Case Report

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Pathology Section

Primary Renal Squamous Cell Carcinoma: A Case Report

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ABSTRACT

Primary renal squamous cell carcinoma is a rare malignancy of the upper urinary tract. Very few of such cases have been reported in the world literature. The diverse aetiological factors, the non-specific clinical presentation and the radiological findings of this tumour lead to a difficulty in its diagnosis. The diagnosis is established only after the histopathological examination of the resected specimen. The case which has been reported here was a case of primary renal squamous cell carcinoma in the left kidney with multiple calculi and hydronephrosis.

Key Words: Calculi, Kidney, Squamous cell carcinoma

INTRODUCTION

Primary malignant tumours of the renal pelvis are relatively rare; these constitute about 8%-14% of all the renal malignancies [1]. Urothelial carcinomas are observed in more than 90% of the cases and squamous cell carcinomas are seen only in 0.7%-7% [2]. Renal squamous cell carcinoma is a rare malignancy of the upper urinary tract and it occurs six times more frequently in the renal pelvis than in the ureter. These are moderately to poorly differentiated tumours which are more likely to be invasive and in advanced stages at the time of their diagnosis [3,4]. Most of the patients have a history of chronic urolithiasis, renal infection or analgesic abuse [5]. Very few cases of primary squamous cell carcinoma of the kidney have been reported in the literature. Solid masses, hydronephrosis and calcifications are common, but these are non-specific radiological findings. The diagnosis is established only after the histopathological examination of the resected specimen. An early metastatic spread is common and the prognosis is poor, with only very few patients surviving longer than 5 years [4,5]. The case which has been reported here had squamous cell carcinoma of the renal pelvis with hydronephrosis and renal calculi. The tumour was diagnosed only after the resection of the specimen and histopathological evaluation.

CASE REPORT

A 54-year old female, a housewife of a low socioeconomic status, presented with left flank pain which radiated to the scapular region and intermittent haematuria since one month. There was a history of intermittent pain in the abdomen with pain in the left iliac fossa since one year. The clinical examination revealed left sided abdominal fullness and tenderness. The routine lab investigations were performed; haemoglobin was 10.2 gms% and the peripheral smear showed neutrophilic leukocytosis. The platelet count was 5.1 lakh cells/cu.mm. The erythrocyte sedimentation rate (ESR) was 26 mm after the 1st hour. A urinalysis revealed haematuria and pyuria. The urine culture showed Proteus. Radiological investigations were done. A plain X ray of the abdomen (AP view) showed hazy opaque shadows in the left kidney. Intravenous pyelography (IVP) revealed an enlarged left kidney, a normal contour with a faint nephrogenic phase and multiple stones in the pelvis and the calyces [Table/Fig-1]. Ultrasound of the abdomen showed an enlarged left kidney with multiple hyper echoic lesions, with posterior shadowing in the left kidney, which was suggestive of multiple large renal calculi with hydronephrosis. The case was diagnosed as a left nonfunctional kidney and total nephrectomy (left kidney) was performed. It was observed during surgery that the left kidney was attached to the peri renal tissue, showing hyperaemia, inflammation and intense adhesions. The specimen was subjected to a histopathological examination [Table/Fig-2].

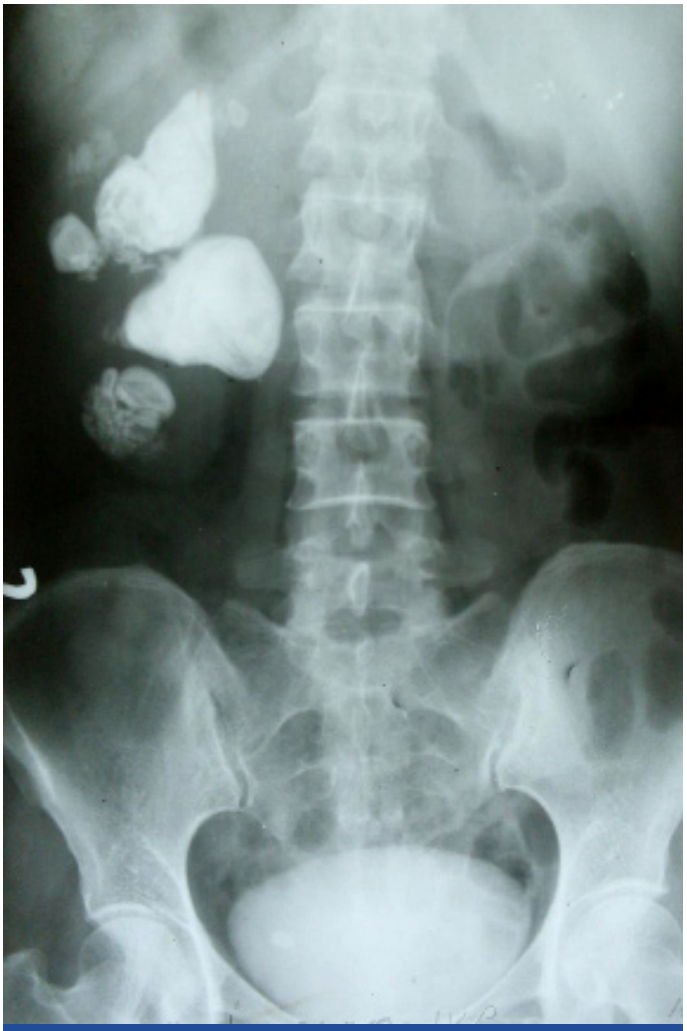
The gross examination showed that the left kidney measured 11.2 x 5.5 x 4 cms. The surface was smooth anteriorly and the posterior surface showed a reddish brown scar due to the dissection of the adhesions. The cut section showed four large staghorn type of calculi and multiple small calculi of round to irregular shapes, the largest one measuring 5 x 4 cms and studded in the renal parenchyma. Surrounding these calculi, the tissue showed hyperaemic and necrotic areas with grey white nodular areas of 3 x 2 cms, extending into the cortex and the renal capsule [Table/Fig-3].

Microscopically, the gray white areas showed a well differentiated squamous cell carcinoma with keratin pearls and nests of large, atypical epithelial cells. The surrounding areas showed a chronic inflammatory reaction with focal necrosis and abortive tubules [Table/Fig-4,5].

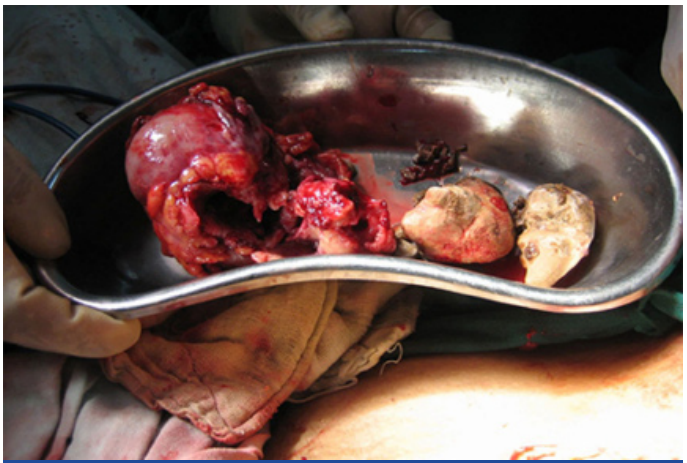
Thus, after deriving the final diagnosis, the patient was subjected to thorough clinical and radiological examinations in order to search for metastatic lesions. There was no evidence of any lymph nodal enlargement or distant metastases. An active follow up of the case was done with regular evaluation and there was no evidence of any metastases or recurrence of the disease till six months. The patient was advised to attend the follow up clinic once a month.

DISCUSSION

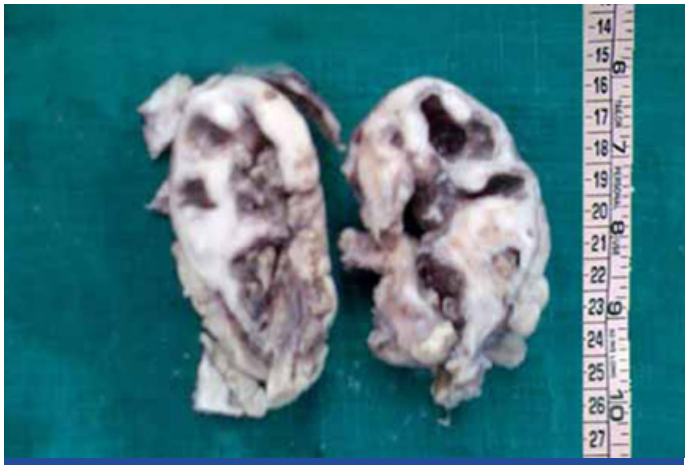
Primary malignant tumours of the renal pelvis are relatively uncommon, comprising of only 8-14% of all the renal malignancies [1]. The most common renal malignancy in adults is clear cell carcinoma, followed by papillary carcinoma and chromophobe cell carcinoma [4,6]. Squamous cell carcinoma of the renal collective system is a



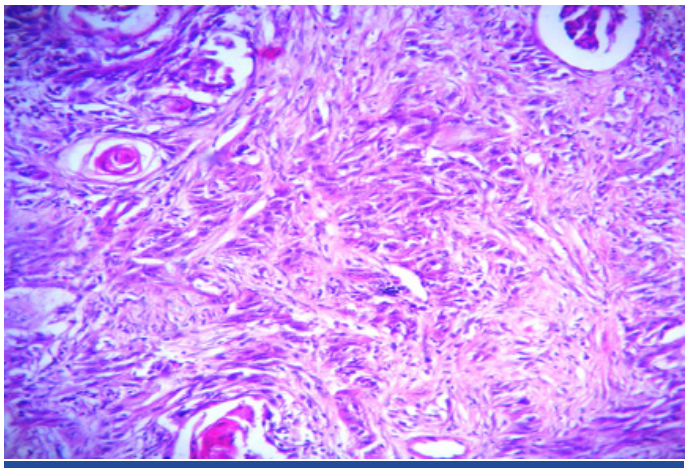
[Table/Fig-1]: Intra venous pyelography [X-ray] – showing multiple staghorn calculi in left kidney.



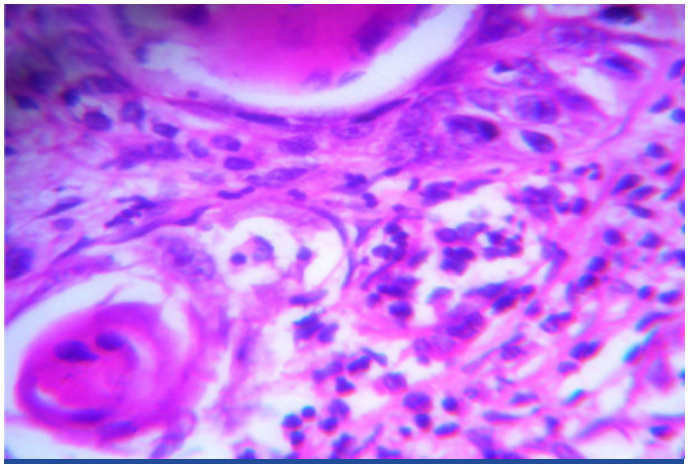
[Table/Fig-2]: Resected left kidney showing multiple large staghorn-calcului and small calculi.



[Table/Fig-3]: Nephrectomy specimen showing hydronephrosis and grey white nodular areas.



[Table/Fig-4]: Microscopic picture showing keratin pearls, atypical epithelial cell nests and abortive tubules (H&E; 10x)



[Table/Fig-5]: Microscopic picture showing keratin pearls, atypical epithelial cells and mitotic figures (H&E; 40x)

rare malignancy with a poor prognosis, accounting for about 10% of the renal pelvic tumours and 0.5% of the renal tumours [6,7].

Squamous cell carcinoma of the urothelial tract is thought to arise through a process of metaplasia of the urothelium. A majority of the patients have squamous metaplasia of the adjacent urothelium. The aetiological factors, namely long standing staghorn calculi and infections are the leading ones. Other factors include exogenous and endogenous chemicals, vitamin A deficiency, hormonal imbalance, schistosomiasis and smoking [8]. However, some cases have been reported where no apparent aetiological factor could be detected [1,9]. Squamous metaplasia in the adjacent mucosa is reported in 17-33% of the patients [10]. 94% of the renal squamous cell carcinomas usually present in an advanced stage at the time of the initial diagnosis. 21% of the patients are reported to be not eligible for surgery due to associated co-morbidities or advanced diseases [5,11]. An early metastatic spread is common and the prognosis is poor, with only 7.7% of the cases surviving more than 5 years. A median 5-11 month survival has been reported in a previous case series [6,12].

Hypercalcaemia, leucocytosis and thrombocytosis have been reported to be a part of the paraneoplastic syndromes in renal squamous cell carcinoma [13].

The diagnosis is often missed due to nonspecific features i.e., solid mass, hydronephrosis and calcifications which are common radiologic findings. Some specific findings such as an enhancing extraluminal and exophytic mass on the CT scan were described in previous case reports [14].

Nephrectomy with or without ureterectomy is performed in such cases. Nephrectomy is necessary even in the face of metastatic disease; to establish a histological diagnosis, for the control of the symptoms such as – pain, fever and haematuria, or to eliminate the source of the infection before a systemic chemotherapy can be instituted. Cisplatinum based chemotherapy and palliative radiotherapy have been advocated for the control of the local symptoms in metastatic disease, but they have failed to show any survival benefit [5,6].

In a study which was done by Lee et al., [14], primary renal squamous cell carcinoma was classified into two categories based on the location of the tumour – the central and the peripheral types. The central type had more rates of lymph nodal metastasis and the peripheral type showed parenchymal thickening with peri renal infiltration. The central type had poorer survival rates. The present case was a peripheral type of primary renal squamous cell carcinoma as per Lee et al., Nativ et al., [15], performed a study in which renal squamous cell carcinoma was divided into three groups. The report of the study stated that the one and two year survival rates of locally invasive renal squamous cell carcinoma were 33% and 22% respectively.

Biopsies from the renal pelvis or the calyceal wall should be considered in cases of long standing large renal calculi, especially in cases of staghorn calculus. Such patients are susceptible for harbouring occult or overt malignancy along with the renal stone disease [16].

CONCLUSION

The diagnosis of squamous cell carcinoma of the kidney is difficult on clinical grounds. It is a diagnostic challenge. Radiological investigations can only give information regarding hydronephrosis, calculus or the presence of any growth (tumour) but, they may not give an accurate diagnosis. A histopathological examination helps in deriving an accurate diagnosis, as was seen in the present case. The present article emphasizes the importance of a combined clinical, radiological, surgical and histopathological approach. The possibility of a malignancy should always be kept in mind in all the complicated cases and a histopathological examination should be performed in all the cases without fail.

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