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BMH Medical Journal 2014;1(4):79-82 **Case Report**

Papillary Carcinoma Thyroid in a Seven Year Old Child: A Case Report

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Abstract

Papillary carcinoma is not a very common malignancy among young children. It's biological behaviour and prognosis is different from that of adults. We report a case of papillary carcinoma thyroid in a seven year old child, with a discussion on the mode of presentation and prognosis.

Key Words: Papillary carcinoma, Thyroid

Back ground

Thyroid enlargement and nodules are very uncommon in children. But when present, the chance of malignancy among such nodules is very high. The most common histological type associated with childhood thyroid cancer is papillary carcinoma. It is more common in girls than boys. Thyroid cancers in children behave differently as compared to that of adults. Despite an increased incidence of lymph node and distant metastasis at presentation, the prognosis is better in younger patients. Importantly, thyroid surgery in children is associated with more complications compared to the elderly.

Case report

We present a case report of a 7 year old girl, who presented with a swelling in the anterior aspect of the neck that was first noticed about 18 months back. Fine needle aspiration cytology of the swelling was suggestive of papillary carcinoma thyroid. There was no family history of any cancers, nor a history of exposure to radiation.

On examination, there was diffuse enlargement of both lobes of thyroid gland of about 5X4 cm. Bilateral level II lymph nodes were palpable (each measuring 2X1 cm). CT evaluation showed diffusely enlarged thyroid gland with multiple calcific foci in both lobes. Right lobe was measuring 25x16x41mm and the left lobe 25x18x53 mm. There were also a few enlarged lymph nodes at left level IV. Level II nodes were enlarged on both sides.

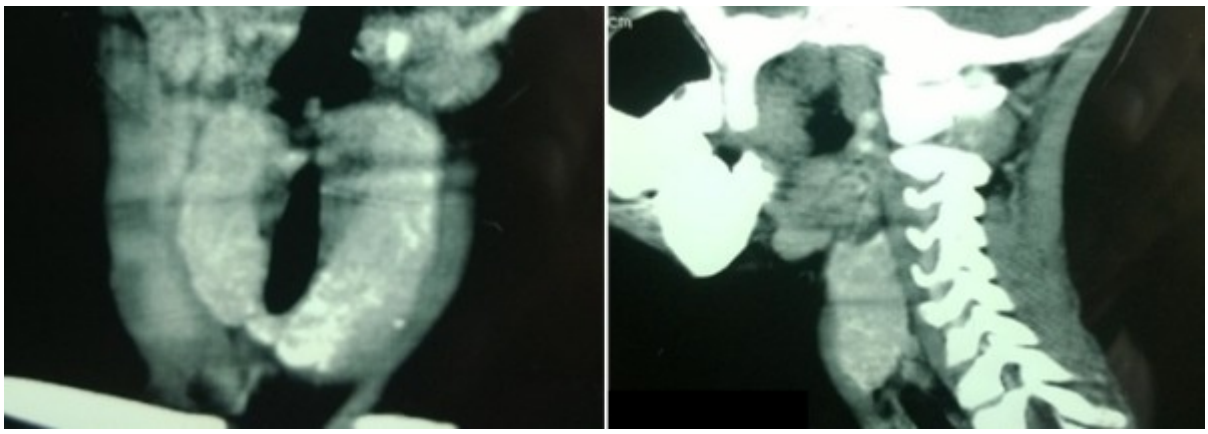

Figure 1: Calcification in both lobes of the thyroid gland

Both vocal cords were mobile during indirect laryngoscopy.

She was treated with Total thyroidectomy with central compartment clearance and bilateral selective neck dissection. At exploration, both lobes of the thyroid gland were diffusely enlarged. There were significantly enlarged lymph nodes in level VI and bilateral level II, III, IV and V. Bilateral recurrent laryngeal nerves and parathyroid glands were identified and preserved.

Post-operative period was uneventful. She did not have any signs and symptoms of hypocalcaemia. Her serum calcium values were also normal (8.3 mg/dl).

The histopathology report showed papillary carcinoma thyroid diffusely involving both lobes and isthmus of the thyroid gland, with extensive psammomatous calcifications and minimal fibrosis. Extra capsular spread was noted. Sixty seven lymph nodes sampled; twenty two of which showed metastasis from papillary carcinoma with extra nodal spread. Other nodes showed reactive changes only.

She was started on suppressive doses of thyroxin. After six weeks, Thyroxin was stopped for a period of 4 weeks to allow TSH to rise. Radio-iodine ablation was done and there was no uptake in lungs or bones. Serum Thyroglobulin was 0.4 ng/ml (0.7-21) and serum anti thyroglobulin antibodies were 2276 iu/ml (5-15). The elevated serum anti- thyroglobulin antibodies suggest that the serum thyroglobulin values are not reliable for follow up of this patient. This is because even if there is recurrence or distant metastasis, the Tg levels will be low due to the effect of these antibodies. The presence of anti-Tg antibodies , which occur in 25% of thyroid cancer patients and 10% of general population , will falsely lower the serum Tg levels. [7]

Discussion

Thyroid cancer among young children is an uncommon disease, even though there is a recent trend towards an increased incidence. It is still rarer among those aged less than 10 years. In an article by Hogan et al, 1753 paediatric patients with thyroid cancer were studied; only 5% were found to be less than 10 years of age. Papillary carcinoma is the most frequent histological subtype of childhood thyroid cancers. Differentiated thyroid cancer in children contributes to 3% of all differentiated thyroid cancer as reported by Tata Memorial Hospital [1-3].

The incidence is higher among girls than in boys. In the series by Hogan et al, girls outnumbered boys by a ratio of 4:1. In another study by Devendra et al, the female to male ratio was 2.3:1. But in the pre-pubertal age group the ratio was 1.5:1; compared to a ratio of 3:1 in the age group between 13 and 17 years. [2,3]

In a study conducted by Fassina et al, 16 (28%) patients had family history of thyroid cancer and 43 (76.8%) had papillary carcinoma, 9 (16%) had follicular carcinoma, 2 (3.6%) had medullary

carcinoma and 3.6% had lymphoma [4].

The biological behaviour of paediatric thyroid cancer is more aggressive compared to adults. They often present with lymph nodes or with distant metastases. In the study by Devendra et al, 56% patients presented with cervical lymphadenopathy, and 19.2 % patients had pulmonary metastases. The incidence of pulmonary metastases was significantly higher in patients with lymph node involvement at presentation. Luiz Paulo et al. reported that 61 % paediatric patients had lymph node metastases and among them 24% presented with cervical lymph nodes without thyroid enlargement. Hogan et al. reported 46% patients with lymph node metastasis and 7.6% patients with distant metastases. Zimmerman et al reported an increased incidence (6.9%) of distant metastases in children as compared to (2.1%) in adults. They also reported increased incidence of postoperative nodal recurrence in children (30%) against 7% in adults. [1,3,5]

The impact of the presence of lymph node metastases at presentation on the recurrence rates and survival is not very clear. A match pair analysis from Memorial Sloan Kettering showed that the presence of cervical lymph nodes had no impact on recurrence and survival in young patients. Hogan et al reported that patients with distant metastases had worse outcome compared to patients with regional disease ($p< 0.0001$). [2,6]

The patient in our study had lymph node metastasis at presentation. Cervical lymph nodes were palpable on both sides of the neck. In the final histopathological examination twenty two lymph nodes showed metastatic disease. However, she did not have any distant metastases.

According to ATA guidelines, the treatment of differentiated thyroid cancer is by total thyroidectomy with neck dissection, followed by I131 ablation. The patient has to be supplemented with suppressive dose of thyroxin. The patient needs to be followed up by Thyroglobulin estimation, Iodine diagnostic scanning and ultrasonography.[7]

Total thyroidectomy and bilateral neck dissection and central compartment clearance was done for our patient. She was then started on thyroxin for TSH suppression. Post-operatively 6 weeks later, Thyroxin was stopped for 4 weeks and Radioiodine ablation was done . A pre-treatment RAI scan was not done as the surgery findings and HPR indicated RAI ablation. According to ATA guidelines, pre-treatment RAI scan can be avoided because of its low impact on the decision to ablate and due to the concerns over I^{131} induced stunning. In the post ablation scan, there was no residual thyroid tissue and no regional or distant metastases . [7]

Total thyroidectomy in children are associated with more complications compared to adults. Luiz Paulo et al reported transient hypocalcemia in 24% and permanent in 16% of patients. The other well known complications are recurrent laryngeal nerve paralysis and post-operative bleeding and haematoma [5].

Although the presentation in paediatric thyroid cancer is more aggressive, the prognosis is excellent. Male gender, non-papillary tumour and distant metastasis are poor prognostic factors in case of thyroid cancer in children. Hogan et al reported mean overall survival of 30.5 years and a mean disease specific survival of 31. [5] years. The mean overall survival was longer in females. McGregor et al reported from the Tumour registry of the Duke Comprehensive Cancer Center, a 100% 25 year survival for 56 patients. [2,8]

Conclusion

Though the incidence of thyroid cancer in paediatric population is generally low, recent trends show that it is on the rise. Despite aggressive presentation with lymph nodal disease and distant **Santhosh**

metastases, but prognosis appears to be excellent. Total thyroidectomy with dissection of involved neck nodes, followed by I^{131} ablation is the treatment recommended. The patient has to be kept under regular follow up with TSH suppression by thyroxin, and serial thyroglobulin estimation and radioiodine scanning.

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