

Case report

Hemorrhagic thyroid nodule causing shifted airway

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Abstract:

Sudden rapidly increased neck swelling due to spontaneous intranodular bleeding of the thyroid gland is rare occurrence but can be considered. Here, we report an extremely rare case of spontaneous rupture intrathyroidal nodule in a healthy young female who had no history of neck swelling, thyroid disease or neck trauma. She was closely observed and treated conservatively as there was no compromised airway. She was discharged well after completed intravenous antibiotic.

Keywords: Neck mass; thyroid nodule; ultrasound; airway

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Introduction:

Sudden rapid increase swelling of the neck be life-threatening. It is considered as surgical emergency as airway can be compromised at any time. Therefore, it is important to know the possible underlying aetiology. Common causes of acutely developed neck swelling include cervical lymphadenitis, neck cyst infection, and deep neck abscess including those involving retropharyngeal and parapharyngeal spaces. Spontaneous sudden onset of haemorrhagic thyroid nodule is extremely uncommon. Limited number of cases have been reported.¹ Most of the intrathyroidal haemorrhage cases were mild, causing only mild pain and discomfort, and very rarely cause significant unsightly neck swelling. It is owing to its tough fascia that enveloped it to the trachea. In some circumstances, extravasation of blood from the spontaneous rupture of a thyroid nodule

causing extension of blood along the fascia planes of the neck and manifest as lateral neck swelling.² However, acute upper airway obstruction can occur from massive haemorrhage into a thyroid nodule if the hematoma is rapidly expanding.

Case summary:

A 22-year-old lady presented with an anterior neck swelling for 2 days' duration. It was noticed upon waking up from bed. It was progressively increased in size within 2 days. It was associated with pain and low-grade fever. However, there was no hoarseness or obstructive symptoms. Otherwise there was no history of neck massage, trauma, insect bites, bleeding tendencies or any history of heavy labour. She was also not taking any medications including anticoagulants, over-the-counter drugs or any traditional remedies.

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Figure 1: Diffuse right anterolateral neck swelling which developed within 2 days.

The initial evaluation revealed a stable patient who was not in respiratory distress. There was no stridor or hoarseness. The neck examination revealed diffuse right anterolateral neck swelling, measuring 10 cm x 7 cm, occupying from hyoid bone till suprasternal notch (Figure 1). It was firm, mildly tender and moved with swallowing. The overlying skin was normal. The lateral pharyngeal wall was not medialized upon oral cavity examination. Flexible nasopharyngolaryngoscopy revealed a normal larynx. The vocal cords were symmetrical and mobile, with patent laryngeal inlet.

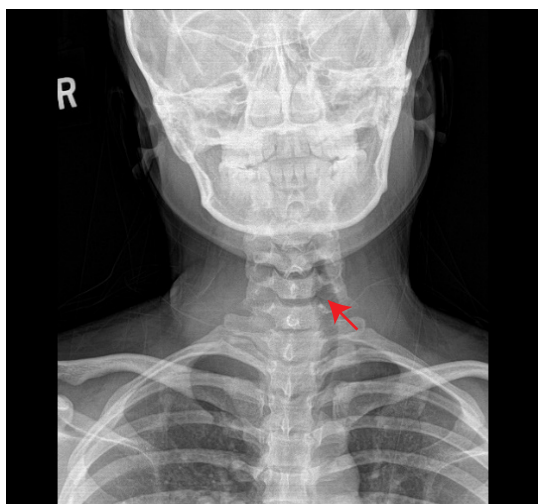


Figure 2: Soft tissue radiograph of the neck showed displacement of the trachea (arrow) to the left and a soft tissue shadow in the right lower neck (circle).

Laboratory investigations showed a white blood cell count of $12.0 \times 10^9/l$. Thyroid function test results were normal with TSH level of 2.89mIU/L and Free T4 of 17.00pmol/L. A radiograph of the soft tissue of the neck revealed increased soft tissue density over the right lower neck with displacement of the trachea toward the left side (Figure 2). An urgent neck ultrasonography showed a well-defined anechoic cystic lesion occupying almost whole right lobe thyroid measuring 3.8cm x 5.3cm x 6.9cm with echogenic materials within (Figure 3). Trachea was shifted to left side. The diagnosis was right haemorrhagic thyroid nodule.

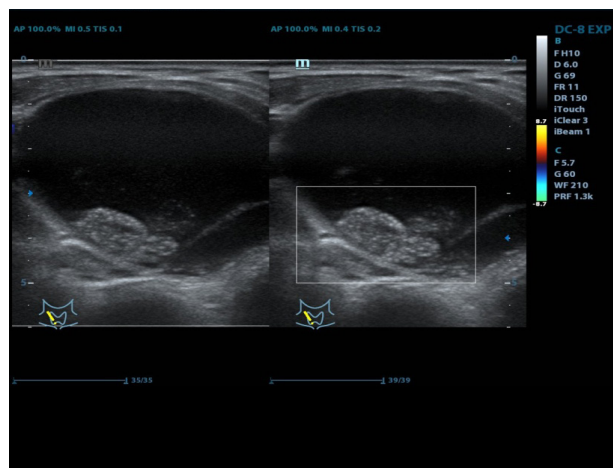


Figure 3: Right thyroid mass with echogenic materials and internal septation.

As our patient was well with no airway compromise, the decision was made for conservative treatment with intravenous antibiotic to prevent secondary infection and analgesia to reduce the pain. After 3 days of admission, there was no more neck pain and swelling slightly reducing in size. She was discharged well with a two-week appointment for reassessment.

Discussion:

Sudden onset of neck swelling due to thyroid in origin may result from traumatic causes, such as post fine needle aspiration procedure, rupture of aneurysm, or in rare circumstances, a parathyroid adenoma or spontaneous bleed into the thyroid gland nodule.³ Thyroid gland is one of the most vascularized organ in the body. Two postulated theories on how spontaneous haemorrhagic in the thyroid nodule occurred are (i) abnormal vessel anatomy such as

deficient elastic tissue, adventitia and musculature that lead weakens the veins and (ii) arteriovenous shunting into the nodule that diverts blood under high pressure to the nodular veins can result in extravasation of blood into the nodule.^{4,5}

Intrathyroid bleed can lead to life-threatening airway compromise. This is due the anatomical relationship of the gland which encapsulate the trachea reinforced by the pretracheal fascia. Early fatal spontaneous massive thyroid swelling in 50-year-old patient has been reported. The patient had developed cervicothoracic hematoma due to parathyroid haemorrhage that confirmed by post-mortem autopsy.⁶ We have also previously reported a case of massive bleeding from an anaplastic thyroid lesion, which eventually lead to patient to succumb to her illness. In that case, the pathology was anaplastic thyroid carcinoma with intra-operative finding of tracheal invasion.⁷

The history, clinical examination and imaging are important for decision-making in the management of abrupt neck swelling due to thyroid nodule bleeding. A detailed history taking and a meticulous physical examination will rule out others differential of sudden neck swelling thus will lead to a targeted treatment. In our case, radiographs of the neck using the soft tissue technique showed tracheal deviation due to large mass on the opposite side and it was confirmed haemorrhage of thyroid nodule by ultrasonography evidence.

Treatment of spontaneous intrathyroid bleed depends on the individualized patient's condition. If the haemorrhage is progressively increasing toward hematoma leading to airway compromise, urgent surgical intervention is required to secure the airway such emergency thyroidectomy or worse emergency tracheostomy.⁸ In addition, if a bleeding from the

thyroid mass continues despite conservative measures, emergency thyroidectomy can be considered.⁹ However, if the patient is not in respiratory distress and examination reveals no airway compromise, a conservative management can be taken to give time for spontaneous resolution of the haemorrhage.¹⁰ As our patient not in respiratory distress although the radiograph showed shifted trachea, we opted to treat patient conservatively and he patient recovered satisfactorily without complication as a result of prompt diagnosis and management. Reassessment of the thyroid lesion during follow up including a repeat ultrasonography and fine needle aspiration for cytology (FNAC) should be considered. FNAC is a rapid, relatively painless diagnostic procedure preferred in investigating a solitary thyroid nodule with high specificity and sensitivity¹¹, even if a clear aspiration fluid yielded.¹²

As a spontaneous intrathyroidal haemorrhage is a rare occurrence. A detailed history, clinical assessment and suitable imaging modality are required to aid selection of treatment approach. As the thyroid gland is anatomically close to the trachea, the airway need to be carefully assessed for early detection of airway compromise.

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References:

1. Amadei EM, Benedettini L, Piccin O. Two cases of cervical hemorrhage with upper airway obstruction: a life-threatening condition. *Case Reports in Medicine*. 2014;2014:674176. <https://doi.org/10.1155/2014/674176>
2. Hughes J, Mulki O, Stephens J, Robinson A. Extensive laryngo-pharyngeal haematoma in a warfarinised patient requiring emergency tracheotomy. *Internet Journal Otorhinolaryngol*. 2007.
3. Hor T, Lahiri SW. Bilateral thyroid hematomas after fine-needle aspiration causing acute airway obstruction. *Thyroid*. 2008;18(5):567-9. <https://doi.org/10.1089/thy.2007.0363>
4. Testini M, Logoluso F, Lissidini G, Gurrado A, Campobasso G, Cortese R et al. Emergency total thyroidectomy due to non-traumatic disease. Experience of a surgical unit and literature review. *World Journal of Emergency Surgery*; 2012; 7(1):9. <https://doi.org/10.1186/1749-7922-7-9>
5. Johnson N. The Blood Supply of the Thyroid Gland: I. The Normal Gland. *Australian and New Zealand Journal of Surgery*. 1953;23(2):95-103. <https://doi.org/10.1111/j.1445-2197.1953.tb05025.x>
6. Capps RB. Multiple parathyroid tumors with massive mediastinal and subcutaneous hemorrhage: A case report. *American Journal Medical Sciences*. 1934;188:800. <https://doi.org/10.1097/0000441-193412000-00007>
7. Lo RH, Ibrahim MF, Abdullah K, Ahmad N, Hassan F, Mohamad I. Extensive neck hematoma as an extremely rare presentation of thyroid carcinoma. *International Journal of Human and Health Sciences* 2010;4(3):226-228. <https://doi.org/10.31344/ijhhs.v4i3.205>
8. Lee JK, Lee DH, Cho SW, Lim SC. Acute airway obstruction by spontaneous hemorrhage into thyroid nodule. *Indian Journal of Otolaryngology and Head & Neck Surgery*. 2011;63(4):387-9. <https://doi.org/10.1007/s12070-011-0223-9>
9. Mohamad I, Wan Din WSJ. Emergency thyroidectomy for a bleeding multinodular goiter. *Malaysian Journal of Medical Sciences* 2009;16(3):45-6.
10. Wong TL, Jaafar R. Spontaneous rupture of hemorrhagic thyroid nodules causing extensive laryngopharyngeal, neck, and chest hematoma. *The Egyptian Journal of Otolaryngology*. 2017;33(1):128. <https://doi.org/10.4103/1012-5574.199405>
11. Karim MI, Nachev R, Fuklev N, Nargis N. A study on evaluation of solitary nodular thyroid lesions by FNAC and its histopathological correlation. *Bangladesh Journal of Medical Science* 2019;18(4):789-795. <https://doi.org/10.3329/bjms.v18i4.42906>
12. Minz R, Adhikari A, Biswas S, Ray R, Bose K, Mondal S. Diagnostic diversities of Clear Fluid encountered during Fine needle aspiration cytology with an analysis of various variables. *Bangladesh Journal of Medical Science* 2019;18(4):753-755. <https://doi.org/10.3329/bjms.v18i4.42880>