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Case Reports

Tumor-to-tumor Metastases: Papillary Renal Cell Carcinoma into A Papillary Thyroid Carcinoma: A Case Report

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Abstract

Thyroid malignancies are commonest endocrine malignancy. It can be primary, can be secondary also. Though secondary thyroid malignancies are rare it happens sporadically from kidney, skin, breast and head-neck tumor. Here we described a case of metastatic papillary thyroid carcinoma. This case was diagnosed as a case of papillary cell carcinoma of left kidney 18 months back, underwent radical nephrectomy and received a course of Tyrosine Kinase Inhibitor also and remain symptom free for one year. Then presented to us with thyroid swelling along with cervical lymphadenopathy.

Key words: *Papillary carcinoma, thyroid gland, renal cell carcinoma, thyroglobulin, tyrosine kinase inhibitor*

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Introduction

Amongst the highly vascularized organs in the human body thyroid gland is one of them. One can expect frequent metastasis in thyroid gland due to its vascularity. But metastasis to thyroid gland is very rare.[1-2] If it is found then kidney is the most common primary site. Other primary sites from where metastasis to thyroid gland occurs are melanoma, lung, breast, esophagus, uterus and colon carcinoma.[3-5]

Though clear cell renal cell carcinoma is the commonest primary renal malignancy papillary renal cell carcinoma is not uncommon.[6] It comprises 10-20% of all primary renal malignanc.[7] Males are more affected then females. Histologically there is papillary or tubulo papillary appearance of renal parenchyma. It may be diagnosed incidentally during imaging. It may occur in early adult hood as well as in elderly patients. Radical nephrectomy along with chemotherapy and radiotherapy is the available modalities of treatment.[7-8]

Case Presentation

A 21-year-old non-diabetic, normotensive Bangladeshi male, ex-student, hailing from Noakhali presented to the hospital in April 2021 with the complaints of multiple nodular swellings

Table 1 : *Laboratory parameters of the patient*

Name of Investigations	Result	Normal Value
Hemoglobin	9.5 gm/dL	Male: 13-18 gm/dL
ESR	95 mm in 1st hour	Male: 0-10 mm in 1st hour
WBC count	8000/mm^3	4000-11000/mm^3
	Neutrophil- 57%	Neutrophil: 40-75%
	Lymphocyte- 32%	Lymphocyte: 20-45%
Total Platelet Count	4,40,000/mm^3	1,50,000-4,50,000/mm^3
Urine R/M/E	Appearance: Clear	
	Protein: Nil	
	Sugar: Nil	
	Pus cell: 1-2/HPF	
	RBC: Nil	
Random Blood Sugar (RBS)	4.2 mmol/L	<7.8 mmol/L
SGPT	21 U/L	21-72 U/L
Serum Creatinine	0.97 mg/dL	0.7-1.3 mg/dl
Serum Albumin	3.2 g/dL	3.4-5.4 g/dL
Serum Calcium	10 mg/dL	2-10 mg/dL
Thyroid Function Test	T3 (Tri-iodothyronine): 106.47 ng/dL	82-179 ng/dL
	T4 (Thyroxine): 8.8 µg/dL	4.5-12.5 µg/dL
	TSH (Thyroid Stimulating Hormone): 6.20 µIU/mL	0.35-5.50 µIU/mL
Computed Tomography (April 2017)	Left renal mass, features suggestive of RCC (Stage II)	
Histopathology from resected left kidney	Section shows malignant tumor, composed of numerous papilla with fibrovascular core. These are lined by a single layer of anaplastic cuboidal to columnar cells with round medium sized vesicular nuclei. The fibrovascular core contains a few foamy macrophages.	
	Remarks: Papillary Renal Cell Carcinoma	
USG of Whole Abdomen (April 2018)	Multiple enlarged lymph nodes in peripancreatic, para-caval and para-aortic location, the largest one 71x38 mm.Mixed echogenic area having solid and cystic component present in left lumbar region, measuring about 78x38 mm.	
	Remarks: Abdominal lymphadenopathy with recurrence of left renal mass	

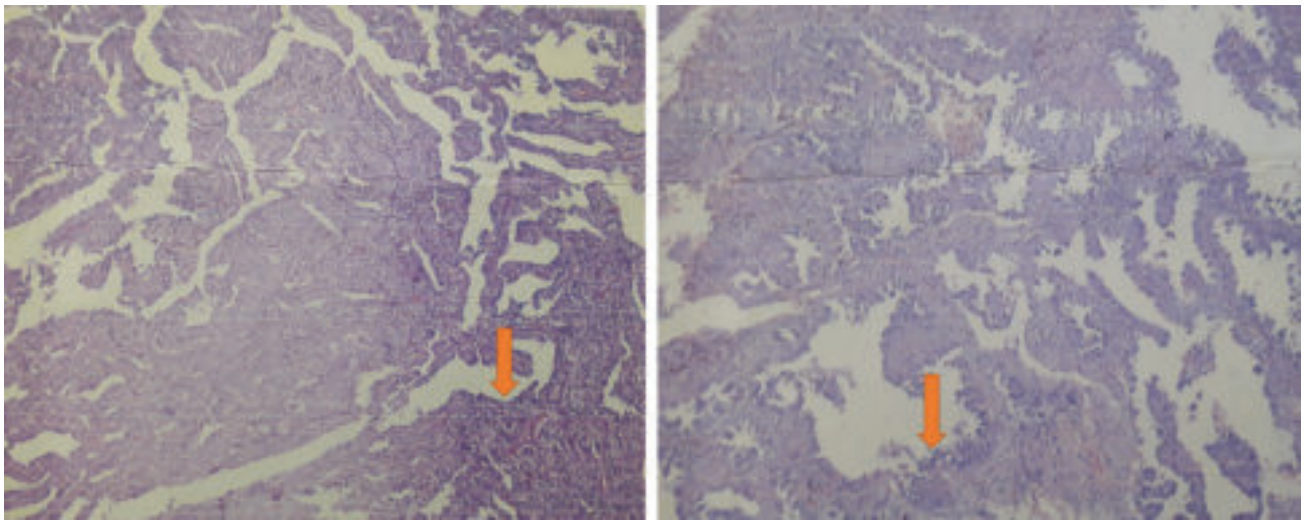

Fig.-1: *(A) Papillary renal cell carcinoma (B) : Metastatic papillary thyroid carcinoma*

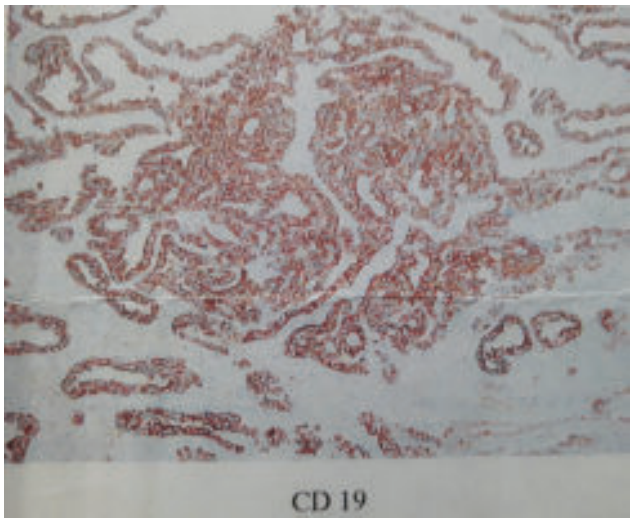

Fig.-2:

in different parts of body, loss of appetite and weight loss for eight months. He had a past medical history of Papillary Renal Cell Carcinoma of left kidney in 2017 (figure 1A). At that time, he was treated with Radical Nephrectomy of left kidney. For the forthcoming year, he remained in good health. After a year of his surgery, he developed abdominal lumps in left lumbar and epigastric region. He was evaluated again and labelled as a case of Recurrence of left renal mass with abdominal lymph node metastasis. He was then treated with Oral Tyrosine Kinase Inhibitor (TKI)- Sunitinib, but couldn't continue the treatment as it was not well tolerated.

In April 2021, the patient presented with multiple nodular swellings in different parts of body which were progressively increasing in size and number. He had no H/O fever, cough, hemoptysis, breathlessness, jaundice, contact with known Pulmonary TB patient, unprotected sexual exposure, skin rash, joint pain, bowel or bladder abnormality. None of his family members had H/O such illness. On general physical examination, the patient was mildly anemic, non-icteric, there were no bony tenderness, clubbing, koilonychia. There were multiple enlarged lymph nodes in both anterior cervical chains and axilla, the largest one measuring about 8x3 cm in diameter, non-tender, smooth surface, regular margin, hard in consistency, fixed with overlying skin and underlying structure with no discharging sinus. There was a nodule in the left lobe of thyroid gland measuring about 3×2 cm, hard in consistency, non-tender. On abdominal examination, there were two lumps in left lumbar and epigastric region. The largest one in left lumbar region measured about 12x10 cm, non-tender, hard in consistency, not ballotable, percussion note was tympanitic over the lump and there was no bruit.

Our working diagnosis was Recurrence of left renal malignancy with extensive metastasis. Differential diagnoses of Thyroid Carcinoma with metastasis, Lymphoma were made. Ultrasonography of neck reported hugely enlarged left lobe of thyroid gland with extensive cervical lymphadenopathy. Biopsy from anterior cervical lymph node was done, histopathology report revealed metastatic papillary carcinoma, possible source either thyroid or kidney. Then we underwent immunohistochemistry of that tissue which was positive for only CD-19 (figure 2), but negative for CD3, CD20, LCA/CD45, CD56 and Thyroglobulin. Fine Needle Aspiration Cytology (FNAC) from thyroid gland showed Metastatic papillary renal cell carcinoma (figure1B). Finally, he was diagnosed as a case of Papillary Renal Cell Carcinoma with metastasis to thyroid gland and lymph nodes and was referred to Department of Oncology for further management.

Discussion

Malignancy of thyroid gland is the commonest amongst all endocrine malignancy and it is responsible for more than 3% of all malignancy.[9] Thyroid gland is one of the most vascular organ in the body. Therefore hematogenous metastasis from distant organs to thyroid is possible, however secondary thyroid malignancy is extremely rare. Metastatic or secondary thyroid malignancies contributes only 2-4% of all thyroid malignancy.[8,9] Kidney, skin, breast, head and neck are the common primary site from where secondary thyroid malignancies occur. Nakhjavani et al reported a bit higher rate (5-24%) of secondary malignancies by doing autopsy of 43 cases.[10] Which indirectly signifies that a major portion of secondary thyroid malignancies are occult or their primary sit could not be identified. Tumor to tumor metastasis is another possible modes of secondary malignancy of thyroid gland. Reports of clear cell renal cell carcinoma and papillary cell renal cell carcinoma metastasis to thyroid tumor has been reported.[6-11]

Renal neoplasm is the most lethal urological neoplasm. There are different histological types of renal cell carcinoma, amongst them clear cell and papillary cell types are most common type.[12,13] Papillary cell renal cell carcinoma often metastasize to thyroid gland giving an appearance of papillary thyroid carcinoma. Immunohistochemistry and other markers e.g. thyroglobulin can differentiate one from other.

In the presenting case which was diagnosed as a primary renal malignancy of papillary cell type. Radical nephrectomy was done and TKI e.g. Sunitinib therapy gave initial response. Later there is development of thyroid swelling with anterior cervical lymphadenopathy. Histopathology of lymph node tissue revealed metastatic papillary carcinoma. Initially we think that the primary site I the thyroid gland as it is common. However IHC and thyroglobulin were not suggestive of thyroid origin, therefore we go for FNA from thyroid nodule, cytology from which showed a metastatic renal cell cancer in the thyroid. As the treatment options are different for primary and secondary thyroid malignancy, histological confirmation is mandatory. As in our case initially we planned for total thyroidectomy with radical neck dissection considering primary site is thyroid, later it deviated to chemotherapy/TKI when we confirmed it as secondary from kidney.

Conclusion

Though secondary thyroid malignancies are extremely rare, clinician should be vigilant while dealing with thyroid neoplasm to avoid unnecessary thyroid surgery and its complications.

Authors' contributions

SBP and TBH were involved in writing the draft which was further modified after getting critical inputs from FRC. JB, SMMR, IAS and WR were involved in the management of the patient. All authors agreed upon the final version of the article.

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Availability of data and materials

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Declarations

Ethical approval

Not applicable as this article contains information of only one patient

Consent

Written informed consent was taken from the patient for publication of this case report and accompanying images.

Conflict of interest

The authors declared that there is no conflict of interest.

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