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Case Report

Pathology Section

Urothelial and Squamous Cell Carcinoma of Renal Pelvis – A Rare Case Report

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ABSTRACT

Primary malignant tumors of the renal pelvis are relatively rare. Urothelial carcinoma of renal pelvis accounts for 7% of all renal neoplasms, with Squamous Cell Carcinoma (SCC) forming a very small percentage of these cases. Urothelial and SCC of renal pelvis is still a rarer entity. This malignancy of the renal pelvis lacks the characteristic presentation of common renal cell carcinoma and usually presents at an advanced disease stage. We report a case of urothelial and SCC of renal pelvis in a 61-year-old male who presented with non-specific clinical complaints like dysuria and right flank pain.

Keywords: Haematuria, Kidney, Neoplasm

CASE REPORT

A 61-year-old male presented with dysuria and right flank pain since six months. Pain had increased in intensity over the last one month. There was history of surgery for renal calculi six years ago. Clinical examination was non-contributory; the patient had mild tenderness in the right loin. Urine microscopy showed plenty of pus cells and 3-4 red blood cells per high power field. Urine culture was negative. Hematological investigations showed Hb of 7 gm/dl, total leucocyte count was mildly increased (13200cells/cumm) with normal platelet count of 2.5 lacs. Peripheral smear was reported as normocytic normochromic anaemia with mild leucocytosis. Biochemical investigations were within normal limits.

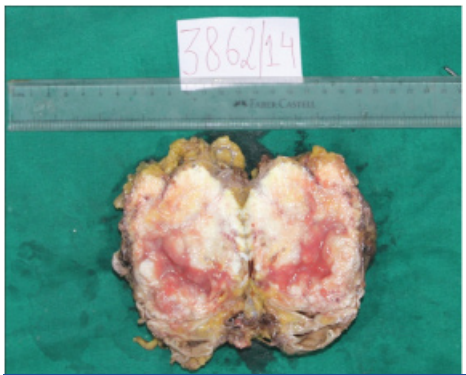
Ultrasonography of the abdomen showed markedly enlarged right kidney with multiple non-obstructive calculi. Computerized tomography scan of the abdomen and pelvis showed a heterogeneous enhancing mass arising from the middle and lower poles of the right kidney measuring 9.5x7.6x6.6 cm. A provisional diagnosis of renal malignancy with hydronephrosis was made on CT scan. The patient underwent right nephrectomy and the specimen was sent for histopathological examination.

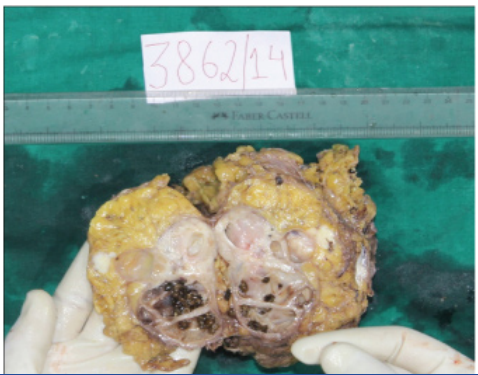
Gross specimen showed kidney with perinephric fat. Kidney measured 12x7x7cm with attached ureter measuring 4cm in length. Externally, an irregular, hard, nodular mass was noted over the postero-lateral surface, measuring 8x6cm. This mass was eroding the renal capsule and Gerota's fascia. On cut section, a greyish-white, firm to hard growth measuring 8x6x6 cm, involving an entire cross-section of the kidney along with the renal pelvis was noted [Table/Fig-1]. Grossly tumor emboli were not seen in ureter. Serial cross-sections revealed dilated calyces in the upper pole which contained multiple brown calculi each ranging from 0.2 to 0.3 cm in diameter [Table/Fig-2]. The cortico-medullary junction could not be made out.

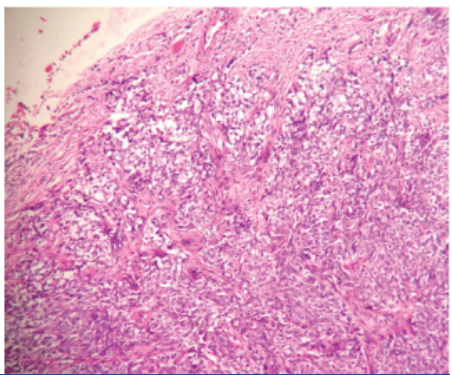
Multiple sections studied from growth showed tumor tissue arranged in nesting pattern. Individual tumor cells showed round to oval nuclei with prominent nucleoli and clear to eosinophilic cytoplasm suggestive of urothelial carcinoma [Table/Fig-3]. Tumor tissue showed areas of transition from urothelial carcinoma to SCC, involving almost 80% of the tumor [Table/Fig-4]. Tumor cells were arranged in diffuse sheets. Individual tumor cells were polygonal and showed round to oval vesicular nuclei with prominent nucleoli and abundant eosinophilic cytoplasm. Many keratin pearls, individual cell keratinization, intercellular bridges and abnormal mitoses were noted in the areas of SCC [Table/Fig-5]. Multiple microscopic sections studied didn't show heterogeneous areas composed of sarcomatoid carcinoma, production of mucin, mixture of epithelial and stromal elements which ruled out possibility of renal cell carcinoma, unclassified. Focal areas showed thyroidisation of the tubules, atrophic tubules filled with secretions and lympho-plasmacytic infiltration in the interstitium. Sections studied from renal artery, renal vein and ureter were free from tumor tissue. Diagnosis offered was urothelial and SCC of renal pelvis with chronic pyelonephritis.

DISCUSSION

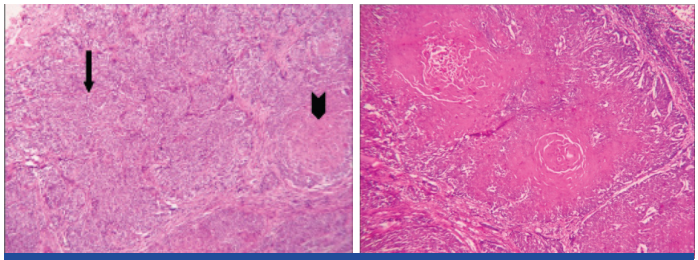
Urothelial carcinomas of the renal pelvis are very rare tumors, accounting for approximately 7% of all renal tumors [1]. SCC of the







[Table/Fig-1]: Cut section of kidney showing greyish white tumor tissue along with areas of haemorrhage and necrosis. **[Table/Fig-2]:** Cut section of kidney showing multiple calculi in dilated calyx.
[Table/Fig-3]: Photomicrograph showing tumor tissue arranged in nesting pattern with individual cells showing clear to eosinophilic cytoplasm (H&E, 100X).



[Table/Fig-4]: Photomicrograph showing areas of transition with urothelial carcinoma (arrow) and SCC (arrowhead) (H&E, 100X). **[Table/Fig-5]:** Photomicrograph showing squamous cell carcinoma with keratin pearls and individual cell keratinisation (H&E, 100X).

renal pelvis is an uncommon tumor, the incidence of which is only 1.4% of all renal malignancies. Various etiological factors like renal calculi, infections, vitamin A deficiency and hormonal imbalance are thought to be related to its pathogenesis [2]. In a study of 108 cases of high grade urothelial carcinoma of renal pelvis by Perez-Montiel et al., along with high grade urothelial carcinoma, squamous differentiation was noted in 14 cases and SCC was noted in one case [1]. These tumors are highly aggressive and usually are diagnosed at a very late stage which inevitably leads to a poor clinical outcome [3].

This tumor occurs most commonly in the age group of 50-60 years with no predilection for sex and is mostly unilateral. Most patients present with non-specific features like pain and haematuria. The cause for pain is pelviureteric junction obstruction and/or local extension whereas haematuria may be due to primary tumor mass or calculi. Paraneoplastic syndromes like hypercalcaemia, leucocytosis and thrombocytosis may also be associated with SCC [4]. In the present case, there were no symptoms of paraneoplastic syndromes.

SCC of the urothelial tract arises through a process of metaplasia of the urothelium and majority of the cases show squamous metaplasia of the adjacent urothelium [5]. It is presumed that the cause of squamous metaplasia in these cases is chronic irritation of the urothelium, and there is subsequent malignant transformation in this metaplastic urothelium [5]. The most common cause for squamous metaplasia in the urothelium is long-standing renal calculi. Other factors that have been implicated in this process are previous history of renal calculus surgery, chronic analgesic abuse, exogenous and endogenous chemicals, vitamin A deficiency, hormonal imbalance, schistosomiasis, smoking, and radiotherapy [4,6]. In the present case, there was past history of surgery for renal calculi. Histopathological examination of the nephrectomy specimen also showed multiple brown calculi within dilated calyces which might have caused squamous metaplasia of the urothelium and subsequent malignant transformation.

The radiological features of this tumor are highly non-specific. Most commonly, the radiological findings include a solid infiltrating mass with hydronephrosis, with or without calcifications, the radiological differential diagnoses for which are primary and secondary renal neoplasms and xanthogranulomatous pyelonephritis [7].

The mainstay of treatment for these tumors is surgery and chemotherapy has only marginal benefit. Nephrectomy is the treatment of choice and should be performed even in the presence of metastatic disease [6]. With a median survival rate of only 3.5 months after diagnosis, the prognosis is very poor [5]. Indexed case also succumbed to death within one month of diagnosis.

CONCLUSION

SCC of the renal pelvis, occurring as a distinct entity or along with urothelial carcinoma, is a very uncommon tumor. Majority of the patients present with advanced disease because of delay in diagnosis due to non-specific clinical features and radiological findings. Regular monitoring of patients with long-standing nephrolithiasis may help in making an early diagnosis, which is essential for improving patient outcome.

REFERENCES

[1] Perez-Montiel D, Wakely Jr PE, Hes O, Michal M, Suster S. High-grade urothelial carcinoma of the renal pelvis: clinicopathologic study of 108 cases with emphasis on unusual morphologic variants. *Modern Pathology*. 2006;19: 494-503.

[2] Bandyopadhyay R, Biswas S, Nag D, Ghosh AK. Squamous cell carcinoma of the renal pelvis presenting as hydronephrosis. *J Cancer Res Ther*. 2010;6: 537-39.

[3] Karabulut A, Emir L, Gonultas M, Incel N, Germiyanoglu C, Erol D. Squamous cell carcinoma located in the renal caliceal system: A case report and review of literature. *Turk J Cancer*. 2002;32: 20-24.

[4] Singh J, Hafiz A, Shafi A, Rather AR, Rasool M, Bashir S. Primary squamous cell carcinoma of the renal pelvis associated with staghorn calculi. *JK Science*. 2012;14: 152-54.

[5] Singh V, Sinha RJ, Sankhwar SN, Mehrotra B, Ahmed N, Mehrotra S. Squamous cell carcinoma of the kidney – rarity redefined: Case series with review of literature. *J Cancer Sci Ther*. 2010;2: 82-85.

[6] Mathur SK, Rana P, Singh S, Goyal V, Sangwan M. Incidentally detected squamous cell carcinoma in non-functioning kidney presenting as multi-cystic mass. *J Surg Case Rep*. 2011;9:8-11.

[7] Bhaijee F. Squamous cell carcinoma of the renal pelvis. *Ann Diagn Pathol*. 2012;16: 124-27.

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