Graves' disease in children: an enlarged goitre causes severe tracheal stenosis

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DESCRIPTION

A teenage high school student underwent an X-ray of the chest during a routine physical examination at the time of admission to school, which revealed marked tracheal stenosis (figure 1A). The boy was diagnosed with Graves' disease a year before due to goitre and easy fatigability and was under treatment with an antithyroid drug. He remained in an euthyroid state with 15–20 mg/day of methimazole. Since the disease onset, he had been reporting discomfort during swallowing owing to the enlarged goitre. Ultrasonography of the thyroid performed 6 months earlier showed a highly diffused goitre with a heterogeneous echogenic pattern (40 mm width, 40 mm thickness, 60 mm height in the right lobe and 35 mm width, 40 mm thickness, and 60 mm height in the left lobe). No apparent tracheal stenosis was noted. Furthermore, with the increase in duration of physical education after entering the high school, the boy became aware of dyspnoea during exercise. The CT scan of the neck showed that the minimum tracheal diameter was 3 mm (figure 1B), indicating severe tracheal stenosis. Therefore, total thyroidectomy (thyroid weight: 300 g) was performed with an oral tracheal intubation under conscious control. Histopathological examination revealed no neoplastic lesion. The tracheal stenosis did not improve immediately after thyroidectomy; therefore, intraoperative tracheostomy was performed. The cannula was removed on postoperative day 5, and tracheal stenosis was not detected on day 14 (figure 1C). Consequently, the respiratory distress during exercise disappeared.

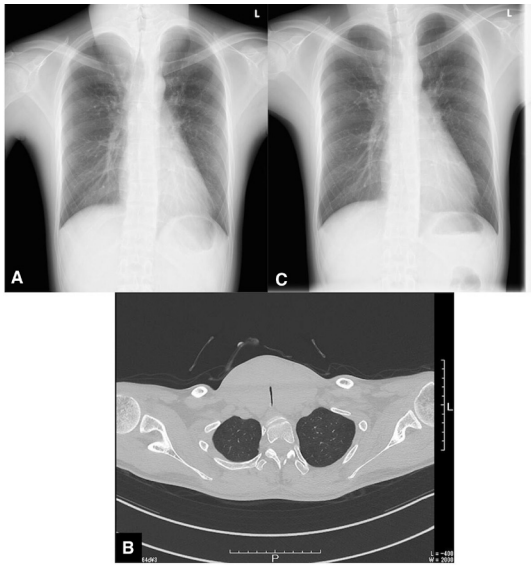

Figure 1 (A) A routine X-ray of the chest during physical examination for admission to a school revealed severe tracheal stenosis. (B) Horizontal image of CT of the cervical. Tracheal diameter is 3 mm with marked tracheal stenosis. (C) X-ray of the chest 2 weeks after total thyroidectomy. Tracheal stenosis has improved.

Tracheal stenosis occurs rarely due to an enlarged goitre even in a benign goitre associated with Graves' disease.[1] Further, airway stabilisation is a significant problem in the case of goitre with tracheal stenosis. Previous reports suggest that extracorporeal membrane oxygenation was used at the time of thyroid surgery in some cases,[2] while in others, a tracheal stent was placed preoperatively.[3] An enlarged goitre may cause dyspnoea due to tracheal stenosis even in adolescents with Graves' disease whose thyroid function is normally controlled. After the symptoms of tracheal compression become clinically evident, the occurrence of complete airway occlusion may be sudden and unpredictable. Hence, when goitre-induced tracheal stenosis is evident, an early thyroidectomy is recommended.

Learning points

- An enlarged goitre may cause dyspnoea due to tracheal stenosis even in adolescents with Graves' disease whose thyroid function is normally controlled.
- Early thyroidectomy is recommended in patients with severe tracheal stenosis due to goitre associated with Graves' disease.

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