Acute Airway Obstruction by Spontaneous Hemorrhage into Thyroid Nodule

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Abstract A 73-year-old man was transferred after cardiopulmonary resuscitation with endotracheal intubation. The neck computed tomography revealed about a 6.5×5 cm homogeneous, mildly enhancing cystic mass in the thyroid isthmus, occupying nearly the entire lower central neck region and compressing the trachea. An emergency subtotal thyroidectomy was performed.

Introduction

Most cases of thyroid hemorrhage are mild, causing only pain and discomfort, and only rarely cause significant neck swelling. However, massive hemorrhage into a thyroid nodule can result in a rapidly expanding hematoma with compromise of the airway. Such hemorrhagic events may occur spontaneously, after exertion, or after trauma (blunt or fine-needle aspiration) [1–7]. We report a case of acute airway obstruction due to spontaneous hemorrhage into a thyroid nodule.

Case Report

A 73-year-old man was transferred to the hospital after cardiopulmonary resuscitation with endotracheal intubation by the paramedics. The medical history was remarkable for hypertension for 20 years and angina pectoris with myocarditis 9 years ago. The patient was taking antihypertensive medication and aspirin. The patient had a benign

thyroid nodule diagnosed 10 years ago and intermittently evaluated. The patient denied any history of trauma or upper respiratory tract infection.

On the morning of admission, the patient felt a sudden worsening dyspnea and called 911; he then lost consciousness. Three days before the incident, he reported feeling a tight heaviness and hard swelling at the lower central neck region.

On arrival at the emergency room, the patient was alert, and intubated. A 7×5 cm hard non-fluctuant mass was palpated at the lower central neck region. There were no bruits or thrills detected. The neck computed tomography revealed about a 6.5×5 cm homogeneous mildly enhancing cystic mass at the thyroid isthmus compressing the trachea (Fig. 1). The findings suggested an acute airway obstruction, due to hemorrhage into the preexisting benign thyroid nodule. The echocardiogram revealed relatively good heart function with no significant changes when compared to a previous check up.

An emergency subtotal thyroidectomy was performed. A large, firm, and cystic thyroid mass occupied nearly the entire lower central neck region (Fig. 2). There was no obvious actively bleeding vessel. Most of the resected thyroid gland consisted of a firm, round, heavy, and cystic mass in the center and contained multiple chambers with blood clots inside. Some tracheal rings were slightly softened and slightly out of place due to the long standing compression by the mass. However, the patient was successfully extubated on the first postoperative day and there were no airway complications including tracheal stenosis. The pathology revealed a nodular hyperplasia without any sign of carcinoma.

The patient was discharged from the hospital and followed for 1 year without any sign of recurrence or complications.

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Fig. 1 The neck computed tomography revealed about a 6.5×5 cm homogeneous mildly enhancing cystic mass in the thyroid isthmus compressing trachea. The tube used for intubation was seen within the compressed trachea

Fig. 2 The intraoperative findings showed a large and firm thyroid mass occupying nearly the entire lower central neck region

Discussion

There are two possible mechanisms for hemorrhage into a thyroid nodule [8–10]: (1) abnormal vessel anatomy with resultant weakening of the veins and (2) arteriovenous shunting into the nodule that diverts blood under high pressure to the nodular veins, resulting in extravasation of blood into the nodule. Therefore, a spontaneous hemorrhage under pressure can occur in association with exertional events, such as light housework, coughing, choking on food, straining at defecation, crying, or physical labor.

We could not find such an event in this case. However, it is possible that some unknown event in addition to the aspirin therapy, in this patient, contributed to the sudden hemorrhage into the existing thyroid nodule.

The natural history of a nodular goiter is not completely understood, but slow growth appears to be the general pattern. The clinical course of a nodular goiter may be asymptomatic, but the possibility of associated respiratory distress with a nodular goiter should be kept in mind. Furthermore, a hemorrhage into a goiter may precipitate an acute life-threatening airway obstruction. The hemorrhage causes further enlargement of the nodular goiter and further narrowing of the airway. Considering the patient in this case, with multiple chambers filled with blood clots inside of a hard thyroid swelling, the simple aspiration of blood was not a treatment option. Although conservative management has been reported to be useful [4, 5], early surgical decompression should be considered whenever tracheal compression is a concern, especially if the patients are symptomatic or have mediastinal extension [6]. If this patient was treated surgically immediately after the initial symptoms of swelling at the lower central neck region (3 days before the cardiopulmonary arrest), the cardiopulmonary resuscitation could have been avoided.

Conclusion

Because of the possibility of hemorrhage into a preexisting thyroid nodule, early surgical management should be considered in cases at risk where compromise of airway is possible.

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