ORIGINAL RESEARCH PAPER

Pathology

PAPILLARY THYROID CARCINOMA IN PEDIATRIC PATIENT- A CASE REPORT

KEY WORDS:

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Introduction-

Thyroid carcinoma is the most common endocrine malignant diseases, accounting for 06% of all pediatrics cancer. Papillary thyroid carcinoma which accounts for approximately 90% of pediatric thyroid cancer. However, pediatric papillary thyroid carcinoma is still a rare disease. Due to lack of clinical trials, treatment options remain controversial. Pediatric thyroid cancers typically present as neck masses with no associated symptoms and thus come to medical attention at widely varying stages of disease progression. In contrast to adult papillary thyroid carcinoma, pediatric papillary thyroid carcinoma tends to be more aggressive at presentation with higher incidence of multifocality, lymph node metastases and extracapsular extension.

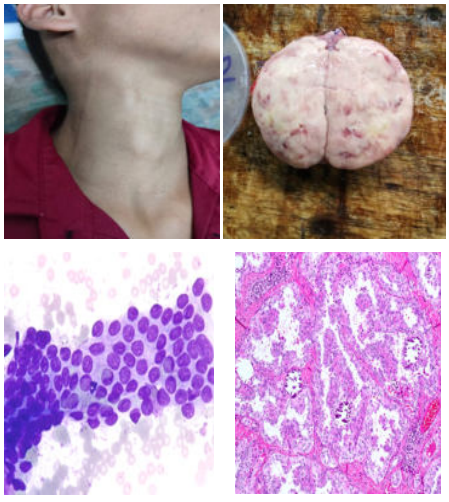
Case Report -

A 13 years old boy presented with 3-4 months history of multiple swellings in lateral aspect of neck on right side. Swellings were insidious in onset and gradually progressed in size. There was no history of fever, cough, cold, weakness, weight loss, loss of appetite and jaundice. There was no family history of thyroid cancer and irradiation. On examination, there was significant bilateral cervical lymphadenopathy and thyroid gland was palpable and firm. Largest lymph node measured 3×2 cm. Thyroid function tests were normal.

Ultrasound scan of thyroid showed diffused hypoechoic lesion on right lobe measured 2.2×1.8×0.7 cm. Suspicious for malignancy with level IIA and IIB lymphadenopathy was made by USG scan. Ultrasound scan of abdomen and chest X-ray had no significant abnormality.

Fine needle aspiration cytology was performed from thyroid gland and cervical lymph node, smears showed epithelial cells are arranged in monolayered sheets, small clusters and in discohesion, exhibiting moderate anisocytosis, overlapping and regular nuclear membrane without nucleoli. Some of the cell fragments showed papillaroid configurations. There were a few cells showing prominent intranuclear inclusions and nuclear grooves. Background was clear with a few red blood cells. There was no colloid, psammoma bodies, or lymphoglandular bodies. Cytological diagnosis of papillary thyroid carcinoma was made.

Total thyroidectomy with central compartment clearance and bilateral functional neck dissection was done. Thyroidectomy specimen measured 4.3×2.2×0.7 cms. Right lobe measured 2×2×0.7 cm, left lobe measured 2×2×0.5 cm. External surface of isthmus showed grey white nodule measuring 0.7×0.5 cm. Cut section of the left lobe showed grey white areas measuring 0.9×0.4× 0.3 cm. Cut section of isthmus showed grey white nodule which measured 0.6 cm across. Cut section of right lobe was unremarkable. A total of 16 lymph nodes were retrieved from central compartment and right and left functional neck dissection specimens. Histological sections from grey white nodule from the right lobe and isthmus showed features of papillary thyroid carcinoma. Tumor showed psammoma bodies and focal extension into perithyroid soft tissue. Eight lymph nodes showed metastasis out of 16 nodes retrieved. Parathyroids was not identified in the sections studied. Final histopathological diagnosis was papillary thyroid carcinoma—right lobe and cervical lymph node metastasis was made.



Discussion-

Thyroid cancer is rare in the pediatric population, but thyroid carcinomas occurring in children carry a unique set of clinical, pathologic, and molecular characteristics. In comparison to adults, children more often present with aggressive, advanced stage disease. Specifically, Papillary thyroid carcinoma which accounts for approximately 90% of pediatric thyroid cancer. The vast majority of these thyroid carcinoma are Papillary thyroid carcinoma (80-90%), followed by follicular thyroid carcinoma (10%), medullary thyroid carcinoma (3-5%), and rarely anaplastic thyroid carcinoma.

Risk factors include a family history and previous radiation exposure. The patient presented, however, had no identifiable risk factors. Sporadic papillary thyroid cancer represented only 1.4 % of newly diagnosed childhood carcinomas. Interestingly, the incidence among gender lines changes according to age group with males having 6:1 increased

incidence at ages 5–9, a similar incidence among males and females from ages 10–14 and a ratio more consistent with adult patients with 5:2 female to male ratio after the age 14 years. Papillary thyroid carcinoma (PTC) clearly behaves as a different clinical disease in children and adults. Children with locally advanced disease, lymph node involvement, and distant metastasis have better long term prognosis than adults.

Children with PTC can be expected to have a normal life expectancy and optimal surgery is the treatment of choice. Papillary or papillary-follicular histology has been shown to be a major risk factor associated with recurrence after surgical resection. The rate of recurrence is 35–45 % in children compared to 5–20 % in adults. Differentiated thyroid carcinomas have a more aggressive clinical behavior in young children with a reported rate of lymph node metastases ranging between 60 and 80 % and lung metastasis in approximately 20 % of the cases at diagnosis. However, despite the aggressive clinical characteristic of differentiated thyroid carcinoma in their series survival rate was 100 % after 10 years. The bilateral neck dissection specimen of our patient showed multifocal papillary carcinoma metastases, however X-ray chest was normal. Predictive factors for recurrence include younger age Diagnosis is often established with a combination of ultrasound, CT scan without contrast, fine needle aspiration cytology. In young children the positive predictive value of FNA (fine needle aspiration) is low, but in our case aspiration cytology was the initial means of diagnosis. Activation of the RET proto-oncogene through somatic rearrangements represents the most common genetic alteration in papillary thyroid carcinoma. Three main rearranged forms of RET have been described: RET/PTC and RET/ PTC3, which arise from a paracentric inversion of the long arm of chromosome 10, and RET/PTC2, which originates from a 10;17 translocation]. There is broad variability in the prevalence of RET/PTC rearrangement, due to different detection methods and tumor genetic heterogeneity.

Many studies recommended total or near total thyroidectomy as the procedure of choice for papillary thyroid carcinoma in children, the indication for total thyroidectomy being the presence of multicentric tumor occurrence and bilateral lobe involvement. We performed total thyroidectomy with bilateral functional neck dissection and central compartment clearance in our patient. Voice was normal after surgery and there was no hypocalcemia in post-operative period. The other issue in the management of children with thyroid cancers is the role and extent of neck dissection. Neck dissection is indicated for palpable metastatic neck nodes but there is no proven efficacy for prophylactic neck dissection in the absence of initial palpable or radiological disease

Conclusion

Pediatric papillary thyroid cancer can have a very aggressive initial presentation including a high rate of local lymph node metastases and relatively high rate of distant metastases compared to adult patients. Although a lifetime recurrence rate is high, the mortality rates are still low. Palpable thyroid abnormalities in children should be viewed with suspicion and worked up for possible malignancy.

Consent:

Written informed consent was procured from the patient.

Conflict of Interests:

No conflict of Interests.

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