

Anesthetic management of a patient with narcolepsy for emergency caesarean section

Mehtap Honca, Merve Bayraktaroglu, and Eyup Horasanli

Department of Anesthesiology and Reanimation, Kecioren Training and Research Hospital, Ankara, Turkey

Narcolepsy is defined as a neurological disorder and is characterized by excessive daytime somnolence, sleep paralysis and cataplexy [1]. The cause of this disorder is thought to be a loss of function of the neurones in the hypothalamus producing hypocretin/orexin peptides, which play an important role in the control of the human sleep-wake cycle [2]. Herein we present an emergency caesarean surgery of a narcoleptic patient under general anesthesia who was not receiving any treatment.

A 35-year-old primigravida (weight: 82 kg, height: 165 cm) with a 13-year history of narcolepsy at 39 weeks gestation received emergency caesarean delivery due to failure of labor progression. She first experienced symptoms of excessive sleepiness when she was 22 years old, but she had been diagnosed by her neurologist at age 25 with narcolepsy. She was treated well with modafinil 200 mg and imipramine 10 mg. She stopped her medication of her own account 1.5 years ago. Bedside ultrasound, revealed fetal distress, and the patient was taken to the operating room for an emergency caesarean section. In the operating room, routine monitors (electrocardiogram, pulse oximeter, arterial blood pressure) were attached. Her blood pressure was 144/92 mmHg, heart rate was 88 beats/min, and pulse oximeter oxygen saturation was 97% at room air. Bispectral index (BIS) values of the patient were recorded using a BIS sensor applied to her left forehead.

General anesthesia was induced with propofol 2 mg/kg, and rocuronium 0.6 mg/kg IV was administered to facilitate tracheal intubation. BIS values of the patient were above 95 before induction of anesthesia. Her trachea was intubated with a 7.5 mm-sized endotracheal tube in one attempt without difficulty. A live

female baby weighing 3160 g was delivered (APGAR scores; at one minute: 9, and at five minutes: 10). Anesthesia was maintained with sevoflurane in 1 : 1 of oxygen and nitrous oxide mixture, with end tidal sevoflurane concentrations between 0.8–1.4%. BIS values ranged between 46 and 60. Hemodynamic parameters of the patient were stable during the surgery. The surgery lasted 50 minutes. Postoperative analgesia was provided with intramuscular diclofenac sodium. Neuromuscular blockade was antagonized with 100 mg sugammadex. When she responded to verbal commands with sufficient respiration and neuromuscular function, she was extubated successfully. Her BIS value was above 94 after extubation. She did not experience any complications such as cataplexy, apnea, or prolonged emergence associated with narcolepsy in the postanesthesia care unit. She was discharged home on the third postoperative day.

There's no specific treatment for narcolepsy. While excessive daytime sleepiness is treated using central nervous system stimulants, cataplexy is treated with various tricyclic antidepressants or with fluoxetine. All of these drugs used to treat narcolepsy are metabolized in the liver by the cytochrome P 450 system as propofol and fentanyl. For this reason, the anesthetist should be aware of potential drug interactions [3]. Additionally, use of amphetamines may cause a depletion of catecholamines and reduce patients' ability to generate a sympathetic response to hypotension. Direct acting agents such as phenylephrine and /or epinephrine should be used to treat refractory hypotension instead of indirect acting agents such as ephedrine [4].

It has been reported that central nervous system stimulants like modafinil can be used safely during the preoperative pe-

Corresponding author: Mehtap Honca, M.D., Department of Anesthesiology and Reanimation, Kecioren Training and Research Hospital, Sanatoryum Cad, Pınarbaşı Mah, Ardahan Sok, No:25, Keçiören, Ankara 06380, Turkey. Tel: 90-312-356900, Fax: 90-312-3569002, E-mail: mehtaphonca@hotmail.com

© This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

riod. However, limited information is available about the safety of modafinil in pregnancy. Embryo toxicity has been shown in rats, and the manufacturer recommends avoidance during pregnancy and while breastfeeding [5]. Our patient had been using modafinil 200 mg and imipramine 10 mg once daily before her current pregnancy, but she stopped taking her medication.

In the present case report, we used sevoflurane in a 50% oxy-

gen and 50% nitrous oxide mixture without complication. We used a BIS monitor for titrating sevoflurane concentrations. We did not use narcotics and long-acting agents. Our patient was extubated without any complication at the end of the operation. In conclusion, we found sevoflurane anesthesia safe to use for the management of an uncontrolled narcoleptic patient with BIS monitoring for emergence caesarean section.

References

1. American Sleep Disorders Association. The international classification of sleep disorders, revised: Diagnostic and coding manual. Rochester MN: American Sleep Disorders Association; 1997.
2. Burrow B, Burkle C, Warner DO, Chini EN. Postoperative outcome of patients with narcolepsy. A retrospective analysis. *J Clin Anesth* 2005; 17: 21-5.
3. Joyce JA. Anesthesia considerations for patients with narcolepsy. *AANA J* 1999; 67: 59-66.
4. Neustein S. Administration of desflurane with bispectral index monitoring in a patient with narcolepsy undergoing anesthesia. *Acta Anaesthesiol Belg* 2009; 60: 247-9.
5. Randomized trial of modafinil for the treatment of pathological somnolence in narcolepsy. US Modafinil in Narcolepsy Multicenter Study Group. *Ann Neurol* 1998; 43: 88-97.