From Neck Swelling to Abrupt Compromised Airway: A Case of a Hemorrhagic Ruptured Thyroid Cyst

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INTRODUCTION

Spontaneous sudden onset of hemorrhagic rupture of thyroid gland cyst is remarkably uncommon but not unheard of. In current literature, only a limited number of cases have been reported.[1] A rapid and immense swelling can swiftly occlude the airway and threaten the life of a patient.[2] Here, we present a patient who developed a sudden neck swelling that escalated and compromised her airway.
CASE REPORT

A 36-year-old healthy female presented to our Emergency Department with a progressive swelling on the left side of her neck that had started 2 days before presentation. There was no history of trauma, fever, cough, coagulopathies, recent medical procedures, medication intake or thyroid problems. The patient complained of pain and dysphagia on the side of the swelling.

The initial evaluation revealed a sick-looking nonetheless stable patient who was not in dyspnea or in respiratory distress. The neck examination revealed a well-defined soft cystic lesion confined to the left side of the neck anteriorly, measuring around 4 cm × 4 cm, extending from the left thyroid lobe levels III-IV. It was tender to the touch and moved with deglutition. Preliminary fiberoptic flexible scope examination of the larynx was normal.

Laboratory investigations showed a white blood cell count of 10.42 × 10 × 9/L, hemoglobin of 115 g/L and calcium levels of 2.32 mmol/L, which were all within the normal range. The thyroid function test was also within the normal range with elevated antithyroglobulin antibodies.

A preliminary ultrasound study of the neck showed posterior inferior left lobe hypoechoic thyroid nodule measuring 3 cm with ill-defined lateral border and echogenicity suggesting turbid fluid collection in the left neck spaces [Figure 1].

A computer tomography scan showed diffused inflammatory changes of the superficial and deep facial planes mainly on the left side of the neck; however, they were confined to the infrathyroid region within the muscular and visceral facial planes of the intermediate deep cervical fascia [Figure 2a and b].

Three hours after the initial assessment, the patient’s condition suddenly changed. The swelling on the neck became engorged with increased tenderness. However, the patient remained clinically stable with no evidence of airway compromise or respiratory distress. Laryngeal flexible fiberoptic scope was repeated and revealed a left aryepiglottic submucosal hematoma compressing the airway and shifting the patient’s laryngeal inlet to the right [Figure 3a and b].

According to the findings of the flexible fiberoptic scope, the focus was on securing the airway. Therefore, the patient was electively intubated then transferred to the intensive care unit for observation. The patient was managed conservatively with intravenous antibiotics and steroids (dexamethasone). The following day, a, direct flexible fiberoptic scope was repeated which showed regression of the left sided submucosal swelling, and laryngeal inlet patency was visualized. The patient was then extubated and transferred from the intensive care unit to the ward where she gradually improved and discharged on the following day.

Thyroid ultrasound-guided fine needle aspiration (FNA) cytology showed normal sized thyroid gland with evidence of an oblong shaped, fairly well-defined hypoechoic nodule in the left thyroid lobe. Cytology was...
reported as Thy1 (Bethesda class I, nondiagnostic or unsatisfactory). In relation to previous imaging studies and cytology report, a diagnosis of ruptured thyroid cyst and hematoma was established.

**DISCUSSION**

Sudden abrupt neck swelling is both a life threatening condition and a surgical emergency that may result from traumatic causes, such as FNA, rupture aneurysm, or in rare circumstances, a spontaneous bleed into the thyroid gland nodule or parathyroid adenoma. One of the early publications was by Capps, who reported a fatal spontaneous massive swelling in 1934. The 50-year-old patient died of acute dyspnea and postpartum autopsy showed a cervicothoracic hematoma due to a parathyroid hemorrhage. In the current case, the initial physical examination of the neck swelling that mobilized with deglutition favored the endocrine glands of the neck (thyroid or parathyroid) as a preliminary source of the swelling. Furthermore, infectious causes were considered unlikely due to the absence of clinical signs of inflammation and normal white blood count. Moreover, the normal calcium level pushed back the parathyroid glands as a cradle of the swelling. The initial ultrasound of the neck showed a hypoechoic nodule in the left thyroid lobe; this further supported the primary diagnosis of thyroid gland cyst. The subsequent computer tomography scan and direct visualization of the submucosal hematoma with the flexible fiber optic scope helped in constructing the diagnosis of ruptured hemorrhagic thyroid gland cyst.

Numerous authors postulated that the cause of sudden intrathyroid gland spontaneous bleeding can be due to sudden increase in intravenous pressure in certain activities such as cough or valsava. However, the majority of cases lacked a clear triggering event. Interestingly, in our case, the only events that can be somehow considered as triggers were the ultrasound and the cyst palpitation during clinical examination. The management approaches for such cases were all tailored according to the cause. However, the first and foremost mainstay in all reported cases was securing the airway. The same was implemented with our patient, who was immediately intubated when the swelling increased and the laryngeal inlet was directly visualized to be compromised and shifted to the right. Furthermore, planned management in such reported cases ranged from conservative management to surgical exploration and occasionally emergency partial thyroidectomy. Conservative management was reported to be useful in cases of intrathyroid nodule haemorrhage. This was applicable in our case where repeated flexible fiberoptic scope examination of the larynx and ultrasound displayed regression of the hematoma, thereby diminishing the need for surgical intervention.

Taking in consideration the possibility of malignancy, a FNA biopsy was done and reported as a nondiagnostic or inconclusive. Anderson et al. reviewed 393 patients with a single nodule with nondiagnostic biopsy results. Repeated FNA was obtained on 336 nodules, 18 of which were considered to be possibly cancerous, for which surgical removal and pathologic examination was done. This lead to a diagnosis of cancer in two patients. Anderson et al. recommended that nodules with a nondiagnostic cytology result, those that are lacking other risk factors and having benign appearance at ultrasound, could be followed with serial ultrasound examinations without a repeated biopsy. This recent recommendation was followed and our patient underwent several ultrasonographies over a period of a few months. The latest ultrasound on the neck was done approximately 9 months after initial presentation and revealed a normal thyroid gland with no evidence of abnormalities.

**CONCLUSION**

Only a limited number of neck swellings attributed to spontaneous hemorrhagic ruptured thyroid gland cyst have been reported. Our case is unusual in terms of the sudden progressive swelling compromising the airway despite of no previous underlying thyroid gland disease or clear trigger of the hemorrhage. Hence, any sudden progressive neck swelling should promote hemorrhagic cyst as a differential diagnosis taking into consideration the necessity of securing the airway.

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**Conflicts of interest**

There are no conflicts of interest.
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