Squamous cell carcinoma located in the renal caliceal system: A case report and review of the literature

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Squamous cell carcinoma of the urinary tract is a very rarely encountered tumor. It is more frequently reported in bladder and male urethra than in renal pelvis. With the addition of new cases in the literature, the impact of its features, such as the location and the stage of the tumor, on the outcome will be highlighted. Here, we present a case with renal squamous cell carcinoma located in the upper caliceal system and discuss it in the light of current literature. [Turk J Cancer 2002;32(1):20-24]

Key words: Squamous cell, kidney, carcinoma

Primary neoplasms of the renal collecting system are uncommon, accounting for only 4-5% of all urothelial tumors (1,2). The transitional cell type is the most frequently diagnosed (85% to 95%), followed by squamous cell carcinoma (6% to 15%) and adenocarcinoma (7%) (3,4). In the present paper, we report a 62 years old women who had lithiasis and squamous cell carcinoma in her right non-functioning kidney.

Case report

A 62 year old female patient presented with intermittent, mild, right flank pain. She had a history of urolithiasis for a long time. Physical examination revealed a slight tenderness on right costovertebral angle and a palpable mass on upper right quadrant of abdomen. Complete blood count, erythrocyte sedimentation rate, biochemical analysis and urinalysis were all within the normal ranges. Intravenous urogram revealed a non-functioning right kidney and a 22x20 mm radiopacity located at the right renal area. Ultrasonography revealed an obstructing calculi located in the renal pelvis and a solid mass in the upper pole calyx. Computed tomography demonstrated a huge, non-functioning, hydronephrotic right kidney with a calculi of diameters 23x21 mm located in the renal pelvis and a solid mass of approximately 25x21 mm in size, located at the inner surface of the upper dilated calyx (Figure 1). There was an adipose tissue obliteration between the liver and the adjacent right kidney.
On the basis of these findings a radical right nephroureterectomy was performed. The convalescence was uneventful.

Histopathologic examination revealed a tumoral tissue with atypical squamous epithelial cells and intensive necrotic areas which invaded the renal parenchyma (Figures 2 and 3).

Fig 1. Tomographic view of intraluminal solid mass in the right kidney

Fig 2. Tumoral tissue with atypical squamous epithelial cells (H&E X100)
Figure 3. Intensive necrotic areas and atypical squamous epithelial cells which invaded the renal parenchyma (H&E X20)

The intact renal tissue showed tubular dilatation, thyroidisation and lymphocytic infiltration that were all consistent with pyelonephritis. Tumor invaded renal capsule and fascia of Gerota but not beyond the perirenal adipose tissue. No metastasis was detected in the hilar lymph nodes. The patient is under the follow-up for 4 months with no evidence of relapse or metastasis of the disease.

Discussion

Primary squamous cell carcinoma of the renal collecting system is a very rare entity. The incidence of renal squamous cell carcinoma among malignant renal tumors ranged widely from 0.5% to 8% in the previous reports (5,6). In general, these tumors are highly aggressive and are at high stage when detected and can be expected to have a poor clinical course.

The lack of characteristic presentation like hematuria, pain and palpable mass causes delay in diagnosis. Most of the detected tumors are histologically high grade, 84% of the tumors were locally advanced or metastatic (7).
Squamous cell carcinoma of the renal pelvis is often associated with phenacetin consumption, chronic renal calculi or infection. The incidence of co-existing urinary stone was reported in a wide range between 18% (6) and 100% (5). Squamous metaplasia invades mucosa adjacent to the carcinoma in 17% to 33% of the patients (8). Whether the occurrence of squamous metaplasia is due to the presence of the calculus that leads ultimately to the development of carcinoma or existence of squamous cell carcinoma causes the formation of calculus is not clear yet. This dilemma is particularly valid for the co-existence of the tumor and calculus at the renal pelvis. As renal squamous cell carcinoma is frequently associated with infected staghorn calculi existing for a long duration, it is recommended for the patients with renal stone disease who don’t need intervention or patients under extracorporeal shock wave lithotripsy treatment or patients with non-functioning kidney due to stone disease to be carefully examined with imaging modalities (9).

The tumor can be documented by conventional radiological imaging modalities. Filling defects or obstructive lesions in the renal pelvis by intravenous/retrograde urography or detection of a solid mass by ultrasonography can be the signs of the tumor (10). Tomographic imaging reveals these findings more specifically (10,11).

Recently in a retrospective study of Lee et al (9), 15 patients with squamous cell carcinoma of the kidney were classified into two groups according to localisation of the tumors as central and peripheral type. They stated that the central renal squamous cell carcinoma presents more intraluminal components and is usually associated with lymph node metastasis whereas peripheral renal squamous cell carcinoma presents with prominent renal parenchymal thickening and might invade the perirenal fat tissue before lymph node or distant metastasis could be identified. The survival of patients with central renal squamous cell carcinoma was reported to be significantly shorter than those with peripheral renal squamous cell carcinoma.

In the report of Nativ et al (7), patients with renal squamous cell carcinoma were divided into three groups on the basis of tumor staging criterias outlined by Peterson (12). Nativ et al reported that patients with locally invasive renal squamous cell carcinomas had 1 and 2 year-survival rates of 33% and 22%, respectively. They have also reported that the treatment modalities like nephrectomy, nephroureterectomy, adjuvant radiotherapy or chemotherapy, irrespective of tumor stage, did not affect the survival of the patients.

The current primary treatment of renal squamous cell carcinoma is nephroureterectomy. If metastasis develops, adjuvant chemotherapy or irradiation has little effect on the unfavourable prognosis (10).

The case that we mention here is consistent with the peripheral type renal squamous cell carcinoma as reported by Lee et al (9). The tumor was locally advanced like most of the tumors in the literature. The co-existence of renal calculus and renal squamous cell carcinoma was also present in this case. Patients with renal stone disease who don’t need intervention or patients under extracorporeal shock wave lithotripsy treatment or patients with non-functioning kidney due to stone disease must be carefully examined with imaging modalities and by this way the early detection of the tumor may provide a better outcome for the patients.
Despite the tumor of our patient has invaded the fascia of Gerota, we are in an expectation of a better survival with respect to the central type renal squamous cell carcinoma. We decided to follow-up the patient until the evidence of metastatic disease would be demonstrated. We are planning to start a combination chemotherapy including methotrexate, cisplatin and bleomycin as reported by Corral et al (13) recently if the signs of metastatic disease are revealed. Corral reported a high but short lived overall response rate with this chemotherapy regimen.

References