underlying mechanism of delirium in this patient population is not clear.

Patient concerns: A 45-year-old man who developed postoperative delirium on the second day after partial laryngectomy. Interviews of the surgical team, patient, and patient's spouse revealed that the patient was psychologically stressed, but had not been diagnosed or treated. The patient also suffered impairment in physiological functioning and sleep disturbance after surgery.

Diagnosis: Postoperative delirium.

Interventions: The postoperative delirium was treated with an antipsychotic drug.

Outcomes: The patient recovered well.

Lessons: Preoperative psychological stress, which is often undiagnosed and untreated, can increase the risk of postoperative delirium in middle-aged patients undergoing laryngectomy. Therefore, screening for psychological stress and implementing strategies to prevent delirium should be considered for patients who undergo laryngectomy, even if they are not in high-risk older age groups.

Abbreviation: POD = postoperative delirium.

Keywords: delirium, head and neck cancer, mental disorder, risk factors

1. Introduction

Postoperative delirium (POD) is a common mental disorder of the elderly. The overall incidence in older individuals is 36.8%, and the incidence rises with increasing age.^[1] POD in middle-aged patients (aged 40–60 years) is rarely reported. After obtaining written informed consent for publication of his clinical data, we present a case of POD after partial laryngectomy in a 45-year-old male patient. This case indicates that patients with laryngeal cancer, even those who are relatively young, can be at risk of developing POD.

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2. Case presentation

A 45-year-old man (70 kg) presented to our clinic for partial laryngectomy. He smoked 1 pack per day for 20 years but did not abuse alcohol or other substances. His mother developed POD after coronary artery bypass grafting at the age of 70. His medical history was unremarkable except for an uneventful laryngeal biopsy under general anesthesia 1 week previously. Pathology confirmed stage 3 (T4N2M0) laryngeal cancer. His family encouraged him to undergo surgery, and he agreed. He was not taking any long-term medications. His basic blood test results, including hemoglobin (15 g/dL), creatinine, electrolytes, calcium, and glucose, were all normal.

The patient was classified American Society of Anesthesiologists (ASA) 1 at the time of surgery. The man underwent general anesthesia during his operation. Anesthesia was maintained with sevoflurane and sufentanil-based balanced anesthesia. The bispectral index was maintained between 40 and 60 to ensure an appropriate depth of anesthesia. The surgeon performed a total laryngectomy and right neck dissection. The surgery was uneventful with no significant blood loss and no transfusion was needed. The surgery took 3.5 hours to complete.

The patient had a smooth emergence from anesthesia and was transferred to the intensive care unit. He did relatively well in the immediate postoperative period. Postoperative pain was managed with an intravenous patient-controlled analgesia device containing oxycodone, with good pain control. Postoperative vitals were stable, and postoperative blood tests were normal. The only medications administered were antibiotics and oxycodone. Although his sleep quality was poor and he had troublesome coughing, no signs of confusion were noted by his clinicians or family.

On the second day after surgery, the patient developed an acute change in mental status. He exhibited reduced awareness of his environment, disrupted attention, and hallucinations. Moreover, he removed his clothing, displayed aggressive behavior towards his family, pulled out his nasogastric tube, and stayed awake all day and night. He was treated with physical restraints. His mental disorder persisted throughout the next 2 days. A psychiatrist diagnosed delirium, which was treated with an antipsychotic agent, ziprasidone mesylate. The delirium cleared slowly, and the patient's medical condition stabilized thereafter. An interview of the surgical team revealed that the patient had been "very nervous" in the operating room. Further, his wife reported that he was depressed about undergoing a laryngectomy prior to surgery. The patient later admitted to feeling psychological stress. This psychological stress had not been diagnosed or treated prior to surgery.

One month after discharge, the patient returned for follow-up. He was no longer taking any medications, and at the time of the interview, he exhibited no evidence of any thought disorder. The man looked well and denied any symptoms of confusion or depression.

3. Discussion

POCD is mainly characterized by learning and memory impairment. In contrast, POD refers to any delirium that occurs after surgery. The characteristics of delirium are inattention, altered level of consciousness, disorganized thinking, and a fluctuating course.^[2] Most cases of delirium develop in the first 2 postoperative days.^[3] In general, POD occurs more frequently in older patients.^[4–6] In this case, however, a 45-year-old patient developed POD on postoperative day 2. It lasted for 2 days until an antipsychotic medication was administered.

The underlying mechanism of POD is unknown. Both predisposing and precipitating factors contribute to POD. Predisposing factors include advanced age (more than 70–75 years old), pre-existing dementia, functional disability, laboratory abnormalities, cardiovascular disease, and depression.^[3,7] Surgery and anesthesia are precipitating factors, and higher degrees of physiological insult during surgery are associated with higher rates of delirium.^[8] Other precipitating factors include uncontrolled postoperative pain, sedating medications, sleep deprivation, and postoperative complications, such as sepsis.^[9]

Laryngectomies can cause severe impairment in various functions, such as swallowing, breathing, eating, and speech, which introduces numerous predisposing and precipitating factors for POD. A meta-analysis of POD following major head and neck cancer surgery reported POD incidences ranging from 11% to 36%. Significant risk factors included old age, male sex, increased surgical duration, history of hypertension, blood transfusions, tracheotomy, ASA greater than or equal to 3, flap reconstruction, and neck dissection.^[10] Another study of POD following head and neck surgeries identified stage IV cancer, surgery lasting more than 10 hours, transfusion of more than 4 units of blood, infusion of more than 5000 mL, and flap reconstruction as risk factors.^[11]

Our relatively young patient did not have many predisposing or precipitating factors for POD. The surgery was unremarkable, postoperative tests were normal, and pain was managed well. The only identifiable factors that could account for the POD in this patient were sleep disturbance, family history of POD, and most notably, psychological stress. Head and neck cancer is as a type of cancer associated with substantial psychological trauma.^[12]

Previous studies showed that younger patients (less than 65 years old) with laryngeal cancer have a greater tendency to develop psychological problems than older individuals.^[13] Recently, Shin et al^[14] confirmed that psychological risk factors contribute to POD. Thus, it seems likely that the severe functional disability associated with the laryngectomy, sleep disturbance after surgery, and undiagnosed and untreated psychological problems can account for his delirious status.

Active and deliberate preventive strategies for delirium are more important and beneficial than treatment; however, it is unclear what treatment strategy will best prevent POD. A recent Cochrane review of treatment strategies to prevent delirium in hospitalized non-ICU patients showed that there was no clear evidence supporting individual treatment strategies, such as cholinesterase inhibitors, antipsychotics, or melatonin.^[15] Similarly, another systematic review did not find evidence supporting the use of antipsychotics to prevent or treat POD.^[16] However, use of antipsychotics may be necessary when agitation puts the patient or caregivers at risk of harm or prevents normal postoperative care.^[17] Interestingly, the Cochrane review did find strong evidence for multicomponent interventions (ie, combinations of treatment strategies that target different risk factors).^[15] Given that undiagnosed psychological stress was probably a major factor contributing to POD in our patient, it may be beneficial to screen for psychological stress in patients with laryngeal cancer prior to surgery and implement mental adjustment and coping strategies as preventive interventions for POD.

4. Conclusion

In conclusion, preoperative psychological stress may increase the risk of POD following laryngectomy in patients considered to be at low risk, such as middle-aged patients. Patients with laryngeal cancer often face treatment-related impairment in physical, psychological, and social functioning. Consequently, this set of patients has an increased risk of acute mental disorder. Preoperative psychological stress is often undiagnosed and untreated, therefore clinicians may want to screen for this condition and implement deliberate prevention strategies prior to surgery.

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