

Case Report

A 4 year old male child suffering from papillary carcinoma of thyroid with right sided metastatic neck node

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Abstract

Thyroid carcinoma accounts for 1-1.5% of all childhood malignancies. These cancers are rare at ages younger than 5 years and more rare in male children. In this case report a 4 years old male child presented with right sided upper cervical neck mass for 11 months and treated as a branchial cyst. After histopathological report and further investigation he was finally diagnosed as papillary carcinoma of thyroid with metastatic right sided neck-node.

Keywords: *Papillary carcinoma; branchial cyst*

Introduction

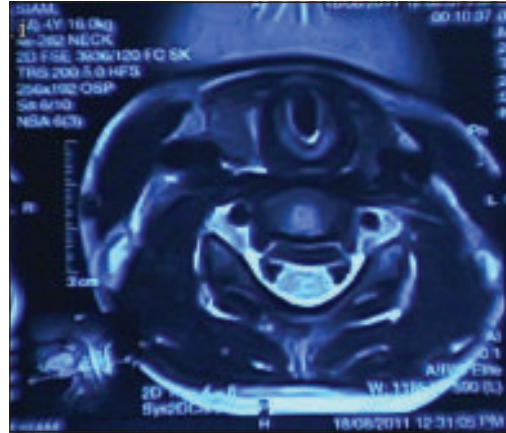
Thyroid cancer, the most common pediatric endocrine neoplasm, represents 1-1.5% of all pediatric malignancies and 5-5.7% of malignancies in the head and neck. Only 5% of all thyroid cancers occur in children and adolescents¹. The peak age is between 7 to 12 years of age². It is much more common in females with a ratio of 4:1³. Only 1 in a million children younger than age 10 years will get thyroid cancer.

Case report

A 4-years old male child presented to a medical center in Mymensingh with the complaint of right sided upper cervical mass for 11 months. The mass was painless, gradually increasing in size, located near anterior border of upper 1/3rd of Sternomastoid muscle, not moves with deglutition or tongue movement. The child was feeding well with no history of fever, weight loss and haemoptysis. No other family members have such type of disease. On examination the mass was oval in shape, 2x2 cm in size, firm in consistency, non-tender surface smooth, mobile, free from overlying skin and underlying structures. Vital signs and other systemic examinations were normal. FNAC from Right sided neck mass showed Branchial cleft cyst. No abnormality detected in hematological profile and Chest X-ray P/A view. Then mass was excised under G/A, and send for histopathology. Metastatic papillary Carcinoma of Thyroid origin was found on histopathology.

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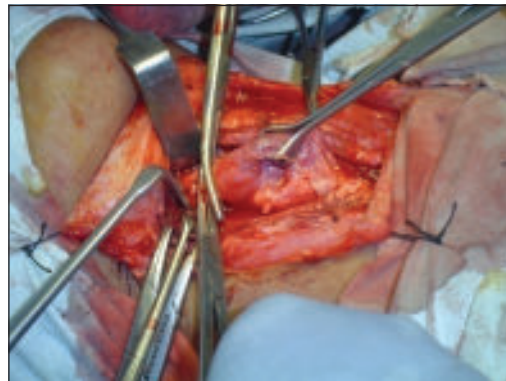
After 1 month of surgery patient came to department of ENT. No history of radiation exposure or irradiated formula feeding as a relevant cause of childhood papillary carcinoma was found. On examination we found a hard Right sided small (1cmx1cm) thyroid nodule and multiple non-tender, firm, mobile lymph-node involving II, III, IV, V cervical lymph node level. Largest one of them was 2x1 cm & smallest one 0.5x0.5 cm. Isthmus and left lobe of thyroid was found normal on palpation.

USG of Thyroid revealed Thyroid gland was normal in position. There was a solid hypo echoic nodule (10mmx9mm) in Right lobe. Left lobe was uniform. Multiple enlarged cervical lymph-nodes are seen in right-neck region. Thyroid scan with ^{99m}Tc showed – Thyroid gland is normal in size & position with uniform radio-tracer including the nodule in Right lobe. Serum T3, T4, TSH was within normal limit. Serum TG was 50.25 ng/ml (Normal 4.14-14.46 ng/ml).

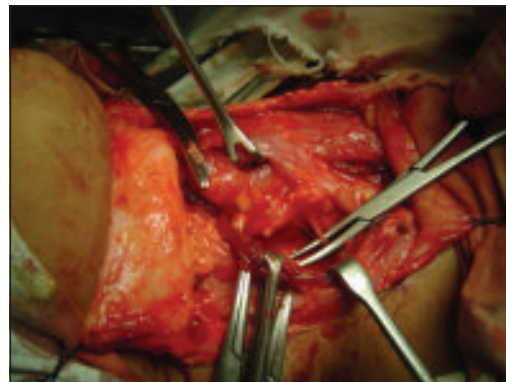
FNAC from Right sided Thyroid nodule showed papillary carcinoma.

MRI of neck (without contrast) showed enlarged Right lobe of Thyroid gland with altered heterogeneous signal intensity.

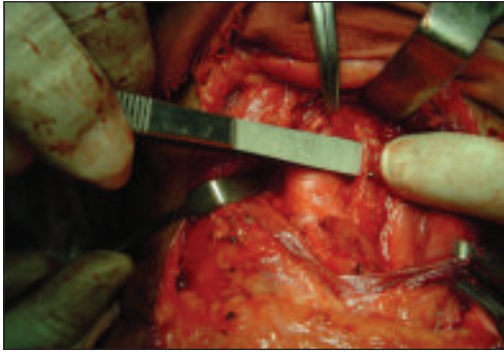
The patient underwent surgery and Right sided Hemi thyroidectomy with selective neck-dissection of Right side of neck was done. The post-operative recovery and period was uneventful.



Upper pole, Middle thyroid vein



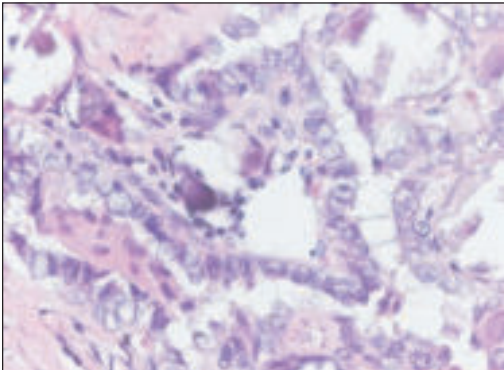
Inferior thyroid artery



Recurrent laryngeal nerve

The histopathological features confirmed papillary carcinoma of thyroid with metastasis of lymph-node.

1 week after post-operative Serum Tg level was 19.87ng/ml. Post-operative Thyroid scan & USG was done after 6 weeks of surgery which showed normal left lobe and no tracer in right thyroid bed or lymph-nodes. Presently the child is on Thyroid hormone supplementation and is disease free at 2 months follow-up.



Discussion

Thyroid cancer, the most common pediatric endocrine neoplasm, represents 1-1.5% of all pediatric malignancies and 5-5.7% of malignancies in the head and neck. Only 5% of all thyroid cancers occur in children and adolescents¹. The peak age is between 7 to 12 years of age². It is much more common in females with a ratio of 4:1³.

The possible causative factors for carcinoma of thyroid in pediatric age group is radiation (>150 cGy), average latent period is 7 year)⁴. 17% of patients had previously received irradiation to the neck⁵. But in this case there was no history of radiation exposure during intra-uterine period, childhood or taking formula milk imported from nuclear explosion area.

Genetic factor (RAS proto-oncogene in 20% papillary carcinoma of thyroid),⁶ familial (in case of medullary carcinoma) or disorder of immune system, TSH receptor activating gene mutation are also considered as the causative factors. Familial factors are autosomal dominant and as no such family history is present in this case, so this possibility can be ruled out. There may be a possibility of occurrence of congenital occult papillary carcinoma. This accounts for 0.5%- 36% of all papillary carcinomas. But the disease generally manifests at older ages.

The most common presentation is cervical lymphadenopathy (74 percent) and distant parenchymal metastases (25 percent)⁷ or firm palpable thyroid nodule with or without cervical lymphadenopathy. 6% of papillary carcinoma presents with lung metastasis or upper mediastinal lymphadenopathy. But it almost never occurs in absence of cervical lymphadenopathy. This case presented with firm palpable right cervical lymph-node followed by ipsilateral thyroid nodule.

They are usually euthyroid. Thyroid scan with ¹²³I or ^{99m}Tc usually shows parenchyma with normal uptake and one or more hypofunctioning nodules. USG provides adequate information about thyroid size or size of nodule. The single best diagnostic tool is FNAC; if unsatisfactory, excision or core biopsy is recommended⁸.

Surgery is the treatment of choice⁹. Total, subtotal or Hemi- thyroidectomy is

recommended along with or without selective neck dissection. No clinical trials have established whether total thyroidectomy with lymph node dissection is better than subtotal thyroidectomy¹⁰. While most authors agree that the treatment of choice for occult papillary carcinoma (less than 1.5 cm in diameter) is hemithyroidectomy and isthmusectomy followed by thyroid stimulating hormone (TSH) suppression¹¹. There is an extremely low incidence of clinical carcinoma in the opposite lobe after properly performed hemithyroidectomy in patients maintained on long-term TSH suppression^{12,13}. Surgeons preferring a lesser resection hold that differentiated thyroid carcinoma in children is an indolent disease and that survival is not clearly related to the extent of gland removal¹⁴. Moreover chances of recurrent laryngeal nerve injury and hypocalcaemia is more in total thyroidectomy.

Considering the age, pre-operative assessment, per-operative findings and post-operative complications we did Right sided hemi-thyroidectomy with ipsilateral selective neck-dissection followed by thyroid stimulating hormone (TSH) suppression.

In follow up, thyroglobulin has been shown to be a useful marker for residual or metastatic thyroid cancer. Plasma level should be measured yearly and an elevated value should raise the suspicion of recurrence¹⁵. The overall survival in non-medullary thyroid cancer in pediatric age group is 98%¹⁶.

References

1. Chaukar DA, Rangarajan V, Nair N, et al. Pediatric thyroid cancer. *J Surg Oncol*. Nov 1 2005; 92(2):130-3. [Medline].
2. Zimmermann D, Hay ID, Gough IR, et al. Papillary thyroid. Cancer in children and adults: long term follow up of 1039 patients. Conservatively treated at one institution during three decades Surgery 1988; 104:1157.
3. George G Browning, Martin J Burton, Ray Clarke, John Hibbert, Nicholas S Jones, Valerie J Lund, Linda M Luxon, John C Watkinson. Scott-Brown's Otorhinolaryngology, Head and Neck Surgery.
4. Klugbauer S, Pfeiffer P, Gassenhuber H, et al. RET. Rearrangements in radiation induced papillary thyroid carcinoma: Genomics 2001; 73:149-160. Back to cited text no.
5. Viswanathan K, Gierowski TC, Schneider AB. Childhood thyroid cancer. Characteristics and long-term outcome in children irradiated for benign conditions of the head and neck. Archives of Pediatrics and adolescent Medicine. 1994; 148:260-5.
6. Lemoine JA, Mayall ES, Wyllie FS, et al: High frequency of ras oncogene activation in all stages of thyroid tumourigenesis. *Oncogene* 1989; 4:159-164. Back to cited text no.
7. Newman KD, Black T, Heller G, Azizkhan RG, Holcomb 3rd GW, Sklar C et al. Differentiated thyroid cancer: determinants of disease progression in patients <21 years of age at diagnosis: a report from the Surgical Discipline Committee of the childrens Cancer Group. *Annals of surgery* 1998; 533-41. A study looking at a very large cohort of children and adolescents with differentiated thyroid carcinoma.
8. Miller JM. Evaluation of thyroid nodules: accent on needle biopsy. *Med Clin North Am* 1985; 69:1603. Back to cited text no.
9. Weber CA, Clark OH. Surgery for thyroid disease. *Med Clin North Am* 1985; 69:1097. Back to cited text no. 11

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10. Ceccarelli C, Pacini F, Lippi F, et al. Thyroid cancers in children and adolescents. *Surgery* 1988;104:1143-1148.
 11. Hubert JP, Kiernan PD, Beahrs OH, McConahey WM, Woolner LB. Occult papillary carcinoma of the thyroid. *Arch Surg* 1980;115: 394-8.
 12. Tollefsen HR, Shah JP, Huvos AG. Papillary carcinoma of the thyroid: recurrence in the thyroid gland after initial surgical treatment. *Am J Surg* 1972; 124: 468-72.
 13. Crile G Jr. Survival of patients with papillary carcinoma of the thyroid after conservative operations. *Am J Surg* 1964; 108: 862-6.
 14. La Quaglia MP, Corbally MT, Heller G, et al. Recurrence and morbidity in differentiated thyroid carcinoma in children *Surg* 1988;104:1149-1156.
 15. Kirk JM, Mort C, Grant DB, et al. The usefulness of serum thyroglobulin in the follow up of differentiated thyroid carcinoma in children. *Med Pediatr Oncol* 1992; 20: 201-208.
 16. Beierwaltes WB, Nishiyama RH, Thompson NW, et al. Survival time and "cure" in papillary and follicular thyroid carcinoma with distant metastases: statistics following university of Michigan therapy. *J Nucl Med* 1982; 23: 561.