

Anesthesia Management Of A Patient With Acquired Tracheomalacia

S Sahin, G Kaya, Z Öresin

Citation

S Sahin, G Kaya, Z Öresin. *Anesthesia Management Of A Patient With Acquired Tracheomalacia*. The Internet Journal of Anesthesiology. 2007 Volume 15 Number 2.

Abstract

Tracheomalacia is an abnormal collapse of the tracheal walls. It may occur in an isolated lesion or can be found in combination with other lesions that cause compression or damage of the airway. A 45 year-old male with tracheomalacia to be related to neck glomus tumor was scheduled for surgical excision under general anesthesia. Intraoperative and postoperative course was uneventful. We think that general anaesthesia can be performed successfully with hemodynamic stable.

INTRODUCTION

Malacia means softness and, in the medical context, is usually used to refer to cartilage or bone. Tracheomalacia is therefore a softness of the tracheal cartilage. Tracheomalacia is a rare and serious condition associated with high mortality in adult receiving intensive care (1,2). It is a condition that is becoming increasingly recognized and may often lead to prolonged intubation and ventilation. We present a case of tracheomalacia in a male patient with no respiratory problem.

CASE REPORT

A 45 year-old, 80 kg, 175 cm male with tracheomalacia to be related to neck glomus tumor was scheduled for surgical excision under general anesthesia. The diagnosis of tracheomalacia to be related to neck glomus tumor was imaging CT at five month ago. CT imaging is demonstrating cervical masses along the course of the carotid artery. No cardiovascular, respiratory, digestive and renal systems abnormalities were detected. His vital signs were stable. Preoperative laboratory evaluation including electrolytes, blood urea nitrogen, creatinine, calcium, and thyroid function tests were within normal limits. Leukocyte count 10.21 mm³, hemoglobin 13.7 g/dl, haematocrit 38.5 %, platelet 272.000 mm³ were normal. On the operation day, following the fast 6 hours later, the patient was accepted to preoperative care unit and a 22 Gauge cannula was inserted into a vein on the dorsum of left hand and crystalloid infusion was started. Fifteen minutes later the patient was taken to the operating room. He was monitored with peripheral oxygen saturation (SpO₂), electrocardiogram

(leads II, V1), cutaneous temperature (T), noninvasive blood pressure (NIBP). Heat rate: 89 min⁻¹, blood pressure: 135/55 mmHg, body temperature 37.1 °C Anesthesia was induced by 1 µg/kg fentanyl, 2,5 mg/kg propofol, and succinylcholine 1 mg/kg intravenous. Tracheal intubation was performed uneventfully. Maintenance was achieved using sevoflurane 1 MAC in a 2: 1 nitrous oxide : oxygen mixture. Hemodynamic and other vital parameters were stable during intraoperative period. The duration of surgery was 45 minutes. After recovery of muscle tone and spontaneous breathing was adequate, trachea was extubated. No respiratory or hemodynamic problems was occur. . The patient was admitted to recovery room with stable vital signs (blood pressure: 137/44 mmHg, heart rate 84 beats.min⁻¹, peripheral oxygen saturation 98%, body temperature 37.0 °C). Thirty minutes later he was sent to service with stable vital signs.

DISCUSSION

Tracheomalacia has been defined as an extreme degree of dynamic compression of the airway, where the cross-sectional area of the trachea is reduced to less than one-half by expiratory compression (3,4). Tracheo- or bronchomalacia may be classified as congenital (also known as primary) or acquired (secondary). Table 1 contains a more detailed list of conditions causing or associated with airway malacia(1).

Figure 1

Table 1: Clinical associations of airway malacia

	Congenital	Acquired
Common	Tracheo-oesophageal fistula Oesophageal atresia	Compression by great vessels: Brachiocephalic Aorta Pulmonary artery Vascular slings
Isolated		Bronchopulmonary dysplasia Pulmonary/mediastinal cysts
Rare	Chromosomal defects: Down's syndrome Trisomy 9 11p13 deletion (Wilms/aniridia) 22q11 deletion 18-22 translocation Chondrodysplasias Williams-Campbell syndrome Di George syndrome CHARGE association Harter's syndrome Harter's syndrome	Intrathoracic tumours Large/ectopic thymus Goitres* Heart-lung transplant Liver failure/transplant Prolonged intubation Tracheostomy Macrocuteaneous Leishmaniasis Tetralogy of Fallot

It produces a clinical picture hardly distinguishable from that of bronchial asthma and consisting of prolonged, labored, and wheezy expiration and progressive asphyxia which is resistant to increased inspiratory oxygen concentration (5). Jokinen et al. (3) found tracheobronchomalacia in 4.5% of 2150 patients who had a variety of pulmonary diseases. There were no findings in our patient's history, or on the preoperative examination, suggesting the development of respiratory difficulties during anesthesia.

Tracheomalacia present before induction of anesthesia might lead to a serious problem during anesthesia, making it difficult to remove the endotracheal tube after surgery.

The anaesthetist may be called on to manage airway malacia in a variety of settings: (i) the patient undergoing diagnostic (or therapeutic) bronchoscopy or radiology; (ii) the patient undergoing thoracic surgery, with or without correction of the malacia; and (iii) the patient undergoing surgery unrelated to the airway malacia. There is surprisingly little in the literature on anaesthetic management of airway malacia (1,6) and much of it is not available in English. Nevertheless, sensible recommendations can be made in the understanding of the underlying pathophysiology. The two main principles are to prevent airway collapse and air trapping by the use of

PEEP/CPAP and to minimize coughing. We were no findings in our patients history, or on the preoperative examination, suggesting the development of respiratory difficulties during anesthesia.

Hidekazu et al. (7) describe an adult patient who showed acquired tracheomalacia that appeared to have been induced by isoflurane, despite the absence of a past history of respiratory diseases. we found no report on sevoflurane(8).

We think that general anaesthesia can be performed succesfully with special attention in patients with tracheomalacia.

CORRESPONDENCE TO

Sevtap Hekimoglu Sahin Trakya University Medical Faculty, Department of Anaesthesiology and Reanimation, 22030, Edirne, TURKEY Tel No : 0 90 284 2357641/3200 Fax No: 0 90 284 2358096 E-mail. sevtaphekimoglu@mynet.com

References

1. James Austin, Tariq Ali. Tracheomalacia and bronchomalacia in children: pathophysiology, assessment, treatment and anaesthesia management. Paediatric Anaesthesia 2003; 13: 3-11.
2. Burden RJ, Shann F, Butt W et al. Tracheobronchial malacia and stenosis in children in intensive care: bronchograms help to predict outcome. Thorax 1999; 54: 511-517.
3. Jokinen K, Palva T, Sutinen S, Nuutinen J. Acquired tracheobronchomalacia. Ann Clin Res 1977;9:52-7.
4. Johnson TH, Mikita JJ, Wilson RJ, Feist JH. Acquired tracheomalacia. Diagn Radio1 1973;109:577-80.
5. McLeod DT, Teasdale AR. Tracheomalacia masquerading as asthma. Cent Afr J Med 1987;33:154-6.
6. Conroy PT, Bennett NR. Management of tracheomalacia in association with congenital tracheo-oesophageal fistula. Br J Anaesth 1987; 59: 1313-1317.
7. Hidekazu Katoh, Satoru Saitoh, Mamoru Takiguchi. A Case of Tracheomalacia During Isoflurane Anesthesia. Anesth Analg 1995;80:1051-3.
8. Yamaya K, Ujike Y, Namiki A. Tracheobronchomalacia occurring under general anesthesia: a case report (in Japanese). Rinsho Masui 1986;10:337-40.

Author Information

Sevtap Hekimoglu Sahin, M.D.

Assistant Prof. Dr., Department of Anesthesiology, Trakya Univ.Medical Faculty

Gaye Kaya, M.D.

Assistant Prof. Dr., Department of Anesthesiology, Trakya Univ.Medical Faculty

Zeynep Öresin, M.D.

Assistant Dr., Department of Anesthesiology, Trakya Univ.Medical Faculty