

CASE REPORT

Bilateral Renal Cell Carcinoma in a Horseshoe Kidney

Imre ROMICS,¹ Péter RIESZ¹, János SZELEPCSÉNYI², Péter NYIRÁDY¹

¹Semmelweis University, Faculty of Medicine, Department of Urology, Budapest,

²General Practitioner, Nagykáta, Hungary

We report a case of bilateral renal cell carcinoma in a horseshoe kidney. To the best of our knowledge this is the second reported case in the international literature. We performed different radiological examina-

tions preoperatively to identify of blood supply, because correct preoperative location of vessels is mandatory. (Pathology Oncology Research Vol 8, No 4, 270–271)

Keywords: renal cell carcinoma, horseshoe kidney, radical nephrectomy

Introduction

If the two kidneys come together during their development in the pelvis they may fuse.³ Horseshoe kidney is a relatively common renal congenital anomaly, present in 0.2–0.3 percent of the general population and seen more commonly in males (male female ratio 2:1).² Horseshoe kidney is known to be associated with different chromosomal disorders for example Turner, Edwards, Patau and Down syndromes.⁷ All kinds of malignant tumors have been reported and the relative risk of malignancy is also increased compared with that nonfused units.⁴ Most commonly adenocarcinomas, transitional cell carcinomas, and Wilms tumors are encountered, but there are also squamous cell carcinomas, lymphomas and sarcomas reported in a horseshoe kidney. The risk of renal cell carcinoma is relatively increased and the tumor occurs almost always in only one unit of the fused kidney.⁴ Occasionally bilateral synchronous or asynchronous cancer occurs in nonfused kidneys but synchronous bilateral renal cell tumor in a horseshoe kidney is an absolute rarity. Herewith we publish our case of a bilateral renal cell carcinoma in a horseshoe kidney because to the best of our knowledge there is only one reported previously in the international literature.⁵

Materials and Methods

A 54-year-old man was referred to our clinic in June 2000 after he was examined by his GP for two periods of intermittent macroscopic hematuria. Ultrasound and CT revealed horseshoe kidney with a bilateral tumor size of 7.8 cm in the largest diameter on the left, close to the isthmus. On the right there was an 8 cm tumor in the largest diameter on the upper pole (*Figure 1*). We performed colour-Doppler US, CT scan and angio-CT examinations for the identification of tumor and its blood supply (*Figure 2*). Conventional serum and blood tests did not show any alteration. On CT scan, chest X-rays and bone scintigraphy there was no evidence of metastasis.

Laparotomy was performed through a midline abdominal incision. During the surgery first the superior mesenteric artery was isolated, then the left lower pole was mobilised and the aorta was prepared. Subsequently the left renal artery, vein and their collaterals were isolated, stitched and cut. After this the right renal artery, and vein were interrupted. To roll the right unit of the horseshoe kidney we had to interrupt the inferior mesenteric artery. Subsequently both ureters were ligated and cut. After preparing and interrupting all collateral vessels on the posterior surface we cut the isthmus and removed first the left, then the right unit of the horseshoe kidney.

Results

Histology showed a relatively well-differentiated renal cell carcinoma in both of the tumors (pT3, Grade2). Following surgery ten million NE Interferon alfa-2b was

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Correspondence: Prof. Imre ROMICS M.D., Ph.D., D.Sc., Department of Urology, Faculty of Medicine, Semmelweis University, Üllői út 78/b, Budapest H-1082, Hungary; Tel: 00 36 1 210-0330, fax: 00 36 1 210-0305; e-mail: romimre@urol.sote.hu



Figure 1. A CT scan shows bilateral tumor in a horseshoe kidney

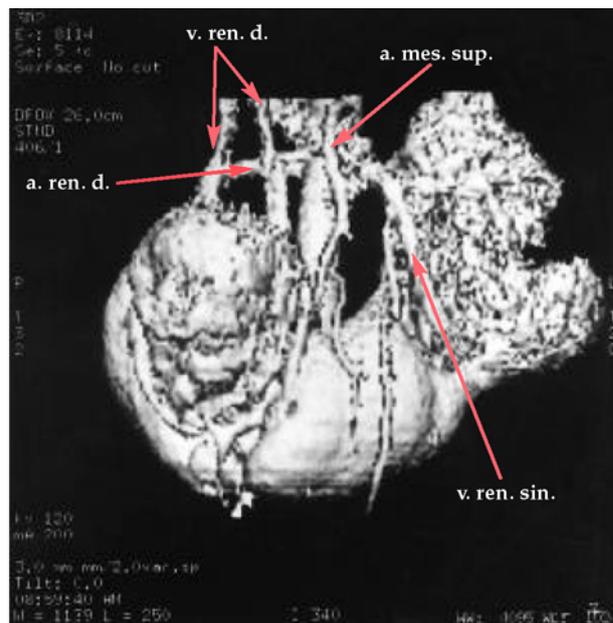


Figure 2. An angio-CT scan shows the affected renal vessels running towards the tumor

given 3 times per week and 5 mg Vinblastin in every three weeks postoperatively for 6 months. There is no evidence of any metastasis or residual tumor on the control CT scan 24 months after surgery.

Discussion

Except in the case of a palpable abdominal mass in midline, a horseshoe kidney does not by itself produce symptoms. Therefore the diagnosis may be made on incidental ultrasonography or intravenous urographic images. Ultrasonography and computed tomography is the gold standard for tumor identification in the kidney. Angio-CT or MRI is also required, especially in patients with solitary kidney, synchronous bilateral tumors, or (as in our case) in a patient with horseshoe kidney because 70 percent of these units have abnormal anatomical pattern.¹

Smith et al⁶ reported their treatment of renal cell carcinoma in synchronous bilateral or in solitary kidney. Twenty patients with tumor in solitary kidney, and 18 patients with bilateral renal cell carcinoma were treated by organ preserving surgery. However they performed radical nephrectomy in 3 patients. They found that survival was independent of whether the patient had tumor in the opposite kidney and survival was dependent on the stage of the local tumor. They also summarised that although bilateral nephrectomy with dialysis is seldom necessary, it should be an option offered to selected patients. In our case it was not possible to perform organ preserving surgery. The fact that the upper pole of the

left unit was supplied by an arterial vessel running directly from the superior mesenteric artery made the operation even more challenging. In summary the key to the treatment of a bilateral renal cell carcinoma in a horseshoe kidney is preoperative radiological examination for the identification of regular and irregular blood supply.

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