

Anaesthesia for a morbidly obese patient with schizophrenia and intellectual disability

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Keywords: general anaesthesia, morbid obesity, schizophrenia, intellectual disability

SAJAA 2009; 15(5): 32-33

ABSTRACT

We report the case of a morbidly obese woman with schizophrenia and intellectual disability who underwent dental treatment using general anaesthesia. The 38-year-old patient was 156 cm tall and weighed 140 kg, with a body mass index of 57.5 kg.m⁻². Her developmental age was less than five or six years. She had been taking several antipsychotic agents, including haloperidol. Tracheal intubation was performed smoothly and anaesthesia was maintained uneventfully using propofol and remifentanyl.

This case demonstrates that the method of general anaesthesia presented here can be used safely in managing patients with these kinds of disabilities.

© Peer reviewed (Submitted: 2009-05-22, Accepted: 2009-08-13)

Introduction

Intellectually impaired people seldom accept dental procedures obediently. General anaesthesia can be one of the safe ways to accomplish a short-term treatment effectively for them.

Obesity is a common health problem among patients with mental illness such as schizophrenia.¹ These patients often have metabolically unfavourable body conditions, which lead to an increased risk of metabolic diseases.²⁻⁴ In addition, people with intellectual disability often have coexisting psychiatric disorders. Of particular note, a related pathogenesis is suggested between intellectual disability and schizophrenia.^{5,6} Therefore, in particular, more intellectually disabled people are estimated to have schizophrenia and morbid obesity, and could be expected to require general anaesthesia to receive medical treatment, including dental procedures. However, few reports are available that describe anaesthetic management of patients having two or more diagnostic conditions of morbid obesity, schizophrenia and intellectual disability.⁷

In many cases, patients with chronic schizophrenia receive various types of antipsychotic agents over a long treatment course, which can contribute to delayed awakening, cardiovascular instability and neurolept malignant syndrome during general anaesthesia.⁸ They often develop postoperative confusion, which increases the risk of morbidity.^{9,10} Morbid obesity causes medical complications of the respiratory, cardiovascular and endocrine systems, e.g. sleep apnoea syndrome, diabetes mellitus and ischemic heart diseases.¹¹ The main concerns in anaesthetising morbidly obese people include issues related to airway and ventilation control, and metabolic diseases.^{12,13} We present a report on the use of general anaesthesia during dental treatment of a morbidly obese woman with schizophrenia and intellectual disability. General anaesthesia was performed twice uneventfully and it contributed to maintaining her oral health.

Case history

A 38-year-old intellectually impaired woman with morbid obesity and schizophrenia was scheduled for dental treatment under

general anaesthesia. Her parents had been unable to control her nutritional intake and oral care because of her intellectual disability. In 1987, when she was 17 years old, she complained of schizophrenic symptoms such as hallucination and delusion. Two years later, she was transferred to a psychiatric hospital where she was diagnosed with schizophrenia. She remained hospitalised for two years, during which she received psychiatric treatment, and subsequently underwent repeated short-term hospitalisations. In 2004, she was transferred to a group home. Caregivers at the group home noticed that she had many carious teeth and tried, unsuccessfully, to encourage her to visit a dental office but she vehemently refused. In February 2008, complaining of an unbearable toothache, she was referred to our hospital by a caregiver at the group home and her mother.

The patient was 156 cm tall and weighed 140 kg, with a body mass index of 57.5 kg.m⁻². The caregiver explained that the patient could walk for approximately five metres by herself but usually required a wheelchair. The caregivers observed apnoeic breathing with loud snoring repeatedly throughout the night in the patient, who was eager to sleep during the day. In fact, she fell asleep easily while we were asking the helper about her anamnesis. Her developmental age was less than five or six years in terms of ability to communicate and language comprehension. She was being administered certain psychiatric agents, including 13.5 mg of haloperidol, 75 mg of fluvoxamine maleate, 25 mg of chlorpromazine hydrochloride, 10 mg of nitrazepam and 3 mg of biperiden for her schizophrenic condition. She had six teeth that needed to be extracted and one tooth in which the pulp needed to be extracted. After some persuasion, she and her mother agreed to her receiving dental treatment under general anaesthesia, and she underwent preoperative tests. The results of blood tests, chest X-ray and electrocardiography were within the normal limits. The airway was graded as Mallampati class 2. She was anaesthetised for the first time in March 2008. We had instructed that she continued taking the prescribed psychiatric agents until the morning of the dental treatment. She fasted from dinner the previous day. In the examination room, she became extremely agitated while lying on a dental chair, from which she was unable to escape because of her morbid obesity. Prior to

introduction of anaesthesia, a set of instruments to secure an intravenous route in the femoral vein had been prepared. We administered nitrous oxide gas with a facemask to sedate her and succeeded in securing an intravenous route in the right hand without using the set. General anaesthesia was induced through a bolus administration of 70 mg of propofol and 0.5 mg of atropine sulphate. Once mask ventilation proved possible in supine position, 7 mg vecuronium bromide was administered. Although the airway was secured easily, due to her morbid obesity two people were needed to ventilate the lungs effectively: one to fit the mask tightly to her face and the other to squeeze the bag. Nasal tracheal intubation was performed smoothly and 600 mg.hr⁻¹ of propofol, 0.5 mg.hr⁻¹ of remifentanyl and 50% nitrous oxide gas mixed with oxygen were administered. Anaesthesia was maintained at a rate of 600–300 mg.hr⁻¹ of propofol, 0.5–0.2 mg.hr⁻¹ of remifentanyl and 33–50% nitrous oxide gas mixed with oxygen. The depth of anaesthesia was monitored using the Bispectral Index Monitor (A-2000, Aspect Medical Systems, Norwood, MA, USA), which showed scores of 40–60. Artificial ventilation was continued with pressure-controlled ventilation to maintain the pulse oximetry saturation at 96–99 % and endtidal CO₂ at 36–43 mmHg for 80 minutes during the procedure in the supine position. A body weight of 60 kg, derived from the body mass index of 25 kg.m⁻² and the height of 1.56 m, was adopted to estimate doses of drugs for anaesthesia. The dentist extracted four teeth and the pulp of one tooth. During the treatment, 2% lidocaine containing 1:80 000 epinephrine was used (7.2 ml in total) as a local anaesthetic agent. Blood pressure decreased slightly, and one mg each of methoxamine hydrochloride and etilefrine hydrochloride was administered twice. Following administration, the patient's intraoperative haemodynamic condition stabilized, with blood pressures in 100–80/50–36 mmHg range, and heart rate between 72 and 88 beats.min⁻¹. The administration of propofol and remifentanyl was discontinued five minutes before the end of the dental treatment. Approximately 10 minutes later, she awoke almost completely when 1.0 mg of atropine sulphate and 2.0 mg of neostigmine were administered. The anaesthesiologists extubated in a supine position after confirming sufficient recovery. She spent two hours in the ward under observation of the helper and nurses, and was discharged from the hospital after lunch. Dental treatment under general anaesthesia was again performed safely in a nearly identical manner 21 days later.

Publication of the case was consented to by the patient and her mother who is her legal guardian and approved by the Hospital Ethics Committee.

Discussion

In general anaesthesia for morbidly obese patients, anaesthesiologists often need to insert tracheal tubes using special techniques under sedation.^{14–17} In this case, as well, we prepared a fiberoptic bronchoscope and optical laryngoscopes. However, because our patient was also intellectually impaired, intubation using these devices would have been difficult to pursue if we had not been able to sedate the patient, allowing her to accept it with sufficient ventilation. Hence, we decided to use a muscle relaxant just after mask ventilation proved possible, because this would allow us to control respirations if intubation was unsuccessful.

The patient had an increased risk of cardiac instability, and perioperative complications,⁹ because of morbid obesity and long-term use of psychotropic agents. Therefore, we continued administration of the antipsychotic drugs to ensure that her schizophrenia remained well-controlled, because discontinuation of the drugs before the operation might have caused unpredictable responses. Moreover, we opted to use propofol and remifentanyl, which allowed us to achieve rapid induction, operative stability, rapid emergence and uneventful recovery. This anaesthetic agent and adjunct have been reported to be effective for psychopathic patients with malignant syndrome and for extremely obese individuals.^{18–22} In fact, induction and recovery were also achieved smoothly in this case.

Slight hypotension was observed in the case under discussion and some causes have been listed here. Remifentanyl may lead to reduced cardiac output and hypotension.²³ It has also been

suggested that sensitivity of peripheral alpha-adrenergic receptors is decreased in schizophrenic patients treated with antipsychotic agents such as haloperidol or chlorpromazine,²⁴ and that epinephrine²⁵ contained in lidocaine used as a local anaesthetic agent causes dilation of peripheral blood vessels. Anaesthesia for ordinary dental procedures might be excessively deep. Nonetheless, blood pressures were maintained easily with methoxamine hydrochloride and etilefrine hydrochloride. Despite the possibility of hypotension, we chose to use the mentioned local anaesthetic agent because it is the most effective agent in dental treatment, and we relied on the effect of postoperative analgesia, which can hardly be derived from remifentanyl. In fact, the patient showed no indications of postoperative pain in the ward.

In conclusion, general anaesthesia with propofol and remifentanyl facilitated dental treatment for a morbidly obese patient with schizophrenia and intellectual impairment. This case demonstrates how general anaesthesia can contribute to the oral health of all individuals, including those with intellectual disability.

Footnote

Presented at the 36th Annual Meeting of the Japanese Dental Society of Anesthesiology, October 9 to 10, 2008, Suita City, Japan.

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