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# COLLECTING DUCT CARCINOMA OF THE KIDNEY: A CASE REPORT

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**We present a case of collecting duct carcinoma of the kidney that is an unusual variant of renal cell carcinoma, whose appearance and behavior are not well established. A 55-year-old man was admitted to our hospital with a left large renal cystic mass detected during a health examination. He had undergone radical nephrectomy under the clinical diagnosis of renal cell carcinoma. Histologically, the tumor was not typical renal cell carcinoma and immunohistochemical study was performed. The tumor cells expressed peanut agglutinin, soybean agglutinin, epithelial membrane antigen and high-molecular-weight keratin, resulting in the diagnosis of collecting duct carcinoma. He received cisplatin-based adjuvant chemotherapy in the manner of the regimen for the urothelial carcinoma, and alive with no evidence of disease for two years after surgery.**

The most of renal cell carcinoma are thought to arise from the epithelium of proximal tubules. The tumor arising from the epithelial cells of the collecting duct is rare. This atypical renal malignancy has been called collecting duct or Bellini's duct carcinoma. The first case of these tumors was reported by Mancilla-Jiminez *et al.* in 1976 (1). Recently, a few investigations demonstrated the histological and immunohistochemical feature of this disease (2-4). While prognostic information of Bellini's duct carcinoma is limited, it seems to have a poor prognosis. We describe a case of the collecting duct carcinoma of the kidney which was diagnosed by the histopathological examination and immunohistochemical staining for some kinds of lectin and high-molecular-weight keratin.

## CASE REPORT

A 55-year-old man was admitted to our hospital with a left large renal cystic mass detected during a health examination. Medical history was unremarkable. Physical examination revealed a soft mass lesion in the left subcostal area. Excretory urography demonstrated downward displacement of the left renal pelvis by the renal mass. Magnetic resonance imaging (MRI) showed a large cystic renal mass that was 12cm in diameter and contained an irregular mass lesion inside the cystic lesion. Percutaneous puncture of the renal cystic lesion and cystography were performed (Fig.1A). Aspirated fluid was dark-red colored. The cytological study of this fluid was negative for malignancy. Digital subtraction angiography demon-

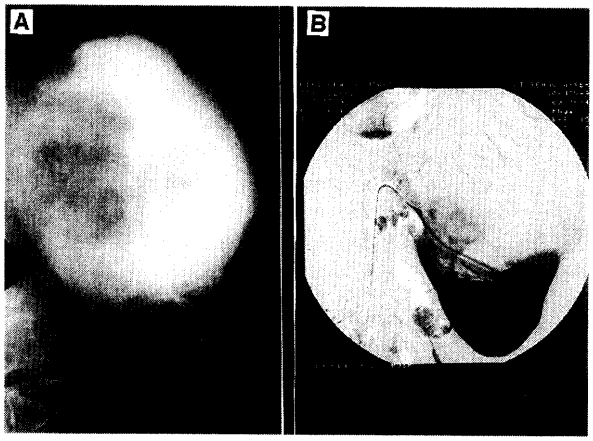


Fig.1 (A) Percutaneous renal cystography revealed a filling defect inside the cyst. (B) Digital subtraction angiography demonstrated tumor stain in the renal cyst lesion.

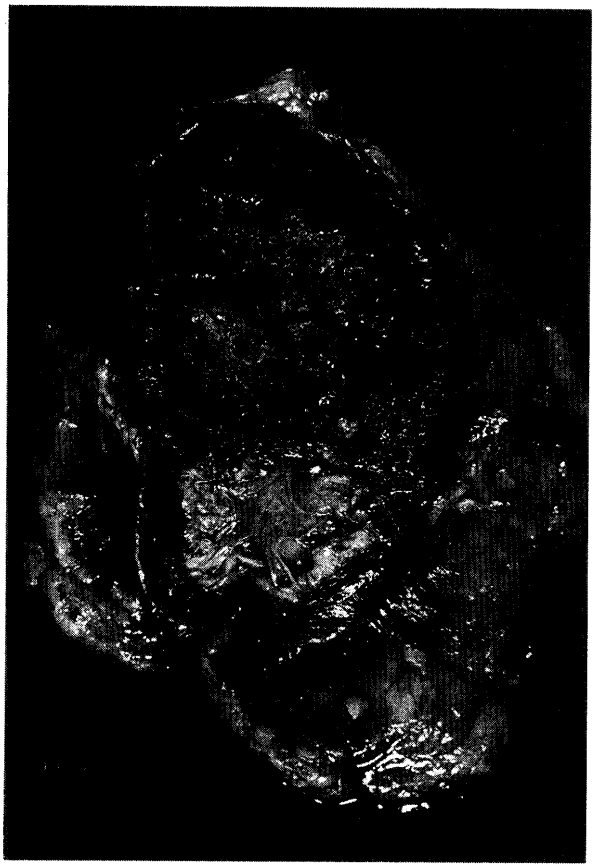

Fig.2 Resected left kidney contained a large cyst and the tumor protruded into the cyst.

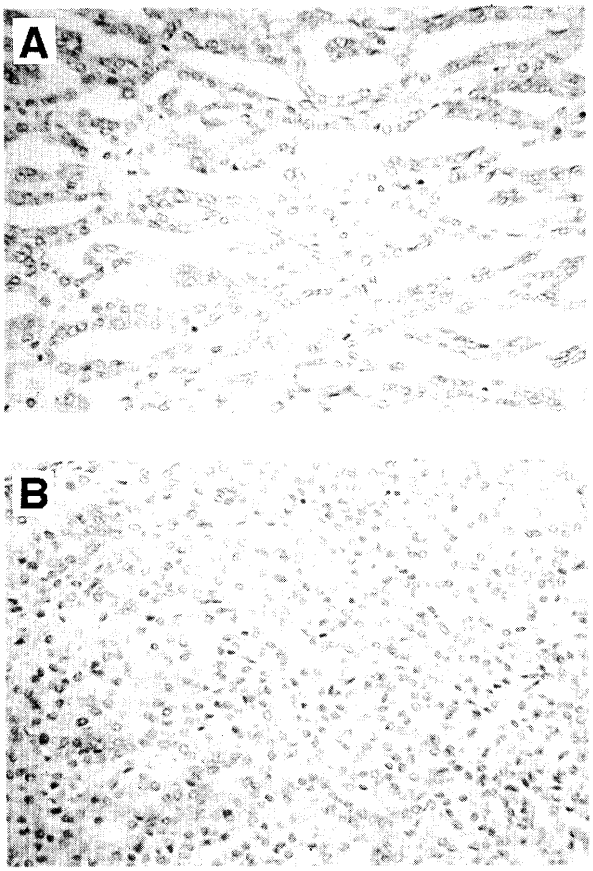


Fig.3 Sections showed cuboidal cells with eosinophilic cytoplasm and pleomorphic nuclei. Reduced from x100. (A) Tubular part. (B) Solid part.

Table 1. Results of immunohistochemical staining

| | Our case | Normal kidney | | |
|---|---|---|---|---|
| | | Proximal tubule | Distal tubule | Collecting Duct |
| PNA(Peanut agglutinin) | + | - | + | + |
| SBA(Soy bean agglutinin) | + | - | + | + |
| DBA (Dolichos biflorus agglutinin) | ± | - | + | + |
| LTA(Lotus tetragonolobus) | - | + | - | - |
| High molecular keratin(MA903) | + | - | + | + |
| EMA | + | + | + | + |
| Vimentin | + | + | + | + |
| Leu M1 | - | + | - | - |

strated abnormal tumor stain in the renal cystic lesion(Fig.1B).

An open laparotomy demonstrated that a smooth, tense and cystic mass was present in the upper pole of the left kidney. Since the pathological examination of the frozen section revealed renal cell carcinoma, left radical nephrectomy and hemilymphadenectomy were performed. A large cyst measuring 10x10x8cm in diameter was present in the upper part of the kidney, which contained a tan tumor measuring 3.0cm in diameter(Fig.2). Microscopic examination of the removed specimen revealed cuboidal cells with eosinophilic cytoplasm and pleomorphic nuclei. The tumor cells were arranged in a solid pattern with a small area of tubular formation(Fig.3A, 3B).

Immunohistochemically, the tumor cells expressed peanut agglutinin(PNA), soybean agglutinin(SBA), epithelial membrane antigen(EMA) and high-molecular-weight keratin(MA903), whereas lotus tetragonolobus agglutinin (LTA) and Leu M1 were not expressed (Table 1).

The postoperative course was uneventful and the patient received 2 cycles of cisplatin-based chemotherapy consisted of methotrexate, vinblastine, epirubicin and cisplatin(M-VEC) (5). He is alive with no evidence of disease for two years after surgery.

## DISCUSSION

Malignant tumor of the kidney originating from the epithelial cells of collecting duct is rare. Of note is the differing embryological origin of the proximal tubules and collecting ducts, which are, respectively, the metanephros and mesonephros (ureteral bud) (3). Since the first case was reported, a few investigations demonstrated the histopathological features of this disease. In the gross appearance, the tumor exists in the renal medulla and usually without necrosis or hemorrhage. Microscopically, it has a various histological structure from tubulopapillary to solid pattern within a same tumor (6). Recently, immunohistochemical staining for PNA, SBA and high molecular keratin(MA903) is considered to be a useful method to facilitate the differential diagnosis of collecting duct carcinoma from typical renal cell carcinoma (6). We made a diagnosis of the collecting duct carcinoma of the kidney from the histopathologic features and immunohistochemical findings of the tumor.

While clinical features of the collecting duct carcinoma are uncertain, the prognosis of this disease seems to be worse than that of typical renal cell carcinoma (2,3). Because of the poor prognosis of this disease, effective systemic therapy with surgical resection is necessary. Cisplatin-based multiple-drug chemotherapy is currently considered to have the greatest efficacy for patients with locally unresectable or metastatic transitional cell carcinoma of the urinary tract (7). The proposed embryological origin of the tumor is the ureteral bud, cisplatin-based chemotherapy may be a reasonable treatment for this disease. In our case, two cycles of cisplatin-based systemic chemotherapy were performed in an adjuvant setting after surgical treatment. While most of cases died of metastatic disease within 2 years after surgery (2,3), our case is alive without disease for two years after surgery and adjuvant chemotherapy. Adjuvant chemotherapy may have exerted an effect upon a favorable prognosis of our case, close observation is necessary and in progress because of an aggressive property of the collecting duct carcinoma.

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