Case Report

A 71-year-old female with giant goiter associated with tracheomalacia

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Case: A 71-year-old woman was admitted to the Emergency Department with severe dyspnea followed by unconsciousness. She had a history of hyperthyroidism and her anterior neck was markedly swollen. After ventilation was started, she soon became conscious with the improvement of oxygenation. Computed tomography findings indicated giant goiter surrounding the trachea. Later, we carried out a thyroidectomy for the giant goiter (800 g), and tracheostomy. Bronchoscopy carried out at the end of surgery showed a deformed tracheal wall on breathing. During inspiration, the collapsed wall of the trachea occluded the airway, although the tracheal wall recovered to normal during expiration. We diagnosed this case as acquired tracheomalacia and a tracheal stent graft made of silicon was inserted immediately after bronchoscopy.

Outcome: After stent graft insertion, the patient was transferred to another hospital.

Conclusion: Emergency physicians should be aware of the causes of tracheomalacia in order to safely carry out treatment, particularly in the case of patients with giant goiter.

Key words: Airway obstruction, emergency department, giant goiter, postoperative, tracheomalacia

INTRODUCTION

FOR AN URGENT and difficult airway, emergency physicians may choose cricothyroidotomy as one of the procedures for securing the airway. However, if patients have neck problems such as giant goiter, a surgical airway cannot be established. Furthermore, patients with giant goiter are occasionally associated with acquired tracheomalacia. We report a female patient admitted with very severe dyspnea followed by unconsciousness, diagnosed with tracheomalacia soon after thyroidectomy, who underwent stent grafting as a result of diagnostic bronchoscopic findings during the operation.

CASE

A 71-YEAR-OLD WOMAN was admitted to the Emergency Department (ED) by ambulance with severe

dyspnea followed by unconsciousness. On arrival, her oxygen saturation was 77% on O₂ administration. She had a Glasgow Coma Scale score of 6 (E₁V₁M₄), and was intubated. She had a history of hyperthyroidism and her anterior neck was markedly swollen. Intubation using an 8-mm endotracheal tube was difficult, so a 6-mm tube was required.

After ventilation was started, she soon became conscious with the improvement of oxygenation; therefore, we suspected the cause of the unconsciousness to be airway obstruction. We performed computed tomography of the cervical region, and giant goiter was found to surround the trachea (Fig. 1). During hospitalization, we attempted extubation several times; however, re-intubation was required due to airway obstruction.

Later, we carried out thyroidectomy for the giant goiter, and tracheostomy to resolve airway compression.

Goiter weighing 800 g was resected. After surgery, bronchoscopy carried out at the end of surgery showed a deformed tracheal wall on breathing (Fig. 2A, B). During inspiration, the collapsed wall of the trachea occluded the airway (Fig. 2A), although the tracheal wall recovered to normal during expiration (Fig. 2B). We diagnosed this case as acquired tracheomalacia. For the tracheal stenosis due to tracheomalacia, a tracheal stent graft made of silicon (øcon

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Received 19 Feb, 2014; accepted 15 Apr, 2014; online publication 26 Jun, 2014

stent; Fuji Systems, Tokyo, Japan) was inserted immediately after bronchoscopy.

After stent graft insertion, the tracheal stenosis markedly improved, and the patient was transferred to another hospital for postoperative treatment.

DISCUSSION

AQUIRED TRACHEOMALACIA is known as a rare complication that may occur in patients undergoing thyroidectomy for giant goiter and tracheostomy.^{1,2} Giant

Fig. 1. Computed tomography on admission of a 71-year-old woman with severe dyspnea followed by unconsciousness shows giant goiter (arrows) surrounding the trachea.

goiter may cause weakness of the tracheal wall due to longstanding bilateral compression. The incidence has been reported to be between 0.001 and 6%.^{1,3}

In a previous report, patients had no ventilation symptoms before surgery, and, after surgery, a compressed, soft trachea with tracheomalacia was identified.³ In another report, a patient complained of difficulty in respiration and swallowing due to a mass in the neck for months.⁴ The present patient complained of dyspnea, which progressed to unconsciousness, and so she was taken to an ED by ambulance.

Tracheomalacia is familiar to thyroid and neck surgeons, but not to emergency physicians. The cause of dyspnea in the present patient on arrival was airway obstruction and we attempted intubation in the ED. We did not know why intubation with a normal sized tube was difficult. Moreover, extubation was unsuccessful and re-intubation was required. Upper airway compression by giant goiter may have been the cause of the airway problem at this time, rather than tracheomalacia.

Emergency physicians often carry out cricothyroidotomy as emergent airway management in difficult airway cases; however, with the presence of giant goiter in the neck, as in the present case, such a procedure seems inappropriate.

Agarwal *et al.* reported that 29% of patients with tracheomalacia were diagnosed in the recovery room, and not on the operating table.¹ After the tracheal wall becomes free from a giant goiter by thyroidectomy, tracheal collapse may become clinically obvious. We diagnosed tracheomalacia by detecting a crescent-shaped deformity of the trachea during the operation, and a tracheal stent graft was positioned safely during the operation.

Fig. 2. Bronchoscopic findings on inspiration (A) and expiration (B) in a 71-year-old woman was admitted to the Emergency Department with severe dyspnea followed by unconsciousness. Arrows indicate the collapsed wall of the trachea during inspiration (A). The tracheal wall recovered to normal during expiration (B).

In conclusion, we encountered tracheomalacia as a complication of goiter and were able to successfully treat it. It is possible that patients with tracheomalacia are transported to the ED if they have symptoms of airway obstruction. Emergency physicians should also be aware that tracheomalacia can be the cause of dynamic airway collapse, in order to conduct treatment safely.

CONFLICT OF INTEREST

NONE.

REFERENCES

- 1 Agarwal A, Mishra AK, Gupta SK *et al.* High incidence of tracheomalacia in longstanding goiters: experience from an endemic goiter region. *World J. Surg.* 2007; 31: 832–7.
- 2 Le BT, Eyre JM Jr, Holmgren EP *et al.* A tracheostomy complication resulting from acquired tracheomalacia: case report. *J. Trauma* 2001; 50: 120–3.
- 3 Abdel Rahim AA, Ahmed ME, Hassan MA. Respiratory complications after thyroidectomy and the need for tracheostomy in patients with a large goitre. *Br. J. Surg.* 1999; 86: 88–90.
- 4 Ağaoğlu N. Tracheopexy for tracheomalacia complicating a giant multinodular goiter: a case report. *Acta Chir. Belg.* 2007; 107: 460–1.