Microcystic Transitional Cell Carcinoma
A Report of 2 Cases Arising in the Renal Pelvis

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Microcystic transitional cell carcinoma is a rare variant of urothelial carcinoma; to date, it has been described only in the urinary bladder. We report 2 cases of microcystic transitional cell carcinoma arising in the renal pelvis. The first case occurred in a 73-year-old man with a history of superficially invasive transitional cell carcinoma who presented with macroscopic hematuria and anemia. The second case occurred in a 62-year-old woman who had no relevant medical history and presented with hematuria. Computed tomographic scan revealed a tumor of the renal pelvis. In both cases, microscopic examination showed invasive transitional cell carcinoma with prominent cystic features. The cysts were irregular in size and were deeply infiltrative. The cysts were lined by single or multiple layers of cuboidal or flattened cells with minimal cytological atypia. The first patient died of his disease 18 months after presentation. The second patient remained well at her 6-month follow-up examination. Microcystic transitional cell carcinoma is an unusual, deceptively bland variant of urothelial carcinoma, which can mimic benign lesions.

Urothelial carcinoma can present many variable features, which can pose diagnostic difficulties. Some variants mimicking benign lesions, such as cystitis cystica or nephrogenic metaplasia, have been described as "deceptively bland bladder carcinoma." In 1991, Young and Zukerberg reported 4 cases of transitional cell carcinoma of the urinary bladder with prominent microcystic pattern. We report 2 additional cases that developed in the pelvicaliceal cavities.

REPORT OF CASES

Case 1

A 73-year-old man had a 5-year history of superficial transitional cell carcinoma of the urinary bladder. He presented with macroscopic hematuria. Cystoscopy revealed no tumor of the bladder, but there was blood originating from the right ureteral orifice. Computed tomographic scan and urography showed no tumor. A nephrectomy was performed because of recurrent hematuria with anemia. The patient died of his disease 18 months later with pulmonary metastases proved by transthoracic fine-needle biopsy.

Case 2

A 62-year-old woman without significant medical history reported macroscopic hematuria for a few weeks. Cystoscopy and bladder biopsies were normal. Cytological examination of urine revealed atypical urothelial cells. Urography and computed tomographic scan revealed a tumor in the upper calyx of the left kidney. A ureteronephrectomy was performed. The patient is well without signs of disease 6 months after presentation.

PATHOLOGIC FINDINGS

Gross examination in case 1 showed an ulcerated and ill-defined lesion of the renal pelvis with extension to the renal parenchyma. Gross examination in the second case revealed a friable exophytic tumor of the upper calyx with extension into the renal parenchyma.

Microscopic examination in the first case showed a proliferation of small tubules and numerous cysts in lamina propria, muscularis propria (Figures 1 and 2), and in the renal parenchyma. Cystic structures involved the fat of the renal pelvis. No papillary carcinoma was associated. The tubules and cysts were randomly distributed with a deeply invasive arrangement in the stroma between muscular fibers and renal tubules. The cystic structures were variable in size and shape, but always measured less than 2 mm. Small cuboidal or flat cells arranged in 1 to several layers lined the cysts and the tubules (Figure 3). Tumor cells had an eosinophilic cytoplasm with round and chromatic nuclei. Small nucleoli were often observed. Mitotic activity was low, without abnormal mitosis. No clear or hobnail cells were observed. Rare nests of typical neoplastic transitional cells were noted focally.

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Figure 1. Cysts of various sizes infiltrating the pyelocaliceal cavities (case 1) (hematoxylin-eosin-saffron, original magnification ×100).

Figure 2. Neoplastic cystic structures with bland appearance invading the renal cavities (case 1) (hematoxylin-eosin-saffron, original magnification ×200).

Figure 3. The cysts are lined by cuboidal or flattened cells with minimal cytological atypia (case 1) (hematoxylin-eosin-saffron, original magnification ×400).

Figure 4. Blue and eosinophilic secretions in the lumens of cysts (case 1) (Alcian blue/periodic acid-Schiff, original magnification ×400).

Figure 5. Low-grade papillary urothelial carcinoma associated with an invasive cystic component (case 2) (original magnification ×100).
COMMENT

Invasive transitional cell carcinoma is usually composed of nests, cords, and trabeculae of large eosinophilic cells with frank cytological atypia. However, several morphologic variants have been described. Some of them have a deceptively benign appearance, which may cause difficulties in the differential diagnosis.\(^1\,^2\)

In 1991, Young and Zukerberg\(^3\) reported 4 cases of transitional cell carcinoma of the urinary bladder with extensive microcystic features. In this initial report, all the tumors were deeply invasive with cysts scattered among foci of typical urothelial carcinoma. In one case, the entire tumor was cystic, as in one of our cases. The cysts were of various sizes and shapes and were lined by cuboidal or flattened cells with minimal atypia. The case composed exclusively of cysts caused major problems in diagnosis. This very unusual morphologic appearance could lead to an erroneous diagnosis of a benign lesion, such as cystitis glandularis, cystitis cystica, or nephrogenic metaplasia. The main criteria for the differential diagnosis between cystitis cystica/cystitis glandularis and microcystic urothelial carcinoma are the variation of shape and size of the cysts, the deep location, the irregular arrangement, and the invasive features in the muscle or beyond. The cytological criteria are less helpful because the atypia are often minimal and have no significant mitotic activity.

Nephrogenic metaplasia could be also confused with microcystic carcinoma. Nephrogenic metaplasia is composed of tubules, cysts, and papillae lined by cuboidal or columnar cells, sometimes with cytological atypia.\(^4\) In the tubules, eosinophilic or basophilic secretions frequently are observed, as in microcystic carcinoma.\(^5\) The major arguments in favor of nephrogenic metaplasia are circumscribed growth, confinement to the lamina propria, and lack of an invasive component.\(^6\) Adenocarcinoma of the bladder is an other important differential diagnosis, but generally atypia, mitotic activity, and necrosis are greater, and no papillary component is present.\(^7\)

To the best of our knowledge, no other reports of microcystic carcinoma have been published since the initial description. In 1997, Paz et al\(^5\) published a series of 12 cases, but it seems that the microphotographs presented are those of papillary urothelial carcinomas with glandular metaplasia, rather than microcystic carcinomas as described by Young and Zukerberg.\(^3\) In this article, we report the first cases of microcystic transitional cell carcinoma of the kidney.

Several other variants of “deceptively bland transitional cell carcinoma” are known.\(^2\) These entities share some morphologic similarities with microcystic carcinoma. The nested carcinoma, a term initially coined by Murphy and Deana,\(^6\) is characterized by irregular nests and tubules of transitional cells without significant atypia, mimicking hyperplasia of Brunn’s nests.\(^5,^6,^7\) Sometimes a microcystic pattern is also present in these tumors. Invasion of the muscle remains the best criterion for the differential diagnosis. Young and Oliva\(^8\) have also reported 3 cases of urothelial carcinoma with a prominent component of small tubules, which were initially misdiagnosed as nephrogenic metaplasia. Careful attention to architectural features is the key to distinguishing this unusual cancer from benign processes.

References