CASE REPORT

Mixed collecting duct and renal cell carcinoma presenting with spinal cord compression

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SUMMARY

Collecting duct carcinoma (CDC) is a rare renal malignancy thought to develop from the collecting duct epithelium of the kidney. CDC tends to have a more aggressive clinical course than conventional renal cell carcinoma (RCC), with early metastases. The occurrence of a mixed CDC and conventional RCC is infrequently reported in the literature. We report the first case of a metastatic mixed CDC and RCC presenting as back pain in a young adult. In addition we discuss the epidemiology of and current adjuvant therapies for CDC.

BACKGROUND

Collecting duct carcinoma (CDC) are a rare and aggressive malignant neoplasm accounting for 0.4–2.6% of all renal cell carcinoma (RCC). While various different histological patterns have been described in conventional RCC, the occurrence of mixed CDC and conventional RCC has only rarely been reported. Almost all cases described in the literature were reported as individual case reports. It is therefore necessary to report all cases to improve our knowledge of this malignancy. We report the first case of a large mixed CDC and conventional RCC in a young adult.

CASE PRESENTATION

A 21-year-old male patient presented with a 1-month history of constant back pain. MRI demonstrated spinal metastasis in T12, L3 and L4, and a left renal lesion was suspected (figure 1). A left-sided renal tumour with multiple spinal metastases was diagnosed following a CT scan (figure 2). There were also numerous retroperitoneal nodes but no cerebral metastases were identified.

An ultrasound-guided core biopsy of the renal lesion was performed. Histology demonstrated sheets of cells with abundant eosinophilic cytoplasm and small pleomorphic nuclei. Immunohistochemical staining was positive to cytokeratin CAM5.2, but CD10, CD117 and keratin 7 were negative. The appearance was of a large-cell carcinoma. In the context of imaging, the appearance was most consistent with RCC despite the lack of CD10 positivity.

The patient developed lower limb weakness and hyper-reflexia and underwent emergency spinal cord decompression and stabilisation of the L4 vertebral metastasis after L4 vertebral metastasis embolisation. Postoperatively the patients lower limb symptoms stabilised.

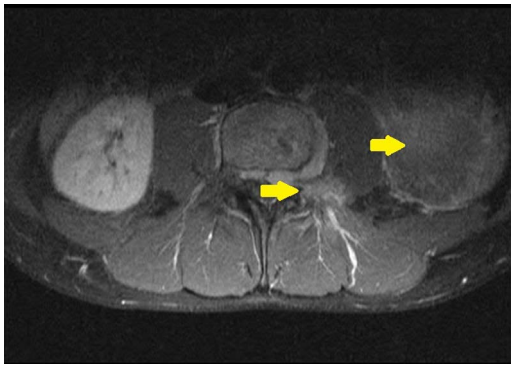

Figure 1 Transverse MRI demonstrating L4 vertebral metastasis. Metastatic deposit within the L4 vertebral body and pedicle extending posteriorly into the left epidural space, abnormal left kidney.

TREATMENT

After careful consideration the decision to proceed with a laparoscopic radical nephrectomy was made. The resected kidney contained a 10.3 cm lower pole tumour, with a circumscribed outline and a variegated tan and brown cut surface (figure 3). Microscopically the circumscribed component of the tumour consisted of conventional RCC with eosinophilic cytoplasm similar to that seen on the preoperative core biopsy. The infiltrative component of the tumour was morphologically different, and consisted of well-formed angulated tubules infiltrating a desmoplastic stroma, the pattern of CDC. The tubules were lined by markedly

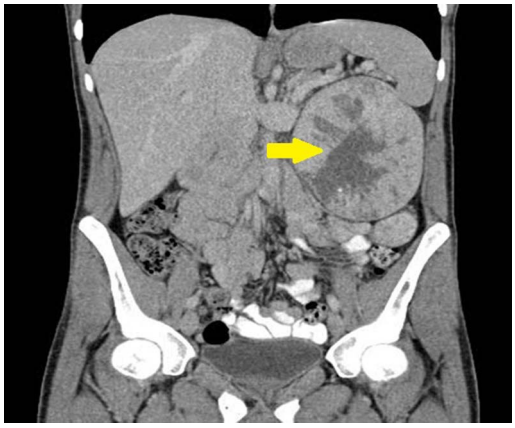

Figure 2 Coronal CT slice demonstrating large renal tumour. Large exophytic tumour arising from the lower pole of the left kidney. Tumour contains central areas of low attenuation in keeping with necrosis.

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Figure 3 Macroscopic view of the renal tumour. Left radical nephrectomy specimen weighed 938 g and was bivalved to reveal a 10.3 cm lower pole tumour with a firm variegated brown, haemorrhagic, gelatinous and yellow cut surface. Tumour appears well circumscribed on this plane of section.

pleomorphic cells in a hobnail pattern with prominent nucleoli. Small nodules of CDC were identified along the edge of the RCC component, with the two components blending together along the interface (figure 4). Tissue from the spinal metastatic deposit was examined microscopically to demonstrate metastatic CDC. The overall stage was pT3a Nx M1.

OUTCOME AND FOLLOW-UP

The patient made an uncomplicated postoperative recovery and was discharged home on day 6. Unfortunately the patient represented 2 weeks later with a new onset of leg symptoms. A repeat MRI spine demonstrated progression of all the spinal metastasis. The patient underwent urgent radiotherapy and since there has been stabilisation of his lower limb symptoms. The patient was started on adjuvant sunitinib but ultimately passed away from the malignancy 8 months later.

DISCUSSION

CDC is a rare, aggressive renal tumour thought to arise from the collecting duct epithelium of the kidney. This is in contrast to the more common renal malignancies that arise from the convoluted tubules of the renal cortex. CDC accounts for less than 1% of all renal neoplasms and more than 100 cases have been described.[1–3]

CDC more commonly occurs in older male patients, with a mean age of diagnosis in the sixth decade.[4] Several studies have highlighted the possibility of a strong family history of malignancy in patients with CDC. However again some studies disagree, currently there is too little published data to draw this conclusion.[5] In this case, our patient had no family history of malignancy. In contrast to other conventional renal tumours that can present fortuitously, over 90% of patients with a CDC were symptomatic at presentation, often with haematuria. Although CDC is, on average, smaller at presentation than conventional RCC (5 vs 7 cm) CDC is more likely to be metastatic at presentation.[6]

Radical nephrectomy remains the treatment of choice for patients with RCC; however, some authors have argued that surgery should be avoided for large CDC tumours. Since the soft tissue margins are more likely to be positive. In the setting of metastatic CDC, radical nephrectomy alone appears only to be useful for palliation with adjuvant chemo/immunotherapy.[6]

However the evidence supporting the use adjuvant chemotherapy for patients with CDC is limited. Gemcitabine plus cisplatin or carboplatin, paclitaxel plus carboplatin, gemcitabine plus doxorubicin, and interferon-α have all been shown to induce at least temporary remission. For patients with poor performance status; sunitinib and sorafenib have recently demonstrated a partial response.[1 7] Collecting duct carcinomas are rare and aggressive renal malignancy. In spite of a radical laparoscopic nephrectomy this patient developed disease progression. This is in keeping with other reports of CDC in the literature. The use of new chemotherapeutic agents such as sunitinib or sorafenib appears promising but needs to be evaluated by prospective studies evaluating chemotherapy alone versus chemotherapy and palliative surgery.

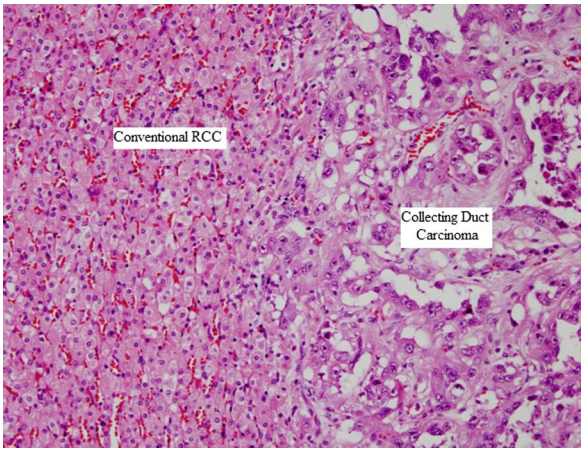

Figure 4 H&E stain ×100, of renal tumour. In some areas the conventional RCC (left) and collecting duct carcinoma (right) components in close association with each other.

Learning points

- Collecting duct carcinomas are rare and aggressive renal malignancy that has a very poor outcome.
- The tumour is often metastatic at presentation.
- Radical nephrectomy is rarely curative alone.
- The use of new chemotherapeutic agents such as sunitinib or sorafenib appears promising but needs evaluation.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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