

# Renal Invasion Of Hepatocellular Carcinoma: Report Of A Case

Renal İnvazyon Gösteren Hepatosellüler Karsinoma : Olgu Sunumu

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Local recurrences or metastases may occur after curative treatment of hepatocellular carcinoma. In this report a 47-year-old man with intrahepatic recurrences and extrahepatic growth of hepatocellular carcinoma invading inferior vena cava, right adrenal gland and right kidney following surgery is described. Emphasis is placed on the MR imaging findings of renal invasion which is thought to be involved by local route.

Key Words: **hepatocellular carcinoma**

Hepatosellüler karsinomada küratif tedavilerden sonra lokal nüks ya da uzak metastazlar ortaya çıkabilmektedir. Bu yazıda cerrahi tedaviden sonra intrahepatik rekürrensini yanı sıra inferior vena cava, sağ adrenal bez ve sağ böbreğe invazyona neden olan ekstrahepatik tümör gelişiminin saptandığı 47 yaşında bir hasta sunulmakta ve özellikle direk invazyona ikinci olarak değerlendirilen renal tutulumun MR görüntüleme bulguları vurgulanmaktadır.

Anahtar Kelimeler: **hepatosellüler karsinoma**

Hepatocellular carcinoma (HCC) is the most common primary tumor of the liver. Partial liver resection and orthotopic liver transplantation may be the curative treatment methods for masses limited to the liver. Extrahepatic metastases are usually associated with the advanced disease and there are only palliative treatment choices such as chemotherapy or transcatheter chemoembolization for these patients (1,2). Extrahepatic tumor growth with direct invasion of adjacent structures is rarely reported in the literature (3-9). Inadequate assessment before surgery, preoperatively missed occult tumors, insufficient therapy, insufficient tumor resection or the aggressive nature of the tumor may lead to early recurrence after treatment. In this report we aimed to present a case of recurrent HCC manifesting with paracaval tumor growth and local-

ly invading the right adrenal gland and right kidney and to describe the MR imaging (MRI) findings of extrahepatic involvement.

## Case

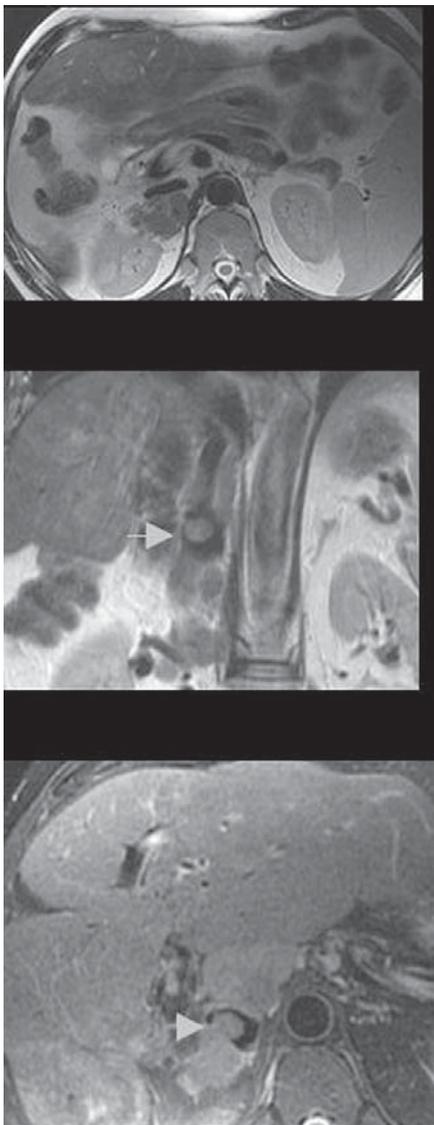
A 47-year-old man with previously diagnosed and operated recurrent HCC was referred to our MRI section in order to depict the current status of the tumor. In the retrospective evaluation of his medical records we found out that he had been diagnosed as moderately differentiated HCC due to chronic viral hepatitis in May 2001. Because the mass was limited to the right lobe, partial hepatectomy was performed in June 2001. He was under follow-up in an outside medical center for about 3 years and as hepatic recurrence had occurred at

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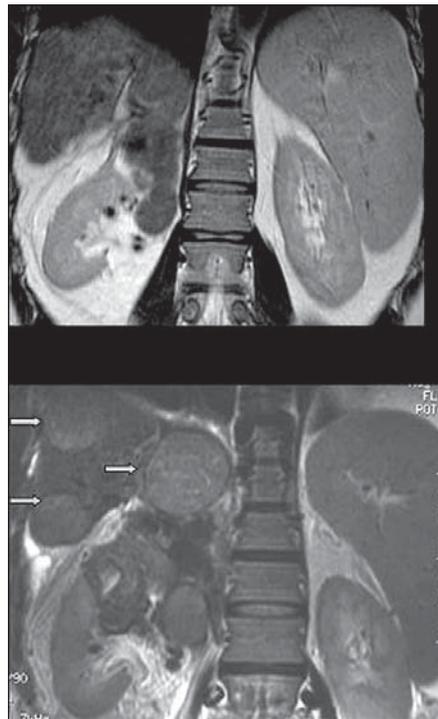
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the end of the first year he underwent transcatheter chemoembolisation for 3 times. On the first MRI we performed, besides the multiple recurrent intrahepatic masses, an extrahepatic retrocaval tumor tissue which partially invaded the inferior vena cava (IVC) (Figure 1) was depicted. The lesion was extending inferiorly to the medial aspect of the kidney. Tumor thrombus in the portal vein branches were also present. As the tumor

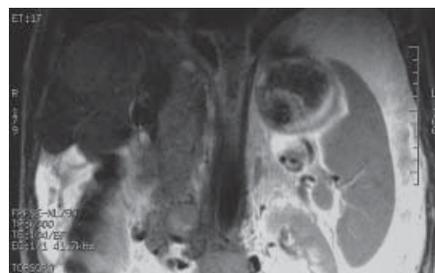


**Figure 1.** Retrocaval tumor tissue is seen on T2 weighted axial image (A). Partial invasion of IVC is visible on T2-weighted coronal (B) and fat suppressed T2-weighted axial (C) images (arrows).

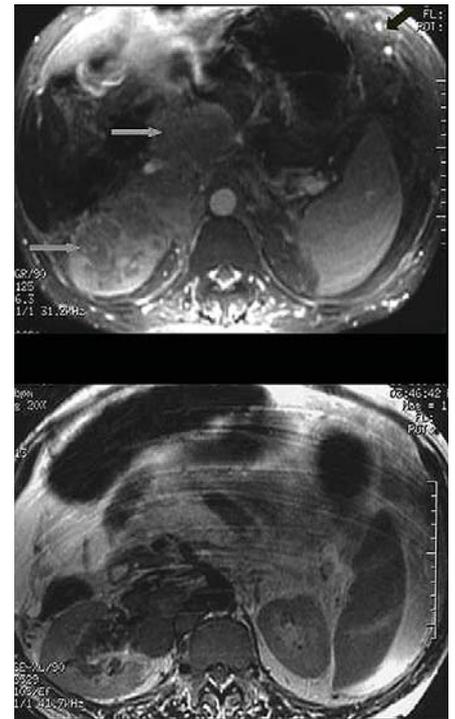


**Figure 2.** T2-weighted coronal images. The extrahepatic tumor neighbouring the kidney (A) has progressed to invasion (B). Also note the growth in intrahepatic masses (arrows).

was in an advanced stage, despite the palliative treatment the patient continued to deteriorate. In a 1-year follow-up period under palliative therapy, both the intrahepatic and extrahepatic masses were progressed by size and renal invasion had occurred (Figure 2). The kidney masses were not as usually expected in metastatic HCC. The retrocaval tumor originating from the caudate lobe had occupied the place of IVC and invaded the right



**Figure 3.** On T2-weighted coronal image the anatomic region of IVC has been occupied by the extrahepatic tumor. The right adrenal gland is thought to be invaded since it is not visualized on none of the sequences.



**Figure 4.** Both the parenchyma and the sinus of the right kidney is invaded by HCC. On the portal venous stage of the multiphase MRI (A) the contrast medium in the masses is washed out (arrows). Also note collateral veins in the abdominal walls (black arrow). The invasion of the right renal hilum is obvious on T2-weighted axial image (B).

kidney from both the parenchyma and the renal sinus (Figures 3,4). The right renal vein was hardly visible as it was displaced by the tumor at the level of the renal hilum. We believe that this was a direct invasion of the kidney by the hepatic mass following paracaval route.

## Discussion

HCC is known as an aggressive tumor. Nevertheless as it frequently develops in cirrhotic liver parenchyma and patients with chronic liver diseases are usually under follow-up, at the time of diagnosis metastases are usually not present. As the diagnostic and the treatment methods of HCC have been improving, the survival rate of the patients has

prolonged and the metastases are seen more commonly. The prognosis of extrahepatic metastases is quite poor with a 1-year survival rate of 24.9% (10). Metastases can follow the hematogenous or lymphatic routes or direct invasion may occur. The most frequent metastatic sites of HCC are known as lung, regional lymph nodes and the skeletal system (1,2,10). Renal metastases are usually bilateral, multiple, small lesions in which tumor cells reach the kidneys by bloodstream. Also retroperitoneal masses neighbouring the kidney may occur due to the dropped tumor cells (1). Brain metastases are not frequent and they are usually hemorrhagic deposits manifesting with stroke-like symptoms (11). Rare metastatic sites of HCC, like uterus and psoas muscle have also been described (12,13). Ho et al reported a case of biopsy proven extrahepatic lymph node metastases following more than 5 years after liver transplantation which mimicked lymphoproliferative disorder (14). Therefore patients must be carefully examined before and after the therapy. As well as local recurrences, distant metastases even in unexpected sites should be considered in the follow-up peri-

od. Nevertheless it should be kept in mind that rare metastatic sites of HCC (like brain and gastrointestinal tract) are almost never the initial manifestations of extrahepatic metastases (2). The patient we present here had undergone surgical resection but recurrence had occurred in a year with progression to extrahepatic disease.

Extrahepatic growth of HCC (pedunculated HCC) is seen approximately 0.24%-3 % of the cases and the long-term prognosis of this form is quite poor (6). It can be defined as a protruding mass on the surface of the liver with a risk of spontaneous rupture (6,15). Besides peritoneal implantation due to the rupture, direct invasion of the adjacent structures may occur. Okuda et al have described 7 cases with extrahepatic growth of HCC involving the right adrenal gland in 2 of which the tumor was adherent to the right kidney (15). As the right lobe of the liver and right adrenal gland get closer with the increasing age which is more prominent in cirrhotic patients, some of the right sided adrenal metastases may be due to extrahepatic tumor growth (7).

As far as we are concerned there is no such a case in the literature describing extrahepatic tumor growth invading inferior vena cava, adrenal gland and the kidney at the same time. When the patient was referred to us his performance status was low and he refused further investigations to detect distant metastases. As the diagnosis and initial therapies were performed in an outside clinic we could not demonstrate the preoperative nature or the operability of the tumor and determine the technique of the surgery. Therefore we could not describe the cause of early recurrence and aggressive progression. The extension of the neoplastic tissue in this case is predominately towards to the hilum and the sinus of the right kidney. Although this appearance suggested the venous invasion, the direction of bloodstream regarding to the site of the primary tumor was inconsistent for thrombotic material to lodge in the renal vein. Inferior vena cava has been reported to be a route for pulmonary metastases of HCC via right atrium (10). Thus, we considered local invasion inferiorly into the kidney rather than hematogenous spread.

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