Upper airway obstruction during extubation after general anesthesia, in a patient with Parkinson disease

A case report

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Abstract

**Rationale:** Parkinson disease (PD) is a chronic neurodegenerative condition often suffered by the elderly. Upper airway obstruction, though rare in patients with PD, can be life threatening and is associated with vocal cord paralysis, laryngeal spasm, and dystonia of jaw and neck muscles.

**Patient concerns:** We describe a life-threatening upper airway obstruction caused by bilateral vocal cord paralysis, in an elderly man with PD, during extubation after general anesthesia.

**Diagnoses:** Based on clinical presentation and visual laryngoscopy, the patient was diagnosed with laryngeal spasm and bilateral vocal cord paralysis after extubation.

**Interventions:** Re-intubation was carried out and dopamine hydrazine tablets were administered via a nasal feeding tube.

**Outcomes:** After re-intubation and further treatment, the endotracheal tube was successfully removed and no symptoms of respiratory distress were observed.

**Lessons:** Patients with PD may be at a risk of life-threatening upper airway obstruction after extubation, which should be prevented systematically.

**Abbreviation:** PD = Parkinson disease.

**Keywords:** bilateral vocal cord paralysis, extubation, general anesthesia, Parkinson disease, upper airway obstruction

1. Introduction

Parkinson disease (PD) is a chronic, neurodegenerative disorder that affects the extrapyramidal system. Apart from limited motor functions such as rigidity, rest tremor, and slowness of movement, PD can affect pharyngeal sensory nerves and impair swallowing and airway protective reflexes, as manifested by dysphagia, secretion retention, and aspiration.\(^1\,2\) Respiratory dysfunction has been noted in PD and is attributed to impaired central control of respiratory muscles, upper airway obstruction, and laryngeal muscle atony. A rare complication of PD is vocal cord paralysis, presenting as hoarseness, dysphonia, dyspnea, and reflux aspiration.\(^3\) Liu\(^4\) has reported a case of persistent perioperative laryngeal spasm in a patient with PD. Another case report describes a 71-year-old man with PD, who developed upper airway obstruction requiring intubation, after the discontinuation of his Parkinson medication.\(^5\) In this case report we highlight the rare complication of severe upper airway obstruction caused by bilateral vocal cord paralysis in a patient with PD, that occurred during extubation after general anesthesia, likely due to the withdrawal of dopaminergic medication.

2. Case presentation

A 72-year-old man (158 cm, 67 kg) was scheduled for trans-urethral prostatic balloon dilation, under general anesthesia. He had a 2-year history of PD, and managed the symptoms by taking dopamine hydrazine tablets regularly. The patient had no history of hypertension, diabetes, asthma, smoking, or drinking. The results of routine laboratory examinations were normal. Echocardiography suggested decreased left ventricular diastolic function and mild mitral valve insufficiency. Examination of pulmonary function suggested a mild restrictive ventilatory dysfunction. At 07:00 on the day of surgery, 250 mg dopamine...
The following points should be borne in mind, regarding the perioperative use of anti-parkinsonian drugs:

1. The withdrawal time should not be long because of the short half-life of levodopa. It should be administered in the morning, before surgery, and as soon as possible after surgery.
Common adverse reactions to levodopa or dopamine agonists include hypotension, nausea and vomiting, and abdominal discomfort, which may cause dehydration or insufficient blood volume.

During prolonged surgery, patients could suffer from muscle rigidity because of the short half-life of levodopa. Drug administration via a nasal feeding tube can prevent the onset of Parkinson symptoms in such a case.

In summary, anesthetists must consider the possibility of upper airway tract obstruction during the perioperative period, for PD patients requiring general anesthesia with endotracheal intubation. The evaluation of hoarseness, choking cough, and dyspnea should be performed carefully, prior to surgery. These symptoms may suggest bilateral vocal cord paralysis, which might lead to refractory and life-threatening upper airway obstruction after extubation. General anesthesia should be approached cautiously, in patients with vocal fold paralysis. Because of preoperative fasting, drugs should be available, via a nasal feeding tube, in time to prevent the onset of symptoms.

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Author contributions

All authors have made material contributions to this manuscript according to the rules of authorship as explained in the ICMJE guidelines. DLY, PYB and SHH were the anesthetists of this patient, DLY contributed to the consent form of the patient. SXD and SHH were major contributors in writing the manuscript and all authors read and approved the final manuscript.

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