Myxoid renal cell carcinoma: histological, immunocytochemical and ultrastructural study

H A Birch, J M Glass, J Vale, M M Walker

Abstract
Renal cell carcinomas show a variety of histological features. A case of a renal tumour arising in a 44 year old African man is reported. The tumour was composed of a cobweb-like pattern of narrow anastomosing tubules lined by cuboidal cells separated by a hypocellular myxoid stroma. Immunohistochemical stains were consistent with a renal cell origin. The differential diagnosis in these cases includes sarcoma. (J Clin Pathol 1996;49:1015–1017)

Keywords: renal cell carcinoma, histological variants.

Case report
A 44 year old African man presented with intermittent loin pain and haematuria. He had been hypertensive for 10 years and had a history of childhood schistosomiasis. He was a non-smoker with no risk factors for renal disease. There was a family history of hypertension. A renal ultrasound scan revealed a mass in the left kidney, which was confirmed on computed tomography scanning. A radical nephrectomy was performed and the patient was discharged home seven days later. He remains well 12 months after the operation.

Pathological findings
Macroscopically, the kidney contained a well defined rounded tumour, 3.6 cm in diameter, within the cortex of the upper pole, confined within the renal capsule and with a soft yellow cut surface with areas of haemorrhage. The remaining renal tissue was macroscopically normal. Five representative samples of the tumour were taken for histological examination. Microscopically, all sections showed that the tumour was composed of a cobweb-like pattern of narrow anastomosing tubules lined by cuboidal cells separated by a hypocellular myxoid stroma.

Table 1 Characteristic clinical, haematological and cytogenetic features of CGL, CNL and patient DM

<table>
<thead>
<tr>
<th>Feature</th>
<th>CGL</th>
<th>CNL</th>
<th>Patient DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Splenomegaly</td>
<td>Immature granulocytes in peripheral blood</td>
<td>Yes</td>
<td>Frequent</td>
</tr>
<tr>
<td>NAP</td>
<td>Ph' chromosome</td>
<td>Low</td>
<td>Present</td>
</tr>
<tr>
<td>bcr/abl hybrid gene</td>
<td>Present</td>
<td>Absent*</td>
<td>Present</td>
</tr>
</tbody>
</table>

*There is only one report of Ph' positive CNL in the English literature.5

pattern of narrow anastomising tubules lined by cuboidal cells. These cuboidal cells had indistinct cell boundaries and contained irregular ovoid nuclei, small nucleoli and finely granular eosinophilic cytoplasm, separated by a hypocellular myxoid stroma containing a mild infiltrate of macrophages and lymphocytes (fig 1). In places, the tubules formed whorls surrounding small blood vessels. The appearances were similar throughout the tumour. There were no areas of acinar, papillary or cystic architecture or clear cell differentiation more typical of renal cell carcinoma. Areas of haemorrhage were present but there was no necrosis. No mitotic activity was present. No lymphatic or vascular invasion was seen and a hilary lymph node was negative for tumour cells. The stroma stained positively for acid mucopolysaccharide (positively with alcian blue and periodic acid-Schiff with diastase pretreatment). The cell cytoplasm was negative on staining for mucin, glycogen and fat.

Immunocytochemical staining was positive for cytokeratin (AE1/3 and CAM 5.2), vimentin and epithelial membrane antigen; and negative for desmin, smooth muscle actin, S100 protein, chromogranin and QBend10. Transmission electron microscopy showed that the cytoplasm was relatively empty, but rough endoplasmic reticulum, free ribosomes, small aggregates of glycogen and the occasional microvesicular and dense bodies were present (fig 2). No lipid was present. The nuclei contained clumped and peripherally condensed chromatin and fibrillar matter. The cells rested on a duplicated basement membrane and were joined by desmosomes. No tight junctions were identified and the granular stroma matter, which contained a little glycogen, was also present in the tubular lumen.

**Discussion**

Renal cell carcinomas exhibit a range of cytological and architectural appearances. They are most commonly composed of cells with optically clear cytoplasm rich in glycogen and lipid (the classic clear cell carcinoma). They can, however, contain chromophilic cells...
Myxoid renal cell carcinoma

which appear eosinophilic if the cytoplasm is plentiful and rich in mitochondria, or basophilic if more scanty with fewer mitochondria. Clear cell and chromophilic cell types of renal cell carcinomas co-express cytokeratin and vimentin and are thought to be derived from the proximal convoluted tubule. These cell types are commonly seen together in any one tumour. De-differentiated ‘sarcomatoid’ spindle cell forms of renal cell carcinomas are also seen. Some tumours are composed of pale chromophilic cells containing microvesicles but little glycogen or lipid, which express cytokeratin but not vimentin and are thought to be derived from the intercalated cells of the collecting duct.

Solid, acinar, trabecular, or tubulo-papillary architectural patterns may also be seen, frequently in combination, in any one tumour. Secondary changes such as cystic degeneration, haemorrhage and necrosis are also common in renal cell carcinomas.

There is some association between cell type and architectural pattern with the clear cell and chromophobic tumours producing a more solid compact pattern, whereas the chromophilic cell types usually produce a tubulo-papillary pattern, with papillae containing fibrovascular cores. The pure papillary variant contains prominent numbers of macrophages with foamy cytoplasm in the papillary cores.

In the present case the tumour described is a chromophilic renal cell carcinoma (Fuhrman grade 2, T2 N0 Mx, stage 2) which is poor in mitochondria for the degree of eosinophilia present and has an unusual microtubular growth pattern and myxoid stroma. The tumour was monomorphic throughout. The absence of other degenerative changes suggests that the myxoid stroma is a primary component of the tumour.

The prognosis of renal cell carcinomas depends on the nuclear grade and the stage, and is independent of the tumour cell type and architecture, except for the sarcomatoid and papillary tumours which fare worse. The clinical significance of the unusual tumour pattern described here is doubtful, but it has not been reported previously. The unusual appearance is a potential source of diagnostic error—other myxoid tumours, such as myxoid chondrosarcoma or leiomyosarcoma, may appear similar on initial microscopic inspection—but immunohistochemistry will provide the diagnosis.


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Abstract
Agreement between Helicobacter pylori IgG antibodies measured using the Pylori-set EIA-G kit in serum, plasma and successfully thawed specimens: implications for epidemiological and clinical studies

Helicobacter pylori antibody titres in serum, plasma and successfully thawed specimens: implications for epidemiological and clinical studies

For qualitative epidemiological studies, this additional misclassification rate is relatively small. However, positive titres did reduce over successive thaws, with the estimated maximum drop being 11.4% per thaw. Therefore, thawing does need to be considered as a contributing factor when interpreting titre drops in eradication trials. Baseline and follow up specimens from clinical studies should be thawed once only and tested concurrently.

Keywords: Helicobacter pylori, epidemiology, serology.

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