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Case Report

Collision Thyroid Tumours: Papillary and Follicular Carcinoma a rare Collision

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ABSTRACT

Collision tumours are very rare and comprise components of varied behavior, treatments, and prognosis. The coexistence of histologically different malignancies in thyroid gland poses a diagnostic and therapeutic challenge in the absence of clearly defined guidelines. We present a case of collision thyroid tumor with co-occurrence of Papillary and Follicular thyroid carcinomas where Follicular thyroid carcinoma was diagnosed on histopathology following lobectomy whereas Papillary carcinoma was diagnosed in the other lobe after completion thyroidectomy.

Keywords: Collision tumor, Papillary thyroid carcinoma, Follicular thyroid carcinoma

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INTRODUCTION

The commonest endocrine malignancy globally is thyroid carcinoma, comprising 1–5% of all carcinomas in females and under 2% in males.[1] The recent past has seen a strident escalation in the incidence of thyroid malignancies globally.1 Multifocal differentiated thyroid malignancies do occur but the simultaneous existence of more than one histologic type of malignancy is extremely uncommon.[1] The typical patterns of these collision tumors of the thyroid include combinations of Papillary with Medullary carcinoma.[2] or Papillary with Squamous cell carcinoma.[3] The rarity of these tumors can be gauged from the fact that the first case of collision thyroid tumor was reported in 19851 and exceedingly rare collision of papillary and follicular thyroid carcinoma was reported as recent as 2013.[4] Since then, only a few cases of collision tumors of papillary and follicular thyroid carcinomas have been reported in the English literature.[5] As per our research, this is the first case of collision thyroid tumor being reported from Pakistan.

CASE REPORT

A 55-year-old woman presented to the ENT department with long-standing swelling in front of her neck. The swelling had progressed over the years without any symptoms but now she had developed difficulty in swallowing and difficulty in breathing on lying flat. She had no symptoms related to either hyper or hypo-functioning thyroid gland. Examination revealed a middle-aged lady with stable vital signs and no significant findings on systemic examination. Local examination revealed asymmetrically enlarged thyroid gland with bilateral palpable nodules more prominent on the left side, with no retrosternal extension, bruit or signs of thyroid malfunction. Her thyroid function tests were normal, and ultrasonography of neck revealed enlargement of thyroid lobes with bilateral nodules. Largest of two nodules on left side measured 3 x 1.68 cm and largest nodule on right side measured 1 x 1cm. The large nodule on left was labelled as TIRAD III. Her thyroid scan had suspicion of thyroiditis. Fine needle aspiration cytology of TIRAD III nodule revealed Atypia of undetermined significance (Bethesda III). She had no comorbidities apart from being hypertensive. She was counseled about the disease and treatment options i.e. lobectomy, total thyroidectomy, and repeat FNAC. She opted for left lobectomy. She was assessed by Anesthesiologist and after being declared fit for surgery underwent left lobectomy and isthmusectomy under general anesthesia. She had an uneventful post-operative period. Her histopathology came out to be Follicular carcinoma thyroid with capsular and vascular invasion as shown in Figure 1 and 2. Size of the tumor was 4.1 x 2 x 2 cm. Background thyroid showed Hashimotos' thyroiditis. It was staged as pT3aNxMx.

She was counseled about the disease and the way forward to completion thyroidectomy. She agreed and underwent completion thyroidectomy. Histopathology examination of the right thyroid lobe

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revealed Papillary carcinoma thyroid, as shown in Figures-3 and 4. The tumor size was 1.8x 1.7 cm.

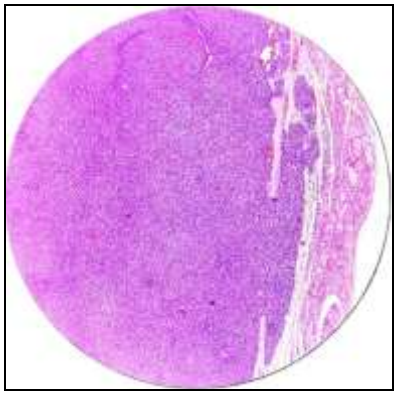

Figure-1: Capsular invasion in Follicular carcinoma thyroid

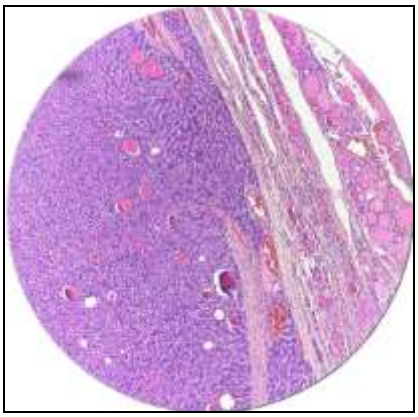

Figure-2: Higher Power Showing Capsular Invasion In Follicular Carcinoma Thyroid

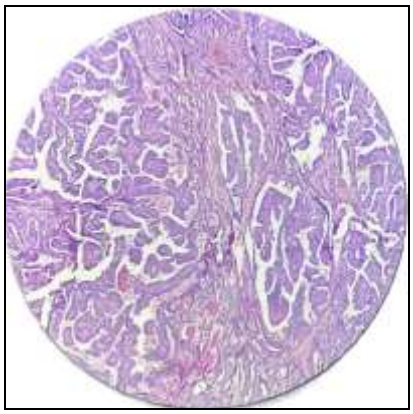

Figure-3: Well-Formed Papillae In Papillary Carcinoma Thyroid

Her post-operative scans revealed no residual thyroid tissue and no lymph node enlargement. She was referred to nuclear medical facility for the favor of radioiodine ablation. Her radionuclide scan was negative for any thyroid tissue or bone deposits. She received RAI therapy and is presently on thyroxine and regular follow up.

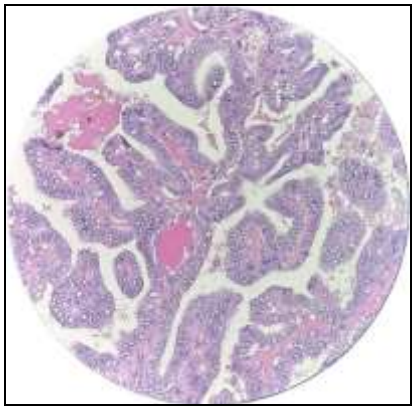

Figure-4: At High Power Papillae, Nuclear Grooving And Clearing Are Prominent

DISCUSSION

Collision tumors have been described in the oral cavity, stomach, liver, kidney, cervix, and ovary.6 The term "collision tumor" refers to the independent coexistence of histologically distinct tumors.[7] Proposed mechanisms of collision tumor generation include simple coincidence, stem cell theory, Collision theory, and Hostage theory.[6,7,8]

These tumors should be considered more aggressive with a higher risk of recurrence.[6] The commonest malignancy of thyroid is Papillary carcinoma (60–65%) followed by follicular carcinoma (15%). Collision tumor of the thyroid demonstrates female preponderance with a mean age of occurrence 53.4 years.[3]

Papillary carcinoma displays a predilection for lymphatic metastasis and Follicular carcinoma tends to metastasize hematogenously.[9] Collision of these two malignancies intensifies the risk to the patient for both lymphatic and hematogenous metastasis, converting the exposure of two cancers with good prognosis to a potentially aggressive disease with a heightened risk of recurrence.[4,9] Collision tumors of thyroid are rarely detected by fine needle aspiration cytology and diagnosis is based on post-thyroidectomy histological examination.[3] Immunohistochemistry staining defines coexisting disconnected tumors and needs inculcation in pathologic assessments. RAS oncogenes such as (NRAS, H-RAS, and K-RAS), may have a role in the pathogenesis of Follicular and Papillary thyroid collision tumors, as these mutations have been reported individually in both these tumors.[2]

Collision tumors pose a management challenge due to a number of factors including the presence of dual pathology with different aggressiveness prognosis, treatment, the rarity of disease, paucity of literature, and poorly defined guidelines. Treatment for collision tumors should depend upon the combination of primary tumors involved and each component of the combination should be treated like an independent primary. The usual pathway is surgery followed by adjuvant therapy.[2,3,7,8] Regular follow-up with repeated scanning is indispensable in the efficacious management of collision tumors of the thyroid.4 A collision of Papillary and Follicular carcinoma is a very rare event. A better understanding of different collision tumor combinations, their diagnostic approach, prognostic impact, and management strategies needs to be stressed upon. Diligent reporting, meticulous data maintenance, and processing can help devise effective management guidelines for a multidisciplinary team approach to these tumors.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

KZM & MZ: Data acquisition, data analysis, critical review, approval of the final version to be published.

JA & TRM: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

AH: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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