



CASE STUDY: RARE CASE OF CRIBRIFORM MORULAR VARIANT OF PAPILLARY CARCINOMA OF THYROID IN PEDIATRIC AGE GROUP.

General Surgery

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ABSTRACT

Introduction: Thyroid carcinoma in pediatric age group are as such rare. Papillary thyroid carcinoma is most common amongst them. Though thyroid tumours in pediatric age group are aggressive; they have better prognosis than adults.

Materials and methods: We discuss a case of 8 years old female child of carcinoma thyroid who was operated for total thyroidectomy and bilateral neck dissection.

KEYWORDS

INTRODUCTION :

In general thyroid malignancy in children are rare. Thyroid malignancy in pediatric age group generally presents as swelling in neck.

Papillary thyroid carcinoma is the most common histological variant of thyroid malignancy found in pediatric age group which approximately constitutes 85%- 90% [1].

From 1975 to 2012, the incidence of this disease increased from 4.8 to 14.9 per 100,000.[2]

Papillary carcinoma of thyroid is aggressive in pediatric age group as compared to adults and have high chances of nodal metastasis. Almost 10% -20% patients at presentation have distant metastasis and 60%-80% patients have regional nodal metastasis.[3] they are also associated with higher incidence of multifocality, lymphnode metastases and extracapsular extension. despite these features prognosis is better in children than adults.

Researchers postulate that thyroid carcinomas in the pediatric population present a higher grade of differentiation and a better response to adjuvant treatment (radioactive iodine followed by suppressive therapy with L-thyroxine).

Female to male ratio is 1.5:1 under 15 years of age.

Thyroid ultrasonography and fine-needle aspiration biopsy are key preoperative diagnostic tools in thyroid nodule examination[4]

In pediatric age group family history of thyroid disease and radiation exposure are very important factors for consideration.[5]

CMV-PTC may develop in patients with familial adenomatous polyposis (FAP) or may be a sporadic tumor. The cribriform-morular variant (CMV) of PTC is a very rare subtype of PTC that was first described by Harach et al., in 1994, in patients with familial adenomatous polyposis (FAP) and in 1999 by CameselleTeijeiro & Chan as the sporadic counterpart of FAP-associated thyroid carcinoma. The sporadic form is often solitary and in FAP-associated thyroid carcinoma is often multicentric [6,7].

The molecular mechanisms involved are mutation of the APC (adenomatous polyposis coli) gene and/or β catenin gene that activate the Wnt pathway (derived from Wingless, the Drosophila melanogaster segment-polarity gene, and Integrase-1, the vertebrate homologue) with cytoplasmic and nuclear storage of β -catenin [8].

Case report:

We report a case of 8 years old female child who came with complaints swelling over anterior aspect of neck since 6 months. Swelling was gradually increasing in size. Swelling was more towards left side of neck.

Patient also had history of loss of appetite and was diagnosed for hypothyroidism in outside hospital for which she was receiving thyroxine supplementation.

Patient did not had complaints of dysphagia/tremors/weight loss/heat or cold intolerance.

On physical examination 5cm x 4 cm swelling was present in midline of neck extending more towards left.

Swelling was firm in consistency and moved with deglutition. A single cervical node was palpable in left anterior triangle of neck which was approximately 1 cm x 1 cm in size.

Ultrasonography of neck was suggestive of well defined iso to hypoechoic lesion with minimal vascularity and tiny calcifications within, with cervical lymphadenopathy Cytology from swelling was suggestive of follicular neoplasm of thyroid Bethesda cat 4 from outside hospital.

Bilateral vocal cords were normal on laryngoscopy. Patient was euthyroid on admission.

Patient was operated for left hemithyroidectomy and specimen was sent for histopathological examination. Histopath report was suggestive of cribriform morular variant of papillary thyroid carcinoma with capsular and vascular invasion. Tumour was focally invading skeletal muscle.

Tumour was staged as pT1b according to 8th edition of AJCC on histopath.

Further management plan of completion thyroidectomy with bilateral neck dissection was decided.

Before that patient was evaluated by colonoscopy to rule out FAP which came negative for FAP.

All parathyroid glands were preserved during surgery.

After completion thyroidectomy and neck dissection on histopathology 4x2.5x1.2 cm right thyroid specimen was received along with 34 left side lymphnodes and 16 right sided lymphnodes and bilateral strap muscle margins. It was again suggestive of cribriform morular variant of PTC.capsular invasion was present .vascular invasion was not present. No evidence of metastasis in any of lymphnodes.

Post operative stay of patient was uneventful. Patient did not develop any signs and symptoms of hypocalcemia. Post operative serum calcium level was 10.5 mg/dl. Patient was not started on thyroid supplementation as patient was further planned for radio iodine uptake scan and ablation. Radio ablation done 4 weeks later to surgery.

DISCUSSION:

As such thyroid carcinomas are very rare in pediatric age group. Papillary thyroid carcinoma (PTC) is the most common variant amongst all. It occurs in association with familial adenomatous polyposis (FAP) or it can occur sporadically.

Because of strong association of FAP, our patient was subjected for colonoscopy which turned out to be normal study.

CMV-PTC is a rare neoplasm described by Harach et al., in 1994, as a particular thyroid carcinoma observed in patients with FAP sometimes preceding the diagnosis of FAP with 4–12 years before colon manifestations [9].

Mutations of *APC* gene are found in the patients with CMV-PTC associated with FAP.

FAP-associated CMV-PTC occurs almost exclusively in females.

CMV-PTC tumors are encapsulated nodules or well circumscribed and may present capsular and/or vascular invasion. Sporadic cases usually appear as isolated tumors and the forms associated with FAP are often multifocal. This variant of thyroid carcinoma is characterized histologically by a combination of cribriform, follicular, papillary, trabecular, solid and spindle cell growth patterns with morular areas.

The colloid is absent in the lumina of the cribriform areas and psammoma bodies and necrosis are not observed. morular cells are positive for Bcl-2 and negative or weakly positive for cytokeratin and β -catenin is located either in nucleus or intracytoplasmic [10]

Tumor cells can be focally positive or negative for thyroglobulin but are always positive for thyroid transcription factor-1 (TTF-1) and negative for calcitonin. Strong nuclear and cytoplasmic staining for β -catenin is the hallmark of this tumor type. Because cribriform-morular variant of PTC is the only primary thyroid tumor with nuclear and cytoplasmic positivity for β catenin, this marker should be used if there are any doubts about the histological diagnosis.

This tumor type is generally associated with a relatively indolent clinical course and good prognosis.

Generally pediatric thyroid tumours are more aggressive than adults and often presents with regional or distant metastasis. In our patient only one cervical lymphnode was palpable at first visit to hospital. For which FNAC was done : suggestive of reactive lymphadenitis. After radical neck dissection there was no evidence of lymphnodal metastasis. Patient did not develop any signs or symptoms of hypocalcemia.

CONCLUSION:

Though pediatric thyroid carcinomas are relatively aggressive ;they have a very good prognosis.

CMV –PCT have very strong association with FAP and APC gene mutation. Every patient should be evaluated for FAP by colonoscopy or genetic study.

Total thyroidectomy with bilateral neck dissection followed by radioiodine ablation is treatment of choice.

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