CASE REPORT

UROLOGICAL ONCOLOGY

Nephron sparing surgery for metastatic collecting duct carcinoma

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Collecting duct carcinoma (CDC) accounts for less than 1% of all renal carcinomas. It is a rare and aggressive neoplasm presenting generally at an advanced stage, and thus has a poor prognosis. The present case describes a 31-year-old female suffering from CDC coexisting with papillary renal cell carcinoma (PRCC) as well as liver, nodal and vertebral metastases. The patient was treated with open nephron sparing surgery. To date, there are only several clinical studies of CDC and few reports of synchronous CDC and PRCC in one kidney.

Key Words: nephron sparing surgery ‹› renal cell carcinoma ‹› collecting duct carcinoma ‹› papillary renal cell carcinoma

CASE PRESENTATION

A 31-year-old female, with no known comorbidities, was admitted to our hospital due to a pathological mass in the right kidney as revealed on ultrasound examination. She initially complained about flank and lumber pain associated which was not associated with haematuria, fever or urinary tract infection. Neither physical examination nor laboratory tests – complete blood count, blood electrolytes and renal function – showed any pathological findings. The chest X-ray also showed no abnormalities. A contrast-enhanced abdominal and pelvic computed tomography (CT) confirmed the presence of an exophytic tumour in the middle pole of the right kidney measuring 31x39 mm (Figure 1), as well as multiple enlarged paraaortic lymph nodes (up to 9 mm). The examination also revealed three metastatic liver tumours up to 10 mm (Figure 2) and a suspicion of metastases in the spinal column. Magnetic resonance imaging (MRI) of the vertebral column showed metastases in C2, C5, C7 and all thoracic, lumbar and sacral thoracic bodies; additionally, a tumour from the C7 vertebral body reaching close to the oesophagus (Figure 3), metastases in the spinous processes of Th4, Th7 and Th9, a pathologic fracture of the L1 vertebral body (Figure 4) and a tumour of the left lateral side of the sacrum.
Right open nephron sparing surgery without ischaemia was performed with the removal of a partially grayish, partially yellowish solid tumour. Histopathology revealed a morphologically heterogenous

tumour: collecting duct carcinoma (CDC) (immunohistochemical stains were positive for CK7, negative for CD10, CK5/6) and papillary renal cell carcinoma (PRCC) type II (CD10 focally positive, CK7 and CK5/6 negative). There was neither capsular- nor angio- invasion, surgical line of resection was dubious. According to The TNM Classification of Malignant Tumours system, the patient was diagnosed as clinical stage T1aN2M1. During the postoperative period, the patient was consulted by a neurosurgeon and discharged home 12 days after the operation with back and neck braces. Three days later the patient was admitted to the hospital because of fever and dysuria. Empirical antibiotic therapy (intravenous ciprofloxacin and cefotaxime) was administered, significant clinical improvement was achieved despite the negative results of the microbiological tests of blood and urine samples. The patient was discharged home and referred to the tertiary oncological facility for supplementary treatment.

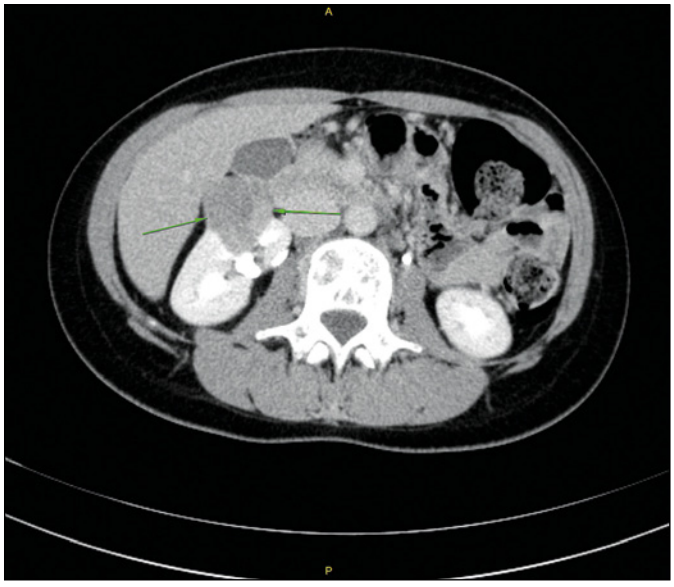

Figure 1. *Abdomino-pelvic computed tomography scan with intravenous contrast (transverse view). Arrows point on the right renal mass.*

DISCUSSION

Collecting duct carcinoma is a rare, aggressive type of renal epithelial malignancy, occurring in less than 1% of all renal neoplasms [1]. Its clinical appearance is known mainly from isolated case reports. In the last decade only several clinical studies were published [2]. The study by Wright et al. [3] shows, that CDC occurs more commonly in males (70%), with the median age at diagnosis being 63. CDC at the time of diagnosis is metastatic in 28% of patients. These results are generally consistent with other studies [1, 2]. Our patient was diagnosed at the unusual young age of 31 years. Most patients present with flank pain, hematuria, palpable abdominal mass and weight loss. The CT scan showed a medullary location with infiltration of the renal sinus without disturbance of kidney contours, cystic component and heterogeneity. Less often, as in our case, an exophytic tumour is noted. Of all renal neoplasms, CDC has a very poor prognosis, with most patients eventually developing distant metastatic disease. The most common metastatic sites included regional lymph nodes, liver and bone [2, 4], as reported in this case;

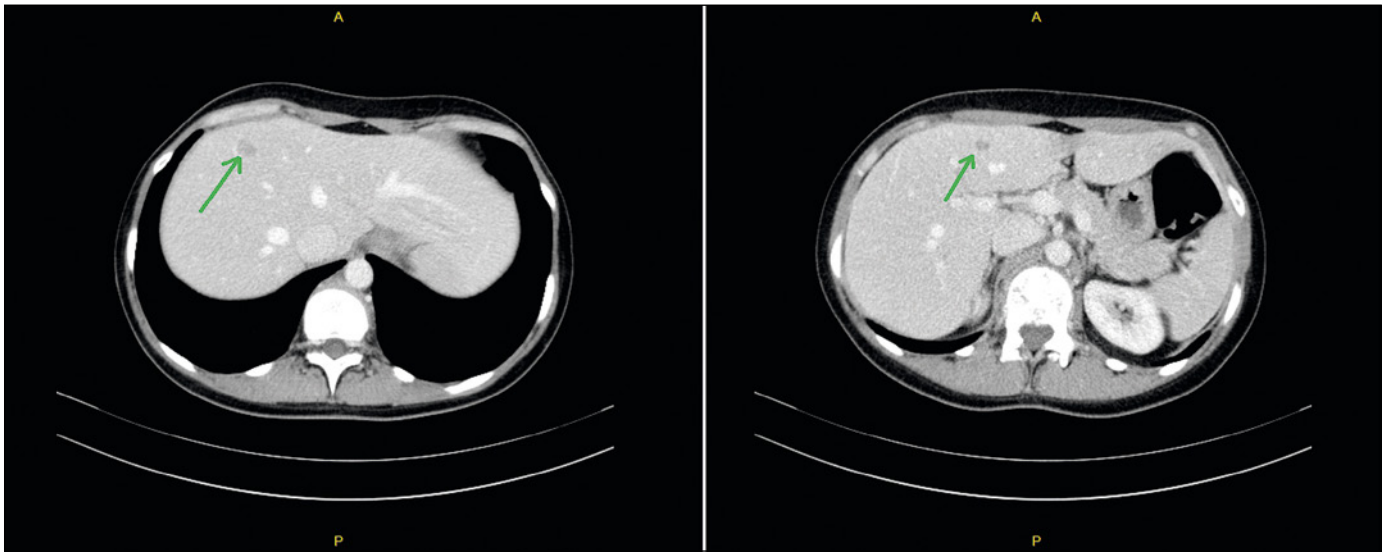

Figure 2. *Abdomino-pelvic computed tomography scan with intravenous contrast (transverse views). Arrow points on the liver metastases.*

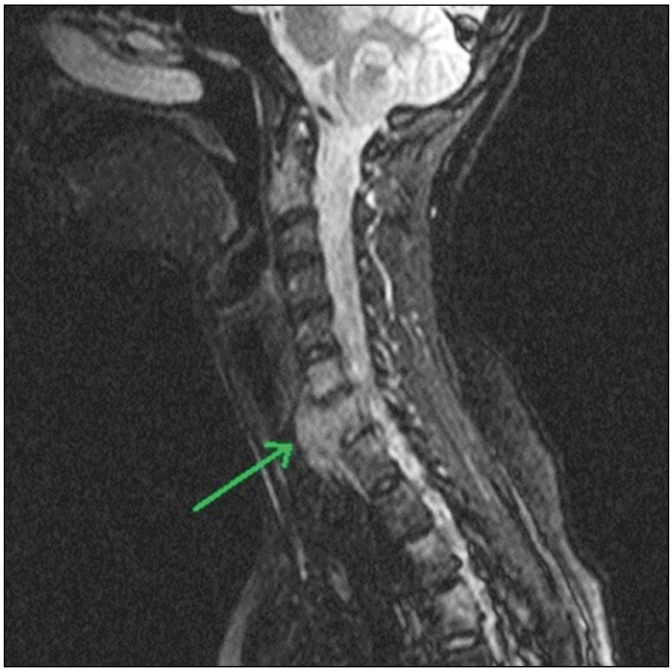

Figure 3. *T2-weighted sagittal image of cervical vertebrae. Metastatic tumour spreading from C7 vertebra body.*

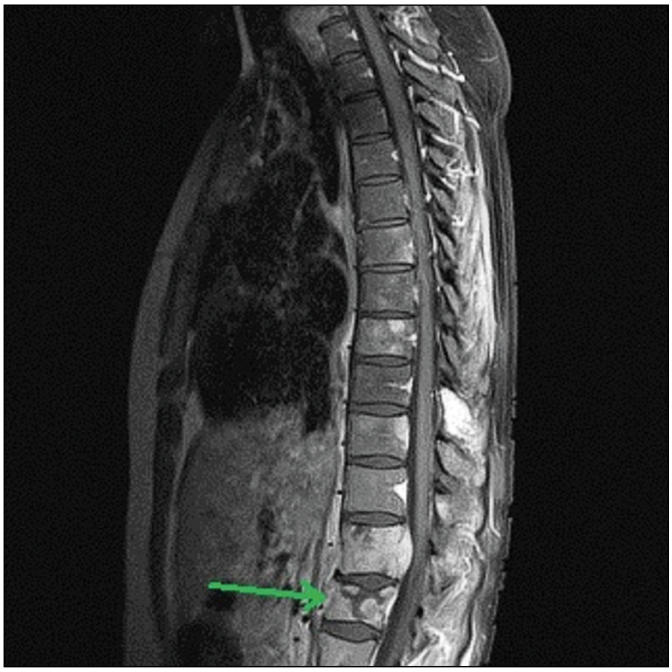

Figure 4. *T1-weighted sagittal image of thoracic vertebrae. Patholocigal fracture of L1 vertebra body.*

it is also worth noticing the presence of metastatic tumours in almost every vertebra of spine requiring appropriate orthopaedic devices.

There are no specific guidelines for the treatment of CDC and only a few retrospective studies have analyzed the efficacy of potential treatment [1, 4]. The vast majority of patients were initially treated with radical nephrectomy, but there are case reports of nephron sparing surgery (NSS) performed on patients with CDC [4–7] with a recurrence-free period exceeding twelve months [5, 6]. In the study by Matsumoto and coworkers, the clinical outcome of NSS in low grade CDC was excellent. Non-compromised renal function theoretically permits administration of the more suitable chemotherapy, which might be beneficial in the era of emerging systemic treatment options. Furthermore, preserving renal function might potentially render patients more tolerant to receiving tyrosine kinase inhibitors (TKI).

Synchronous subtypes of renal cell carcinoma (RCC) in the same kidney remains a scarce occurrence. The study by Arık et al. [8] presents 20 cases, where two of them are reported as coexistence of PRCC and CDC but both as completely separate tumours located in different kidney regions. Interestingly, our study reports the first case of a single mass with histopathological features of CDC and PRCC, which appears exceptional. Arık and coauthors [8] speculate that in patients with separate kidney neoplasms located in close proximity, the more aggressive one may infiltrate the other and they may present as a single tumour, like in this reported case. To the best of our knowledge, this is the second case of those two suptypes of RCC coexisting within one renal tumour. According to Capitanio et al. [9], who evaluated the effect of the nephron sparing approach in metastatic renal tumours on RCC-specific survival, NSS was not associated with worse RCC-specific survival as compared with radical nephrectomy (RN). However, additional studies are required to determine whether metastatic CDC patients treated with partial nephrectomy achieve long-term survival to the same degree as those managed by a more radical approach.

In conclusions, synchronous PRCC and CDC are extremely rare. Nephron sparing surgery may be an option in suitable patients with CDC for preserving renal function, knowing that new, innovative treatment solutions are needed to improve the CDC patients' survival.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest

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