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Case Report

Bellini Duct Carcinoma of the Kidney and Liver Metastasis

Suat Keskin

ABSTRACT

We present clinical and radiological findings in a case of bellini duct carcinoma. This is a rare and aggressive kidney cancer originating from distal renal tubule. The patient underwent transperitoneal radical nephrectomy and the pathological report certified the diagnosis. Control computed tomography scan showed normal findings. But magnetic resonance imaging showed a heterogenous solid mass that is seen hypointense in T1 weighted imaging and hyperintensity in fat suppressed T2 weighted imaging in the liver. Microscopic examination revealed a deterioration structure, desmoplastic appearance and atypical cells with large hyperchromatic nucleus and evidence nucleolus. The histopathological diagnosis was a metastasis of bellini duct carcinoma.

Key words: *Bellini duct carcinoma, radical nephrectomy, heterogenous solid mass, fat suppressed T2 weighted imaging, desmoplastic appearance*

Böbreğin Bellini Duktus Karsinomu ve Karaciğer Metastazı

ÖZET

Bu vakada Bellini ductus karsinomunun (BDC) klinik ve radyolojik bulgularını sunmaktayız. Bellini duktus karsinomu distal renal tübülden köken alan agresif seyirli bir böbrek tümörüdür. Hastaya transperitoneal radikal nefrektomi uygulandı ve patolojik bugular tanıyı destekledi. Kontrol bilgisayarlı tomografide (BT) normal bulgular izlendi. Fakat manyetik rezonans incelemede (MRI) karaciğerde T1 ağırlıklı sekanslarda hipointens ve yağ baskılı T2 ağırlıklı sekanslarda hiperintens görünümde heterojen solid kitle izlendi. Mikroskopik incelemede detoryasyon gösteren yapılar, dezmoplastik görünüm ve hiperkromatik büyük nükleuslu ve nükleouslu atipik hücreler izlendi. Histopatolojik tanı BDC matastazını doğruladı.

Anahtar kelimeler: *Bellini duktus karsinomu, radikal nefrektomi, heterojen solid kitle, yağ baskılanmış T2 ağırlıklı görüntüleme, dezmoplastik görünüm*

INTRODUCTION

Collecting or BDC is a very rare variant of kidney carcinoma, characterized by an aggressive course and an extremely poor prognosis (1). Unlike the more common variants of renal cell carcinoma that arise from the convoluted tubules of the renal cortex, this aggressive malignancy is derived from the renal medulla, possibly from the distal collecting ducts of Bellini. Another distinctive feature of collecting duct carcinoma is its propensity for showing infiltrative growth, which differs from the typical expansile pattern of growth exhibited by most renal malignancies, at pathologic examination (2). Collecting duct carcinomas demonstrate an aggressive clinical course. Less than one-third of patients survive more than 2 years beyond diagnosis, and up to 40% have metastatic disease at presentation (3).

CASE

A 41-year-old man was referred to our hospital in August 2009 for detailed examination of a right renal mass, which had been pointed out by a local physician who was treating the patient for abdominal pain, hematuria and renal stone. Laboratory examinations including urinary cytological examination revealed no abnormalities except for modest elevation of carcinoembryonic anti-

Ünye Government Hospital, Ordu, Turkey

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Correspondence: *Suat Keskin*
Ünye Government Hospital, Ordu, Turkey
E-mail: *drsuatkeskin@yahoo.com*

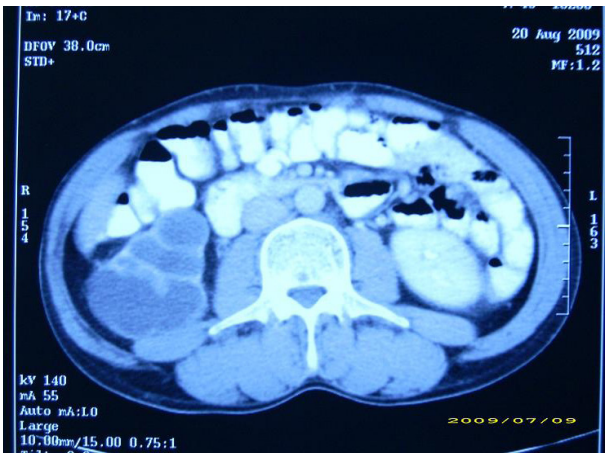

***Figure 1**. Lobulated cystic mass including septations and peripheral calcifications in CT in right kidney.*

gen and C-reactive protein levels. Abdominal ultrasound showed a collecting tube enlargement in the upper pole of the right kidney. CT scan showed a lobulated cystic mass including septations and peripheral calcifications (Figure 1). This lobulated cystic mass spreaded to renal pelvis. The patient underwent transperitoneal radical nephrectomy on the right side through a lombotomic access with a preoperative diagnosis of renal tumor. Histopathologic examination revealed collecting duct carcinoma. The patient was called for control after one month. Control CT scan was performed and showed normal findings. But MRI showed a heterogenous solid mass that is seen hypointense in T1 weighted imaging and hyperintense in T2 weighted multiphase LAVA (Liver Acquisition with Volume Acquisition) imaging in the liver (Figure 2). There was a heterogen pathologic enhacement in identified heterogenous solid mass. Liver biopsy was performed. It was carried out two biopsy materials (20 mm and 2 mm length) in tru-cut biopsy needle. Microscopic examination revealed a deterioration structure, desmoplastic appearance and atypical cells with large hyperchromatic nucleus and evidence nucleolus. The histopathological diagnosis was a metastasis of BDC. The patient was conducted to the other hospital for chemotherapy of liver metastasis.

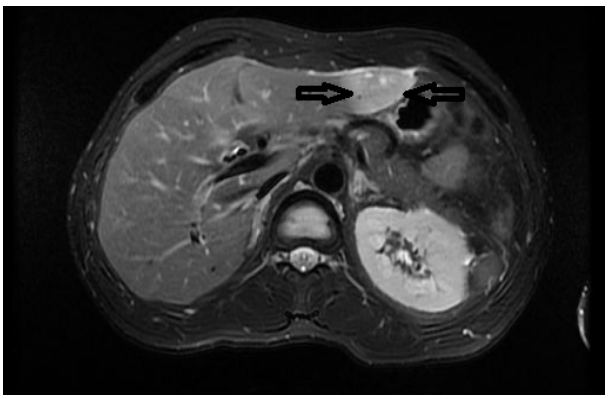

***Figure 2**. Heterogenous solid mass that is seen hyperintense in T2 weighted multiphase LAVA imaging in the left lobe of liver (arrows).*

DISCUSSION

BDC which is a rare and aggressive primary renal neoplasm, arises precisely from the principal cells lining the distal collecting duct (Bellini duct) epithelium (4) and the distal renal tubules (5, 6). BDC is characterized by aggressive nature, frequent presence of local invasion or distal metastasis at the time of diagnosis and often fatal clinical course, though long lasting early stage was also reported (7). Over the past decade, fewer than 20 cases have been reported in the United States (1,8-10). A review of worldwide English literature identified a total of approximately 120 cases (1,8–16). The largest cohort consists of 81 confirmed BDC cases diagnosed at 66 Japanese Institutions. The overwhelming majority of reported BDC cases were metastatic at presentation and most exhibited extremely poor prognosis (16). Hematuria and lumbar or renal angle pain tend to be the most common presenting features (17). On CT, it normally presents as a solid lesion in the renal medulla with minimal contrast enhancement (18). In our patient, CT scan showed a lobulated cystic mass including septations and peripheral calcifications in right kidney and there wasn't a significant of liver paranchima on CT scan. But MRI revealed that a metastatic lesion in liver. In similarly most cases reported previously that the site of the metastasis was the liver (19,20). In contrast previously there were found liver metastasis in CT (1,21,22). In conclusion, BDC is a rare tumor with a clinically rapid and progressively malignant course. Its metastasis mustn't be only determined by CT scan. So in early stage MRI must be performed to find liver metastasis. Detailed, long-term follow-up to detect distant metastasis is, of course, also necessary.

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