Case report

“PAPILLARY CARCINOMA OF THYROID IN A SIXTEEN YEAR OLD PATIENT: AN INTERESTING CASE REPORT”

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Abstract: Papillary carcinoma of thyroid is an uncommon malignancy among young children. Its biological behaviour and prognosis is different from that of adults. We present a case report of a 16 years old child presented with swelling in midline of neck. On fine needle aspiration biopsy (FNAC) papillary carcinoma of thyroid was detected and the patient underwent subtotal thyroidectomy followed by radioiodine ablation and thyroid supplementation. The case is being reported on account of its rarity.

Key Words: Papillary carcinoma, Thyroid.

Introduction: Thyroid enlargement and nodules are very uncommon in young age group. But when present, the chance of malignancy among such nodules is very high. 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.

Case Report: We present a case report of a 16 year old girl, who presented with a swelling in the midline of the neck that was first noticed about 6 months back. The swelling was painless and almost pea size initially but had rapidly increased in size in the past few months. The swelling was 4 x 3 cm in size, mobile, firm in consistency, smooth surfaced and it moved with deglutition. The ultrasonographic examination (USG) of thyroid showed a hypoechoic mass arising from the right lobe of thyroid almost 3×2 cm in size. Rest of the thyroid gland was normal. No cervical lymph node was palpable. Fine needle aspiration cytology of the swelling showed; flat sheets,[Fig-1] three-dimensional tissue fragments and papillary tissue fragments with a fibrovascular core and intranuclear cytoplasmic inclusions (orphan-annie eye inclusions).[Fig-1,2] All these features were suggestive of papillary carcinoma thyroid. The Serum T3, T4, TSH were within normal limits. Chest X-ray, hematological profile, liver and renal function tests were within normal limits. The girl underwent surgery and a sub total thyroidectomy was done. The post operative period was uneventful. The excised specimen measured 3×2 cm. The histopathology section showed presence of numerous branching papillae with fibrovascular core, ground glass nuclei and few psammoma bodies could be found in the fibrous stroma; all these features gave
the definitive diagnosis of papillary carcinoma of thyroid [Fig-3]. However the capsule was not invaded. Post operative thyroid scan was done after 6 weeks of surgery which showed remnant of thyroid tissue. No other metastatic thyroid tissue was detected. Presently the child is on thyroid hormone supplementation and is disease free at 2 months follow up.

**Discussion:** Thyroid cancer among young age group is an uncommon disease. In an article by Hogan et al, 1753; paediatric patients with thyroid cancer were studied and only 5% were found to be less than 10 years of age. Papillary carcinoma is the most frequent histological subtype of thyroid cancers. 70% of cases of papillary carcinoma of thyroid in children occur below the age of 7 years[1]. Differentiated thyroid cancer in young age contributes to only 3% of all differentiated thyroid cancer as reported by Tata Memorial Hospital in India[2-4]. The incidence is higher among girls than in boys. In a series by Hogan et al, girls outnumbered boys by a ratio of 4:1[3]. 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[4].

The biological behaviour of thyroid cancer in young people is more aggressive compared to adults. They often present with lymph node involvement or with distant metastases. In a 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[4]. Luiz Paulo et al. reported that in their study 61% of young patients had lymph node metastases and among them 24% presented with cervical lymph node enlargement and no thyroid enlargement[5]. In another study, Hogan et al. reported 46% patients with lymph node metastasis and 7.6% patients with distant metastases[3]. 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 which was 30% against 7% in adults\cite{5}.

The causative factors for papillary carcinoma thyroid are as follows: Genetic factor (RAS proto-oncogene-20% papillary carcinoma of thyroid)\cite{6}, familial (medullary carcinoma, autosomal dominant), disorders of immune system and TSH receptor activating gene mutation. The possible causative factors for carcinoma of thyroid in young age group is radiation (>150 cGy) with an average latent period of 7 years. In our case no family history of thyroid cancer or history of radiation exposure was present in this case. There may be a possibility of congenital occult papillary carcinoma which accounts for 0.5%- 36% of all papillary carcinomas. But the disease generally manifests at older ages.

On investigation the results of thyroid functions usually confirm euthyroidism. Thyroid scan with 123I or 99mTc 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 test is FNAC and if found unsatisfactory, excision or core biopsy is recommended\cite{7}.

Surgery is the treatment of choice. Total or subtotal thyroidectomy is recommended. No clinical trials have established whether total thyroidectomy with lymph node dissection is better than subtotal thyroidectomy. In our case the child underwent subtotal thyroidectomy followed by radioiodine ablation and thyroid supplementation. Total thyroidectomy in young age is associated with more complications compared to adults. Luiz Paulo et al reported transient hypocalcemia in 24% and permanent in 16% of his patients. The other well known complications are recurrent laryngeal nerve paralysis and post-operative bleeding and haematoma\cite{5}.

Although the presentation of thyroid cancer in young age 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 young age. Hogan et al reported mean overall survival of 30.5 years and a mean disease specific survival of 31 years\cite{5}. The mean overall survival was longer in females. McGregor et al. reported from the Tumour Registary of the Duke Comprehensive Cancer Center; a 100% 25 year survival for 56 patients of his study\cite{3,8}.

**Conclusion:** Though the incidence of thyroid cancer in young population is generally low, recent trends show that it is on the rise however the prognosis appears to be excellent. Total thyroidectomy with dissection of involved neck nodes, followed by I\textsuperscript{131} ablation is the treatment recommended. TSH suppression with thyroxin is recommended postoperatively. The patient has to be regularly followed with serial thyroglobulin estimation and radioiodine scanning.

**References**


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