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A RARE PRESENTATION OF A SOLITARY RIGHT LOBE THYROID NODULE IN THE BACKGROUND OF MULTINODULAR GOITER

By

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Abstract

This case is about a 41-year-old female who presented with a solitary thyroid nodule in the right lobe. She had swelling in the front of her neck for 5 years, weight gain for 1 year, hair loss for 2 years, and palpitations for 1 year, but no other medical illnesses. Blood investigations showed haemoglobin 11.9 g/dL, red blood cells 4.65 million/cumm, hematocrit 37.5%, platelets 3.45 lakh/cumm, and white blood cells 8530/cumm with normal differential counts. Coagulation profile was normal with PT 11.8, INR 0.91, and APTT 31.7. Liver and kidney function tests were normal, with total bilirubin at 0.7 mg/dL and serum creatinine at 0.7 mg/dL. Electrolytes were also normal. HbA1c was 4.8%, showing no diabetes. Thyroid function test revealed low TSH (0.20 mIU/L), normal Free T3 (3.21 pg/mL), and slightly high Free T4 (1.80 ng/dL). Ultrasound of the thyroid showed a right lobe nodule classified as ACR TIRADS 3, mildly suspicious for malignancy, but FNAC confirmed colloid goiter, a benign condition. The patient was managed with right hemithyroidectomy under general anesthesia, which she tolerated well, and the postoperative recovery was uneventful. During treatment, she received intravenous antibiotics (Inj. Xone 1 g) for infection control, a proton pump inhibitor (Inj. Pan 40 mg) to prevent stomach acid secretion, an antiemetic (Inj. Emeset 4 mg) for nausea and vomiting, paracetamol (Inj. PCT 1 g) for fever and pain, tramadol for additional pain relief when required, vitamin supplements (Tab Limcee, Tab Cofovit) for nutritional support, and cough syrup (Syp Ascoril D 30 ml) for dry cough. She is now hemodynamically stable and has been discharged with medical advice, highlighting the importance of proper evaluation and treatment planning for solitary thyroid nodules.

Keywords: Solitary thyroid nodule, Goitre, Thyroid nodules, multinodular.

INTRODUCTION

Goitre is one of the most common thyroid conditions seen across the world. It has been known since ancient times and is described as an abnormal enlargement of the thyroid gland, which is located in the front of the neck. In old records and even in pictures from past civilizations, swollen necks caused by goiter were clearly shown. Goiter may be of different types, including simple and nodular forms. When the thyroid gland becomes enlarged and contains several nodules, the condition is called a multinodular goiter (MNG). By definition, MNG is an enlarged thyroid with multiple nodules inside it. This condition is very common, especially in older adults. In countries where iodine intake is normal, MNG occurs in about 4% of the population. However, when doctors use ultrasound to screen for thyroid problems, the rate increases to 10–20%, and with high-resolution ultrasound, up to 70% of people may show signs of multilocularity.[1], [2], [3]

A solitary thyroid nodule is another frequent thyroid problem. It appears as a single swelling in the thyroid gland and is often found during routine health check-ups or clinical examination. The main concern with a solitary nodule is to rule out thyroid cancer, since only a small number are malignant, but this possibility makes the condition important. Doctors try to avoid unnecessary surgery, so investigations are done carefully before planning treatment. These include a detailed history, physical examination, thyroid hormone tests, ultrasound (USG) of the thyroid gland, radionuclide scans, and fine-needle aspiration cytology (FNAC). FNAC is considered the best initial test for solitary nodules because it is quick, simple,

and reliable for detecting whether the nodule is benign or malignant.[4], [5]

A clinically solitary thyroid nodule is defined as a swelling that looks like a single nodule in an otherwise normal thyroid gland during examination. However, this can be misleading. In fact, almost half of the nodules that seem solitary during examination turn out to be part of a multinodular goiter when seen at surgery. Therefore, about 50% of solitary nodules are true single nodules, while the other 50% are actually multinodular in nature. The conditions that can cause a true solitary nodule include: (1) a simple nodule in a goiter, (2) a toxic adenoma or autonomous functioning nodule, (3) a thyroid adenoma, and (4) a malignant (cancerous) nodule. Rarely, early autoimmune thyroiditis such as Hashimoto's thyroiditis or subacute thyroiditis (de Quervain's thyroiditis) may also mimic a solitary nodule.[6], [7]

Thyroid nodules are much more common in adults compared to children. In the pediatric age group (below 18 years), only about 1–2% have clinically detectable nodules. Risk factors for thyroid nodules in children include previous radiation exposure to the head and neck, female sex, iodine deficiency, the age of puberty, and a family or personal history of thyroid disease. Thyroid nodular disease can present in different ways, such as a single solitary nodule, a multinodular goiter, nodular enlargement in autoimmune thyroiditis (like Hashimoto's thyroiditis or Graves' disease), or small non-palpable nodules detected only by imaging. [8]

CASE REPORT

A 41-year-old female patient was admitted to the general surgery department at Sapthagiri Institute of Medical Sciences and Research Center Hospital in Bangalore. When she acknowledged her complaints were swelling in front of her neck for 5 years, weight gain for 1 year, hair loss for 2 years, and palpitations for 1 year. The patient was apparently well 5 years ago, after which she noticed a swelling in the front of the neck. The swelling was insidious in onset, initially about 2 × 2 cm in size, and has gradually increased to the present size of approximately 4 × 5 cm. She reports significant weight loss over the past 1 year despite having a good appetite. She also complains of scalp hair loss for the last 2 years and palpitations for the past 1 year. There is no history of hoarseness of voice, generalized weakness, or fatigability. She denies features of hypothyroidism, such as cold intolerance, constipation, or dryness of skin. There is no history of consumption of goitrogenous foods or radiation exposure. Her history and family history were not significant. On examination, she was conscious, cooperative, well-nourished, and oriented to time, place, and person. Her vital signs were stable, with a pulse rate of 96 beats per minute, blood pressure of 128/84 mmHg, and oxygen saturation of 98% on room air **(Table 1).** There was no pallor, cyanosis, clubbing, lymph node enlargement, or swelling of the feet. Local examination showed a solitary oval swelling in the thyroid region, about 5 × 4 cm in size, extending from 2 cm above the sternal notch to the upper border of the thyroid cartilage. The swelling had a nodular surface, moved with swallowing, and had no visible veins or scars. On palpation, it was firm, about 8 × 12 cm, non-tender, and the lower border was felt. Carotid pulse was normal. Systemic examination of the heart, lungs, abdomen, and nervous system was normal.

Blood investigations revealed haemoglobin of 11.9 g/dL, red blood cells 4.65 million/cumm, hematocrit 37.5%, platelet count 3.45 lakh/cumm, and white blood cell count 8530 cells/cumm with normal differential counts. Coagulation tests were normal with PT 11.8, INR 0.91, and APTT 31.7 **(Table 2).** Viral screening for HIV, hepatitis B, and hepatitis C was negative. Urine test showed a slightly turbid appearance, presence of a few white cells and epithelial cells, but no protein or sugar. Liver and kidney function tests were within normal limits, with total bilirubin 0.7 mg/dL, serum creatinine 0.7 mg/dL, and normal electrolytes. Glycosylated haemoglobin (HbA1c) was 4.8%, showing no diabetes. Thyroid function tests showed TSH 0.20 mIU/L (low), Free T3 3.21 pg/mL (normal), and Free T4 1.80 ng/dL (slightly high), suggesting hyperthyroidism. Ultrasound of the thyroid revealed a right lobe nodule classified as ACR TIRADS 3, which is mildly suspicious for cancer. FNAC of the swelling showed thyroid follicular cells with colloid and features of colloid goiter, a benign condition. Based on these findings, she was diagnosed with a solitary thyroid nodule of the right lobe **(Table 3).**

The patient underwent right hemithyroidectomy (surgical removal of the right thyroid lobe) under general anesthesia. She tolerated the procedure well and was shifted to the recovery ward in stable condition. Her postoperative period was uneventful. She was given intravenous antibiotics (Inj. Xone 1g for 5 days), proton pump inhibitor (Inj. Pan 40 mg), antiemetic (Inj. Emeset 4 mg), paracetamol (Inj. PCT 1g), tramadol for pain as required, vitamin supplements (Tab Limcee, Tab Cofovit), and cough syrup (Syp Ascoril D). On discharge, her condition was stable and improved. She was advised a soft diet, continuation of medicines including Tab Pan 40 mg, Tab Dolo 650 mg, vitamin C, Tab Orofer-XT for iron, and Healex spray for wound care. She was instructed to follow up with thyroid function tests (TSH, T3, T4) and review in the surgery outpatient department after one week. She was also advised to seek urgent care if she developed severe pain or infection at the operated site.

TABLES AND FIGURES

Table 1: Baseline data

DATE	BP [120/80 mmHg]	PR [72 bpm]	SPO_2 [96-100 %]	RR [18 – 20 bpm]
9 /01/2025	130/80	98	99	22
10/ 01/2025	126/80	87	99	20
11/01/2025	128/80	86	98	22
12/01/2025	122/80	90	99	22
13/01/2025	120/80	85	97	20
14/01/2025	120/80	80	99	20

Table 2: laboratory reports

DATE	Hb [12 – 15 gm/dl]	Prothrombin time [12.9-16.4]	INR [1-1.3]	TSH [0.465 – 4.68µIU/ml]	Free T_4 [0.45 – 1.6]
9 /01/2025	11.9	11.8	0.91	0.3550	1.80
10/ 01/2025	11.4	11.7	0.96	0.3560	1.85
11/01/2025	11.5	11.6	0.96	0.3669	1.87
12/01/2025	12.3	11.7	0.97	0.35630	1.82
13/01/2025	12.2	11.8	0.97	0.3780	1.89
14/01/2025	12.3	11.9	0.98	0.3870	1.85

Table 3: Diagnostic test results and clinical significance

Diagnostic Test	Test Result	Clinical significance
Histopathological examination – medium specimen	Histological features are suggestive of Adenomatoid Goitre	Histopathological examination of a medium specimen helps doctors study tissue under a microscope to confirm disease. It is useful to detect cancer, infections, or inflammation and guide proper treatment
Urine culture	No abnormalities	Urine culture helps identify the bacteria causing urinary tract infections. It also guides doctors to choose the correct antibiotic for treatment.
FNAC	Cytological features are suggestive of colloid goitre. TBSRTC II	FNAC (Fine Needle Aspiration Cytology) helps detect the nature of a lump or swelling by studying cells under a microscope. It is useful to differentiate between benign and malignant conditions for early treatment.
HIV 1 & 2 rapid test	Non-reactive	HIV 1 & 2 rapid test helps detect infection with the Human Immunodeficiency Virus in a short time. Early diagnosis allows timely treatment and prevents further transmission.
HBsAG rapid card test	Non-reactive	HBsAg rapid card test helps detect Hepatitis B virus infection in the blood. It is important for early diagnosis, treatment, and preventing spread to others.
HCV rapid card test	Non-reactive	HCV rapid card test helps detect Hepatitis C virus infection in the blood. It is important for early diagnosis, proper treatment, and reducing the risk of transmission.

DISCUSSION

In this case, the patient was treated with the help of a multidisciplinary team approach. The medicines given were aimed at controlling infection, reducing symptoms, and improving overall health. An antibiotic injection, Inj. Xone 1 g, was used to fight bacterial infection. To protect the stomach from excess acid secretion, a proton pump inhibitor, Inj. Pan 40 mg, was given. For the control of nausea and vomiting, Inj. Emeset 4 mg was prescribed. As a pain reliever and to reduce fever, Inj. PCT 1 g (paracetamol) was used. Tramadol was given only when extra pain relief was required. In addition, vitamin supplements like Tab Limcee and Tab Cofovit were prescribed to correct vitamin deficiency. A cough syrup, Syp Ascoril D 30 ml, was also given to reduce dry cough. After understanding the different types of solitary thyroid nodules and their management, a treatment plan can be developed for patients presenting with a clinically solitary nodule. Broadly, there are two groups of patients. The first group includes those in whom there is a strong suspicion or clear evidence of malignancy from clinical examination. For these patients, further investigations may still be done, but surgical exploration of the thyroid is essential. To assess thyroid status, a detailed history is taken, followed by a clinical examination for signs of hyperthyroidism or other thyroid disorders. Laboratory tests of thyroid function are also important. The activity of the thyroid nodule and surrounding thyroid tissue is often checked using scanning methods such as radioiodine or technetium scans. [7] Multinodular goitre (MNG) is another common thyroid problem. It is detected in 10–20% of people when ultrasound is used, and in up to 70% of cases when high-resolution ultrasound is performed. Once the diagnosis and need for treatment are clear, the doctor and patient must discuss all possible treatment options. This includes considering the advantages, recovery time, possible side effects, costs, and risks. The final decision depends on the patient's age, general health, and the presence of other diseases. [9, 10]

COUNCLUSION

This case highlights a rare presentation of a solitary nodule in the right lobe of the thyroid, seen in the background of multinodular goitre. Thyroid swellings are common, but their presentation can vary from benign goiter to malignant nodules. Careful history taking, clinical examination, and investigations such as thyroid function tests, ultrasound, and fine needle aspiration cytology (FNAC) are essential for accurate diagnosis. In this patient, although FNAC suggested a colloid goitre, ultrasound raised suspicion of malignancy, which justified surgical removal. A right hemithyroidectomy was performed successfully, and the patient recovered well without complications. This case shows the importance of early recognition and proper evaluation of thyroid swellings, as even benign-appearing nodules can present in unusual ways. It also stresses that surgery remains an important treatment option for suspicious or symptomatic nodules. Regular follow-up with thyroid function tests and clinical monitoring is necessary to ensure long-term stability and good patient outcomes.

LIMITATIONS OF CASE STUDY

The main limitation of this study is that it describes only a single patient, so the findings cannot be generalized to all cases of thyroid nodules or multinodular goitre. Larger studies with more patients are needed to confirm the observations. Another limitation is that the diagnosis primarily relied on ultrasound and FNAC, which have their own limitations in terms of sensitivity and accuracy. Histopathology after surgery would provide more definitive information, but this was not fully discussed in this report. Long-term follow-up of the patient is also required to assess recurrence or the development of new nodules. Therefore, while this case is rare and significant, more data are needed to support broader conclusions.

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CONFLICT OF INTEREST

None

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