

Case report:

A child with solitary thyroid nodule: What's next?

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Abstract:

Paediatric thyroid nodule is a rare occurrence. It occurs about 1.5% in childhood while 4-7% in adulthood. The presentations include anterior neck swelling which moves with deglutition. The treatments of choice are either conservative treatment or complete surgical excision if there is presence of obstructive symptoms or malignancy. We describe an 8-year-old girl presented with left solitary thyroid nodule. Malignancy must be ruled out before conservative management was instituted.

Keywords: Paediatric, thyroid nodule, ultrasonography

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Introduction

Thyroid nodular disease consists of disorders ranging from either isolated thyroid nodule or multinodular goiter. The most common mode of presentation is with an asymptomatic midline mass which moves with deglutition¹. It is lesser in occurrence among children and adolescent as compared to adult. Thyroid nodule has much higher incidence of malignancy in pediatric population as compared to adult, whereby about 26% of it are malignant in children, while in adult reported case was 5-10%^{2,3}. Commonest thyroid malignancy in children is papillary thyroid carcinoma (PTC) which accounts for 90% of all childhood cases⁴, while follicular thyroid cancer (FTC) is uncommon. Poorly differentiated tumors and undifferentiated (anaplastic) thyroid carcinomas are otherwise rare in young patients⁵. There are few risk factors to develop thyroid nodules in children such as female sex, post puberty age, previous history of thyroid disease, previous radiation to neck and familial thyroid disorder⁶.

Case report

An 8-year-old Malay girl presented with left anterior neck swelling for the past 3 years. It was initially noticed at the age of 6-year old when the child was underweight at that time. Till now, the swelling did not increase in size, painless and she had no compressive symptoms. She also had no hypo or hyperthyroidism symptoms. There was no history of thyroid swelling or malignancy in the family.

On examination, patient was alert and conscious. There was no stridor. She was afebrile, and not tachycardic. There was no fine tremor, brittle nail, lid lag, proximal myopathy or exophthalmos. Upon neck examination, there was a left paratracheal swelling measuring 4 cm x 3 cm which moves upon deglutition (Figure 1). The differential diagnosis includes congenital cyst, cervical lymphadenopathy and thyroglossal duct cyst. However, the mass did not move upward during tongue protrusion and there was no cervical lymph node palpable.

Her thyroid function test was normal. Neck

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ultrasonography (USG) revealed left large thyroid nodule measuring 2.3 cm x 1.7 cm x 3.6 cm. There was no calcification seen. Fine needle aspiration and cytology (FNAC) of the thyroid swelling revealed colloid nodule. She was planned for 6-monthly USG thyroid assessments.



Figure 1: Left thyroid nodule (arrow) which move during deglutition.

Discussion

When a child comes with thyroid nodule, the first and foremost things to do is to exclude malignancy⁷. Data from the two large studies consisting of pediatric thyroid nodules over several decades collecting nearly 20% of the solitary thyroid mass were malignant, in which majority are papillary carcinoma (Table 1)^{1,3}.

Table 1. Classification of solitary thyroid nodules detected in 128 children and adolescents.

MALIGNANT NODULES (19%)	
•	papillary carcinoma 17 (13%)
•	follicular carcinoma 4 (3.6%)
•	anaplastic carcinoma 2 (1.6%)
•	medullary carcinoma 1 (0.8%)
BENIGN NODULES (81%)	
•	colloid nodule/adenoma 67 (52%)
•	cyst 19 (15%)
•	lymphocytic thyroiditis 18 (14%)

Thyroid nodules can be solid, cystic or mixed in nature. A study on 24 children with cystic thyroid

nodules with mean age of 13 revealed pure cysts in 5 of them, and mixed cystic/solid lesions in 19 of the patients⁸. Diagnostic steps for thyroid nodules in pediatric and adolescent as compared to adults are not much of difference. Daniel et al reported that goitrogenesis does occur in pregnancy and therefore repeated pregnancies could play a role in development of thyroid disorder later on. They suggested that thyroid enlargement in pregnancy should be investigated along the similar step, including thyroid function test, USG as well as screening for thyroid autoantibodies^{9,10}.

The risk factors for malignancy of thyroid nodules includes fast growing nodule, family history of carcinoma especially in medullary carcinoma, hoarseness in the case of recurrent laryngeal nerve involvement, very firm nodule, fixity of the nodule to the surrounding structures, presence of cervical lymphadenopathy and lastly previous history of neck irradiation. Shafford et al in 1999, reported incidence of thyroid nodules after neck irradiation for 93 cases of childhood Hodgkin's disease whereby thyroid ultrasonography after 10 years later revealed abnormalities in all of them including focal lesions in 37% and thyroid cancer in 5.4 % of them¹¹. Mazonaki et al in 2006 studied the associated risk for thyroid cancer induction from head and neck computed tomography (CT) examination during childhood. They concluded that scattered dose to the thyroid from CT scanning is not significant and can lead to a low but not negligible risk for the development of thyroid malignancies¹².

First and foremost step is the clinical examination of the patient, in which detailed history must be taken to rule out likelihood of malignancy. Further investigations consist of blood test which includes thyroid stimulating hormone (TSH) and calcitonin if medullary carcinoma is suspected, thyroid scan in cases of suppressed TSH, USG of thyroid to look for features of malignancy and FNAC in suspicious nodules as well as nodules more than 1 cm. USG characteristic of malignancy in thyroid nodules include hypoechogenicity, absence of cystic lesion, tall more than wide, presence of calcification and invasion to adjacent organs¹³.

In our case, her thyroid function test was normal and the FNAC revealed only colloid nodule. The patient was planned for a 6-monthly follow up with neck USG in view of assessing the size

and symptoms. Apart from that, papillary cancer has been reported to occur in 5 to 14% of cystic lesions¹⁴. So if such changes happen on the next follow up as well as presence of compressive symptoms, surgical intervention should be considered.

Conclusion

Though pediatric solitary thyroid nodule is rare, a detailed evaluation which includes thyroid function test, ultrasonography and fine needle aspiration cytology must be done to rule out thyroid

malignancy before conservative management can be considered.

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