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Case Report

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Papillary Carcinoma of Thyroid in a Child, Rare but Aggressive: A Case Report

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ABSTRACT

Thyroid nodules are uncommon in childhood than adult population. Thyroid malignancies are more common in the detected nodules comprising 22-26% in paediatric age groups in comparison to 5-15% of the adult population. In addition, thyroid malignancies are more aggressive in children than in adults with nodal and pulmonary metastasis. Despite having more recurrent rate than in the adults, survival seems to be better. We are presenting a case of an 11-year-old child presented to our clinic with swelling of neck for 3 months duration. Diagnosis was made through ultrasound, computed tomography and histopathological analysis. Therefore, diagnosing a case with papillary carcinoma of thyroid in children is very challenging and demanding the expertise. Paediatric radiologist could play a vital role in diagnosis which leads to proper management.

Keywords
Children, computed tomography, papillary carcinoma, ultrasound

INTRODUCTION

Thyroid nodules are uncommon in childhood than adult population comprising only 1-1.5% of paediatric age groups. Thyroid malignancies are more common in the detected nodules comprising 22-26% in paediatric age groups in comparison to 5-15% of the adult population.[1,2] In addition, thyroid malignancies are more aggressive in children than in adults with nodal and pulmonary metastasis. Here, we are presenting a case of an 11-year-old child presented with swelling on neck.

CASE PRESENTATION

An 11-year-old female child presented in Paediatric Out-Patient Clinic with painless swelling on anterior and right lateral aspects of neck noticed since 3 months. The swelling was progressive for 3 months. There was no significant pass medical history. Ultrasound neck was advised for the initial workup. Ultrasound of neck showed diffuse heteroechoic echotexture of thyroid with diffusely scattered tiny calcifications (shown in the figures 1a and 1b) along with enlarged bilateral level IV nodes (shown in figure 1c).

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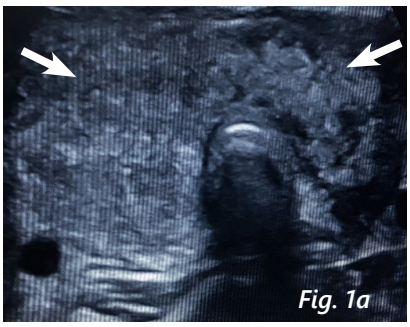
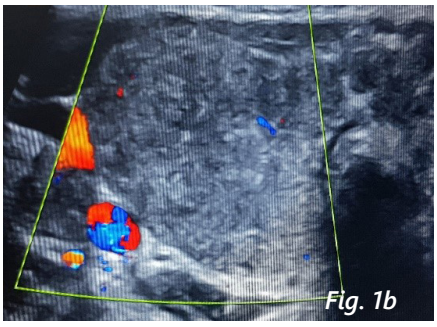




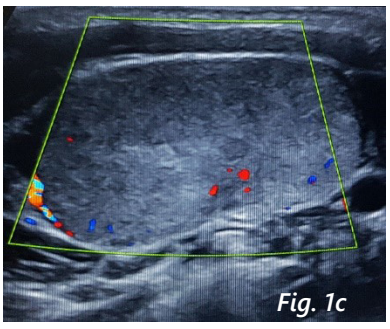
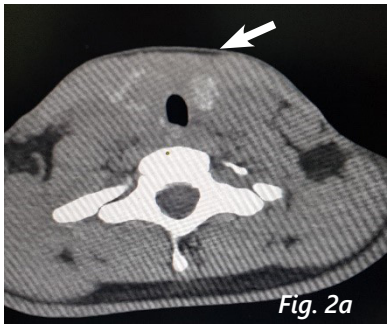


Figure 1a and 1b. Ultrasound of neck shows diffuse heteroechoic echotexture of thyroid with diffusely scattered tiny calcifications (white arrows). The right lobe appears larger than the left. No evidence of increased vascularity. Figure 1c. Ultrasound with colour Doppler shows the enlarged node in right level IV of the cervical region. The node appeared purely solid with no calcifications. Similar node appear in left level IV.



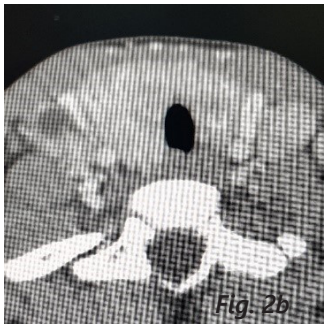
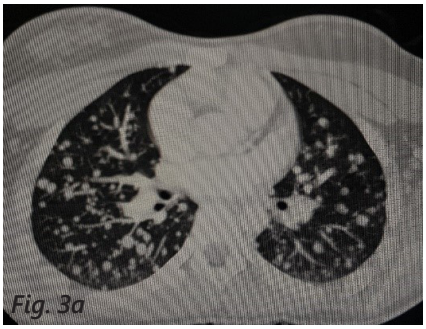


Figure 2a. The axial non-contrast CT shows scattered calcifications the thyroid parenchyma (L>R). Figure 2b. Axial contrast CT shows heterogeneous enhancement of both lobe of the thyroid without any mass like focal lesions. The enlarged thyroid gland especially the right lobe is displacing the right common carotid postero-laterally. Enlarged homogeneously enhancing node in bilateral level IV (white arrows).



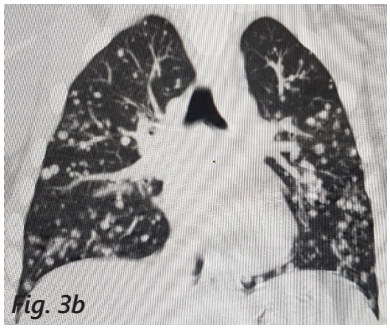


Figure 3a and 3b. Lung window images from CECT shows diffuse randomly distributed micro-nodules in the bilateral lungs.

Then, the child was referred for the histopathological analysis of the thyroid parenchyma and the cervical nodes. After the histopathology, our final diagnosis of papillary carcinoma of thyroid with metastatic cervical nodes was made. Contrast-enhanced computed tomography (CECT) neck along with chest was further done for staging of the disease. CECT showed metastatic bilateral level IV cervical nodes along with metastatic micro-nodules diffusely scattered in bilateral lung fields (Figure 3). However, there were no mediastinal nodes. The child underwent total thyroidectomy with lymph node dissection. Follow up is awaited.

DISCUSSION

The differentiated thyroid carcinoma accounts for 0.5-3% of all the malignancies in the paediatric population. In addition, the child who received the radiotherapy, children with pre-existing thyroid diseases and children with MEN syndromes are vulnerable to thyroid malignancies.[1,2] In children

of age 0-4 years, medullary carcinoma is more common than papillary carcinoma. The incidence of papillary carcinoma increases with age in the paediatric population.[3]

The volume of tumour at presentation is larger in children at first diagnosis compared to adults. Early involvement of the thyroid capsule is seen in children because of the smaller size. Multi-centricity is also more common in children, especially in papillary carcinoma. Nodal and distant metastasis is also more commonly seen at presentation in the paediatric population suggesting the aggressive course in this age group similar to our case. In addition, diffuse hyperechoic non-mass like lesions of the thyroid is present in a less common diffuse sclerosing variant of papillary carcinoma similar to our case (Image 1a and 1b).[4] Other differentials could be lymphoma and thyroiditis. The most common sites for metastasis are the lungs, bone and brain. Imaging is important to identify the severity of involvement of the thyroid parenchyma, solitary or multi-centricity, extra-thyroidal extension and nodal or distant metastasis. These entities are very much important in planning treatment depending on the stage of the tumour.[1,2]

Ultrasound is the first go-to modality for neck swelling in children. Ultrasound characterizes the nodule in terms of number, echogenicity, echotexture, calcifications, margin, capsular invasion, vascularity and cervical nodes. Hypo-echogenicity, irregular outline, sub-capsular location, type III nodular vascularization (peri-nodular and intra-nodular) correlates with maximum possibility for thyroid malignancy in children.[5] Fine needle aspiration cytology (FNAC) remains the mainstay for the diagnostic workup for thyroid nodules in children. Computed tomography (CT), Magnetic resonance imaging (MRI), Positron Emission Tomography (PET-CT) are not routinely performed in detected thyroid nodules. However, in suspicion of extra-thyroidal extensions like detection of cervical nodes, adjacent organ invasion or airway compromise as well asmetastatic work-up CT/MRI play an important role regarding staging and planning the best possible treatment.[6]

The differential diagnosis for our case are thyroid lymphoma and hashimoto's thyroiditis. Primary thyroid lymphoma is rare and is more common in elderly. It shows diffuse hypoechoic echotexture of thyroid gland or hypoechoic mass in ultrasound in contrast to our case showing diffuse enlargement and heterogeneous echotexture. The metastatic nodes appears bulky and hypoechoic without calcifications which is similar to our case. Therefore, differentiating lymphoma with imaging alone is very challenging. Thyroiditis commonly presents with diffuse involvement of the gland with heterogeneous echotexture. However, the nodes do not appear as bulky as in cases of lymphoma.

The therapeutic approach for the treatment of thyroid malignancy is similar to adults and is based on the three modalities; surgery, thyroid hormone replacement or radioiodine treatments. Despite having a more recurrent rate than in adults, survival seems to be better. However, in some literature, a child less than 10 years are said to have the worst prognosis than the older and pre-pubertal age groups.[1]

CONCLUSION

Diagnosing a case with papillary carcinoma of the thyroid in children is very challenging and demands expertise. For this, a paediatric radiologist could play a vital role in diagnosis which leads to proper management.

CONSENT

Written informed consent was obtained from the patient's parents for publication of this case report.

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CONFLICT OF INTEREST

The author(s) declare that they do not have any conflicts of interest with respect to the research, authorship, and/or publication of this article.

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