J Anesth (2006) 20:356
DOI 10.1007/s00540-006-0438-1

Journal of
Anesthesia

Anesthesia with CobraPLA for a patient with Kartagener syndrome

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To the editor: Kartagener's syndrome is a rare hereditary disorder involving chronic sinusitis, bronchiectasis, and situs inversus. The main anesthetic concern is perioperative respiratory complications [1]. We successfully used a new perilaryngeal airway device, the CobraPLA (Engineered Medical Systems, Indianapolis, IN, USA), a patient with mental retardation with this syndrome.

The patient was a 36-year-old man, 161 cm in height and 50 kg in weight. He was scheduled for cataract surgery. He was known to have Kartagener's syndrome, with chronic sinusitis, bronchiectasis, and situs inversus. As he was also suffering from hypophrenosis, general anesthesia was needed for his surgery. Respiratory infection was controlled with ampicillin ($1\,g{\cdot}day^{-1}$), and cough and sputum production were, consequently, minimal. Spirometric measurement could not be assessed, and arterial blood gas analysis showed normal values.

On the day of the operation, premedication with 0.5 mg atropine and 5 mg diazepam was administered intramuscularly. Anesthesia was induced with intravenous injections of 100 mg propofol and 0.1 mg fentanyl. Vecuronium (5 mg) was administered for muscle relaxation and the subsequent insertion of the CobraPLA (size 3). Anesthesia was maintained with 60% nitrous oxide and 1% sevoflurane, with a local anesthetic, 1% lidocaine, as needed. Under volume-controlled ventilation, blood pressure, heart rate, Et_{CO2} (35 mmHg) and Sp_{O2} (100%) were stable. There was no leak at 18-cmH_2O peak pressure throughout the operation. Forty-minute microsurgery was completed smoothly and the patient awoke quickly without any respiratory complications. In the postoperative period, there was no respiratory infection.

The CobraPLA was chosen for three reasons this time:

(1) Not to impair mucociliary transport; Kartagener's syndrome is characterized by primary ciliary dyskinesia. To prevent respiratory complications, it is important not to impair mucociliary transport. There is a report that the laryngeal mask airway (LMA) impairs mucociliary clearance less than the cuffed tracheal tube [2]. The CobraPLA is similar in this respect to the LMA. Some factors other than airway devices may affect and diminish mucociliary function, such as anticholinergic drugs, poorly humidified inspired gases, high inspired oxygen concentration, and anesthetic agents. Although we used atropine to reduce sialosis, it makes sputa viscous, and therefore, perhaps, should be avoided. A recent study reported that 1.5%–2.5% sevoflurane impaired bronchociliary clearance in comparison to total intravenous anesthesia (TIVA; propofol/remifentanil) in patients [3]. On the other hand, it has also been reported that TIVA (propofol/alfentanil) depressed mucociliary flow in patients [4]. Therefore, it seemed unclear which would be better for our patient, 1% sevoflurane or TIVA, during a brief operation.

(2) To seal the airway tightly; muscle relaxation and mechanical ventilation were required for the ophthalmic microsurgery in our mentally retarded patient. The Cobra PLA has a large pharyngeal cuff and is superior to the LMA in regard to sealing pressure for effective ventilation [5]. Although airway pressures exceeding 15–20 cmH_2O usually cause gas leakage with the LMA [6], there was no leak at 18-cmH_2O peak pressure with the Cobra PLA in our patient.

(3) To be able to suck out sputa; if respiratory failure occurs with sputum production, the sputa must be sucked out through a bronchofiberscope. A large-size bronchofiberscope can be easily inserted into the trachea through the CobraPLA [7]. In our patient, this was not needed, because respiratory infection was controlled with antibiotics before operation and sputum production was minimal.

In conclusion, we successfully conducted anesthetic management with a CobraPLA in a patient with Kartagener's syndrome scheduled for cataract surgery. This may be one of the most useful airway devices for patients with Kartagener's syndrome.

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Received: March 27, 2006 / Accepted: July 28, 2006