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Acromegaly—Use of Fiberoptic Laryngoscopy to Avoid Tracheostomy

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Anesthetic management of the acromegalic patient is associated with difficulties in airway maintenance and endotracheal intubation. Elective tracheostomy has been suggested when glottic abnormalities are present such as glottic stenosis or vocal cord paresis, especially when hypertrophy of pharyngeal mucosa is also present.[1,2] Venus,[3] in a Letter to the Editor, suggested without clinical evidence, that complications of a difficult endotracheal intubation and tracheostomy could be avoided by the use of a fiberoptic bronchoscope.

The following report illustrates the value of fiberoptic laryngoscopy in anesthetic management of an acromegalic patient who had severe hypertrophy of pharyngeal and laryngeal tissues.

REPORT OF A CASE

A 54-year-old, 85-kg man with prognathism secondary to acromegaly was scheduled for posterior repositioning of the mandible. One year previously, a transsphenoidal hypophysectomy and radiation therapy were performed for advanced acromegaly. On physical examination, the patient had classic acromegaly, including coarse facial features, prognathism, hypertrophy of oral soft tissues, macroglossia, and large extremities. Medications included cortisone, 37.5 mg/day, in divided doses and sodium levothyroxine (Synthroid®), 0.15 mg/day orally (po).

Preoperatively, awake fiberoptic nasotracheal intubation was explained to the patient. Diazepam, 10 mg, and cortisone, 25 mg, po, and atropine 0.4 mg, intramuscularly (im), were given one hour prior to induction of anesthesia. In the operating room diazepam, 10 mg, and fentanyl, 0.1 mg, were given intravenously (iv), and 6 per cent cocaine was applied topically to the left nostril. Topical anesthesia of larynx and trachea was accomplished by translaryngeal injection through the cricothyroid membrane of 4 per cent lidocaine, 4 ml. An 8-mm nasotracheal tube was inserted through the left nostril into the pharynx. The fiberoptic laryngoscope was then introduced through the nasotracheal tube into the oropharynx. After identification of the vocal cords, the laryngoscope was advanced into the trachea. The endotracheal tube was then advanced over the fiberoptic laryngoscope into the trachea. Anesthesia was induced with thiopental and maintained with N_2O and enflurane.

The surgical procedure consisted of bilateral extra-oral vertical osteotomies and coronoidectomies of the mandibular rami with 15-mm posterior repositioning of the mandible. Intermaxillary fixation was attained with maxillary and mandibular Gunning-type splints. After completion of surgery, the patient was transferred to the recovery room with the nasotracheal tube and intermaxillary fixation in place. Three hours later, he was fully awake and the trachea was extubated. Shortly thereafter, airway obstruction occurred which necessitated reintubating the trachea nasally in the sitting position with aid of the fiberoptic laryngoscope and without removal of the intermaxillary fixation. Two hours later in the intensive care unit, the patient extubated his trachea and again experienced respiratory difficulties such that he was unable to lie down. His trachea was intubated nasally with the use of the fiberoptic laryngoscope for the third time. The nasotracheal tube was removed 28 hours after the initial endotracheal intubation. He did well and was discharged to his room.

Seven days later, he developed a parotid sialocele which was treated with a Barton pressure dressing and repeated aspiration of fluid. During the next several days the swelling over the right parotid and face increased, his temperature was 38.5° C and he became uncooperative and refused to keep the pressure dressing in place. Eighteen days after the operation, he was given meperidine, 75 mg, and promethazine hydrochloride, 25 mg, im, prior to another aspiration of the sialocele and reapplication of pressure dressing.

Shortly thereafter, the patient suffered a witnessed respiratory arrest on the ward. The intermaxillary fixation and pressure dressing were removed immediately and after several unsuccessful attempts of direct oral and nasal intubation, a blind nasotracheal intubation was performed. He was transferred to SICU for the second time. His trachea was extubated 48 hours later. The intermaxillary fixation was not reapplied, and he was able to tolerate his pressure dressing. He was transferred to his room the next day and discharged in good condition from the hospital three weeks later.

DISCUSSION

Exposure of the larynx in patients with acromegaly may be extremely difficult due to hypertrophy of the laryngeal soft tissues, epiglottis, aryepiglottic and ventricular folds, macroglossia and prognathism.[1,2,4] There may be further difficulty in passing an endotracheal tube due to laryngeal stenosis.[5–7]

In this patient, the glottic opening, when visualized by fiberoptic laryngoscope, seemed to be adequate but the laryngeal mucosa, aryepiglottic and ventricular folds were grossly hypertrophied. The vocal cords were seen deep inside a tunnel, as a result of massive hypertrophy of the false cords. Awake fiberoptic

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laryngoscopy and endotracheal intubation allowed securing the airway before induction of general anesthesia. Laryngeal edema due to traumatic intubation was eliminated and thus lessened the possibility of postoperative airway obstruction and the need for tracheostomy. The value of the fiberoptic bronchoscope in diminishing the number of intubations attempts and reducing trauma has also been shown in patient suffering from rheumatoid arthritis.[8] The technique also provides information regarding the degree and extent of laryngeal and pharyngeal tissue changes and the status of the vocal cords and glottic opening. However, several authors emphasized that successful use of the fiberoptic laryngoscope in difficult situations requires considerable experience that should be gained by use of the instrument for elective endotracheal intubation in patients with a normal airway.[9–10]

In acromegalic patients, the large tongue and hypertrophied tissues in and around the upper airway reduce the ratio of airway space to tissue mass and predispose them to airway obstruction.[1] In this patient, posterior repositioning of the mandible, and tissue edema caused by surgical trauma had further decreased the airway space and contributed to the upper airway obstruction and the need for reintubation of the trachea on two occasions. Extubation of the trachea under these conditions may have to be delayed for several hours or days to avoid this problem and close postoperative observation is essential to assure adequacy of the airway and ventilation. Fiberoptic laryngoscopy may also be used for assessment of the upper airway and evaluation of the larynx and trachea after extubation of the trachea.[11]

Although tracheostomy may still be necessary in advanced acromegalic patient with severe laryngeal involvement, fiberoptic laryngoscopy will facilitate management of difficult endotracheal intubation, and may prevent unnecessary tracheostomies in such patients.

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