

Collecting Duct Carcinoma; A Rare Renal Neoplasm - A Case Report

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ABSTRACT

Collecting duct carcinoma is a rare type of renal tumour, arising from the distal collecting duct epithelium in contrast to majority of the renal cell carcinoma which arises from the proximal tubular epithelium. It accounts for <1% of all the renal carcinomas. The prognosis of this disease is extremely poor due to its rapid progression with widespread metastases. We present a case of collecting duct carcinoma involving the left renal upper pole region of a 70 years old female presented with right flank pain that had persisted for 2 months. A computed tomography scan demonstrated a mass measuring 5x4 cm at upper pole of left kidney with pelvic-calyceal system involvement. Following that left radical nephrectomy was done. Histological examination demonstrated that a tumour mass composed of cuboidal to columnar cells in irregular duct like structure, nests, cords and occasional tubule-papillary arrangement. Immunohistochemical staining revealed that the tumour cells were positive for CK7 and High Molecular Weight Cytokeratin (HWMCK) and negative for CD10 and p63. Hence the diagnosis of collecting duct carcinoma was confirmed.

Keywords: Collecting duct carcinoma, renal neoplasm, renal tumour

INTRODUCTION

Collecting duct carcinoma (CDC) is a rare neoplasm, accounting for only 1-2 % of renal tumours. It occurs across a wide patient age range, from 13 to 85 years.^[1] Reports suggest that this tumour arises from

the collecting duct epithelium in contrast to majority of the renal cell carcinoma which arises from proximal tubular epithelium. It is supported by that its typical location at renal medulla and architectural similarity to the distal collecting duct tubules.^[2] CDC is particularly aggressive and up to 32% of cases may be metastatic at the time of diagnosis.^[3]

CASE REPORT

A 70 years old female patient presented with left flank pain and haematuria and that persisted for 2 months. A computed tomography scan demonstrated a mass measuring 5x4 cm at upper pole of left kidney with pelvic-calyceal system involvement. Left radical nephrectomy was done. Specimen was sent to Pathology department for histopathological examination. On gross examination it was noted left kidney measuring 12x8x7 cm and a greyish white mass measuring 5x4x3 cm at upper pole with haemorrhagic and necrotic areas on cut section. Histological examination demonstrated that a tumour mass composed of cuboidal to columnar cells in irregular duct like structure, nests, cords and tubulo-papillary arrangements.

Immunohistochemistry staining revealed that the tumour cells were positive for CK7 and High Molecular Weight Cytokeratin (HMWCK) and Vimentin and negative for CD10 and p63. Hence collecting duct carcinoma was diagnosed.

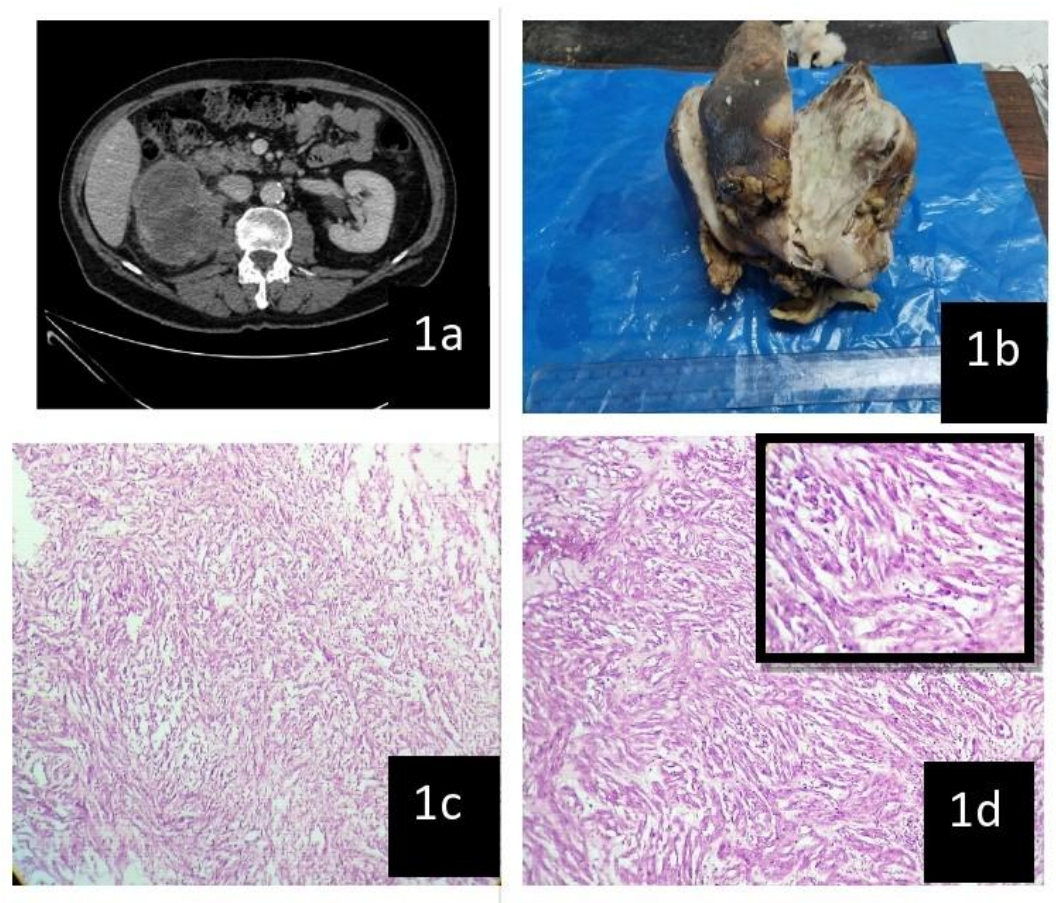


Fig 1: 1a. CT scan shows left renal mass. 1b. Gross picture of the renal mass. 1c. Low magnification view of the tumour mass showing tubule-papillary arrangement (x40,HE) 1d. Microphotograph shows cuboidal to columnar cells in tubule-papillary arrangement (x100,HE), inset view shows cuboidal to columnar cells (x400,HE).

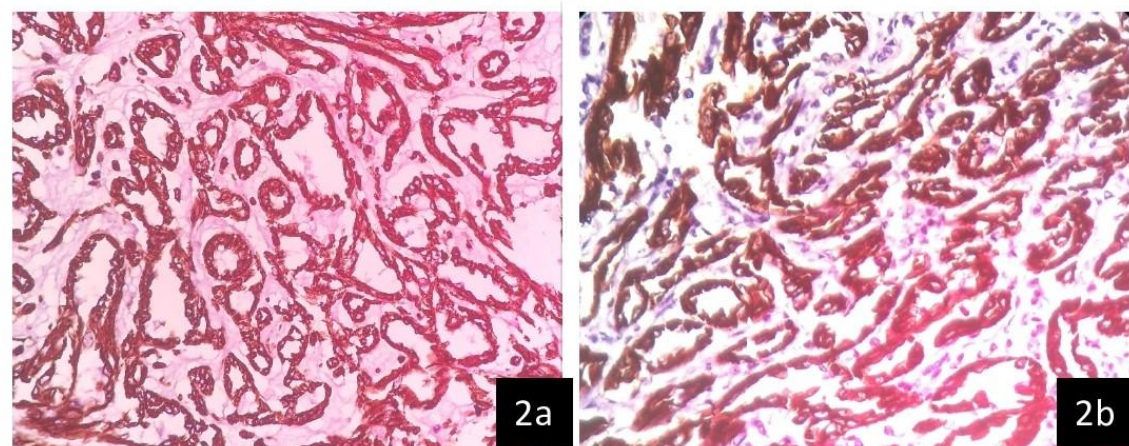


Fig 2: Immunohistochemistry study shows 2a. Vimentin positivity (x400) 2b. CK7 positivity (x400).

DISCUSSION

CDC is a rare pathologic type of RCC, with a tendency towards early dissemination and high mortality rates. Although CDC is a rare tumor, its clinical presentation is nonspecific and may include symptoms of gross hematuria, backaches, weight loss and a local mass. Since these

tumors do not exhibit specific imaging features, a microscopic examination and immunohistochemical staining are required for the diagnosis of CDC^[4] Based on the histomorphological features, differential diagnosis considered were Medullary Renal Carcinoma, Mucinous Tubular and Spindle Cell Carcinoma of kidney and Gland

forming Urothelial Carcinoma and CDC. Mean age at presentation of a medullary carcinoma is 22 years and is usually associated with Sick cell disease or trait. Rest of the lesions present at an older age. Grossly, CDC and Medullary carcinoma are located in the central region of the kidney. Gland forming urothelial carcinoma may distend the pelvis or may appear as an ill-defined scirrhous mass involving the renal parenchyma, thereby mimicking a primary renal epithelial neoplasm. Microscopically, medullary carcinoma shows solid and reticular pattern. Mucinous tubular and spindle cell carcinoma are composed of tightly packed small elongated tubules in a pale mucinous stroma. CDC shows extensive permeation of the renal parenchyma with angulated tubules and tubule-papillary architecture in a desmoplastic stroma. CDC is characterized by immunohistochemical reactivity for Ulex europaeus-1 and high molecular weight keratin (34betaE12) and is negative for CD10. Medullary carcinoma is nearly always positive for Keratin AE1/ AE3, EMA, Low Molecular Weight Cytokeratin and negative for High Molecular Weight Cytokeratin. Mucinous tubular and spindle cell carcinoma show a complex immunophenotype displaying positivity for LMWCK, CK7, CK19 and 34betaE12, Ulex europaeus, and are negative for CD10. Gland forming Urothelial carcinoma shows reactivity for p63, CK7, and CK20.^[2] Diagnostic criteria for CDC 1. Medullary involvement. 2. Predominant tubular morphology. 3. Desmoplastic stromal reaction. 4. Cytologically high grade. 5. Infiltrating growth pattern. 6. Absence of other renal cell carcinoma subtypes or urothelial carcinoma.^[1] Positive immunohistochemical staining for CK19, CK7, HMWCK and vimentin has been previously reported to support the diagnosis of CDC. In addition, a previous study demonstrated that the CDC cells also

express EMA, peanut lectin agglutinin and Ulex europaeus agglutinin 1 and negative for p63 and CD10.^[4] In the present study, immunohistochemical analysis demonstrated that the tumor cells were strongly positive for CK7, HMWCK and vimentin and negative for CD10 and p63. Therefore, the patient was diagnosed with CDC.

CONCLUSION

Collecting duct carcinoma is a rare and rapidly progressive renal neoplasm hence its immensely important to diagnose it. It is poor responsive to adjuvant therapy and survival is very poor. Radical nephrectomy is the only way for treatment. Sometimes it may present as cystic renal mass and poses as diagnostic challenge. Histopathological features and IHC evolution are most important tools for diagnosis.

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