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Collecting duct carcinoma: an incidental finding in a non functional kidney secondary to nephrolithiasis

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Abstract

A nephrectomy specimen was sent to the laboratory for end stage renal disease secondary to nephrolithiasis. Initial sections incidentally revealed a tumor infiltrating the normal renal tissue. Further workup including cytochemical and immuno-histochemical stains confirmed it to be collecting duct carcinoma.

Introduction

Collecting duct carcinoma is an uncommon tumour (less than 1% of total renal malignancies) and it rarely arises on a background of nephrolithiasis. Over 100 cases have been described with a male to female ratio of 2:1.¹ Patients with collecting duct carcinoma usually present with flank mass and haematuria. About one third have metastases at the time of presentation. Metastases to bone are osteoblastic. Upper tract imaging suggests urothelial carcinoma and patients may present with positive urine cytology. Collecting duct carcinomas are usually located in the central duct of the kidney. When small, origin within a medullary pyramid may be seen. Reported tumors may range from 2.5 to 12 cm and they typically have firm grey white appearance with irregular borders.² Some tumors grow as masses within the renal pelvis.

Collecting duct carcinoma often displays infiltration of perirenal and renal sinus fat. Metastasis to regional lymph nodes, lung, liver, bone and adrenal gland are common. Sometimes gross renal vein invasion is seen. The diagnosis of collecting duct carcinoma is often difficult and to some extent is one of exclusion.³

Case Report

Nephrectomy specimen of a 65 year old male was received in the laboratory with accompanying history of long standing nephrolithiasis. Nephrectomy was performed due to non functional kidney. Intravenous pyelography was highly suggestive of tuberculosis. Grossly, the specimen measured 8 x 7 x 5cm. Multiple stones were seen obliterating the ureter. The pelvicalyceal system was markedly dilated. A Grey white fibrous area was seen in the upper pole measuring 3 x

2 x 2cm. Corticomedullary junction was distinct. Capsule and perinephric fat was intact. Initial sections revealed groups and clusters of neoplastic cells infiltrating the renal parenchyma in the form of small tubules. These tubules were lined by columnar cells showing mild atypia. The stroma around the tumour showed marked desmoplasia. Further sections were also taken which showed similar features. Resection margins were free of tumour. Immunohistochemical stains were performed. Tumour cells were diffusely positive for high molecular weight cytokeratins including CK 5/6 and CKAE1/ A3 and focally for vimentin. Mucicarmine cytochemical stain was also positive. Diagnosis of Collecting duct carcinoma was made on the basis of morphology and immunohistochemistry. The patient was sent to a tertiary care cancer hospital and was lost to follow up.

Discussion

Collecting duct carcinoma is a rare renal neoplasm and that too arising on a background of nephrolithiasis is extremely rare.⁴ The prototypic renal cell carcinoma has a tubular or tubulopapillary growth pattern and is associated with a desmoplastic stroma. The edge of the tumour is often ill defined and the tumour has a permeative growth pattern. Glycogen is usually inconspicuous both intraluminal and intracytoplasmic mucins are positive. The central location and associated tubular epithelial dysplasia are helpful in supporting the diagnosis. Tumour cells display positivity for high molecular weight and broad spectrum cytokeratins, co expression of vimentin may also be seen. There is variable immunostaining for CD 15 and epithelial membrane antigen. CD 10 and Villin stains are negative.⁵

The main differential diagnosis of collecting duct carcinoma includes papillary renal cell carcinoma adenocarcinoma or urothelial carcinoma with glandular differentiation and metastatic carcinoma. Morphology and immunohistochemical staining resolves the issue.

Molecular events that contribute to the development of collecting duct carcinoma are poorly understood. HER2 neu amplifications have been described in collecting duct carcinomas.⁶



Figure 1. Gross picture of kidney showing grey white fibrous area in the upper pole.

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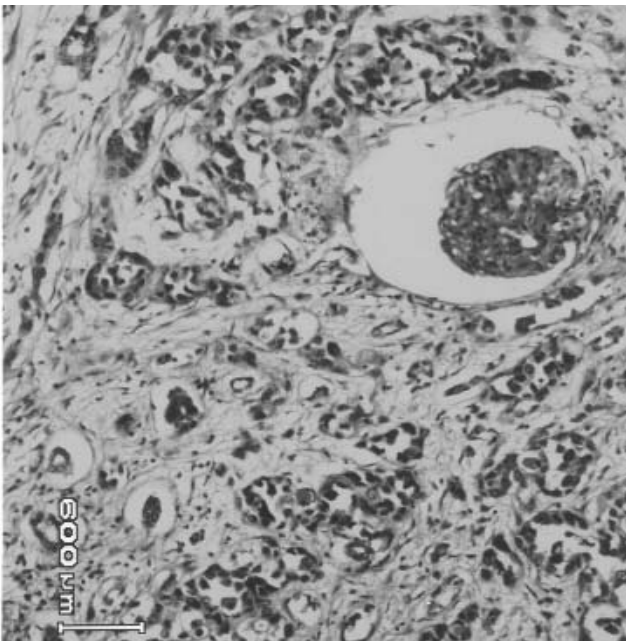


Figure 2. Photomicrograph showing neoplastic cells arranged in micro glands and ducts infiltrating renal parenchyma.