ORIGINAL RESEARCH PAPER

Pathology

KEY WORDS: Kidney, squamous cell carcinoma (SCC), calculi

SQUAMOUS CELL CARCINOMA OF RENAL PELVIS: A CASE REPORT

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ABSTRACT

Primary squamous cell carcinoma of the renal parenchyma is a rare entity. The diagnosis of squamous cell carcinoma of the renal pelvis is usually unsuspected due to the rarity and inconclusive clinical and radiological features, hence patients present at advanced stages resulting in poor prognosis. It can be associated with long standing obstructive uropathy eg. renal calculi and chronic renal infection. Radical nephrectomy is the mainstay of the treatment. We presented a case of Squamous Cell Carcinoma of right kidney with Chronic Pyelonephritis in a patient of a 60 years old male who presented with complains of burning micturition and decreased urine output. The radiological examination showed gross hydronephrosis with staghorn calculi of right kidney. The patient was treated with radical nephrectomy. The significance of this case is highlighted by the unusual location of such a tumour, and while rare, it is an important consideration in the differential diagnosis of renal tumours.

INTRODUCTION

Primary malignant tumors of the renal pelvis are relatively rare and constitute approximately 8% to 14% of all the renal malignancies. The kidney is an unusual site for squamous cell carcinoma(SCC). Urinary bladder and male urethra are more frequently involved by SCC than the kidney. squamous cell carcinoma of renal pelvis is most often associated with long-standing nephrolithiasis, especially the formation of staghorn kidney stones, due to chronic irritation, inflammation, and/or infection and other causes like endogenous and exogenous chemicals, vitamin A deficiency, hormonal imbalance and radiotherapy all which can lead to squamous metaplasia. Due to its rarity and the non-specific clinical signs and symptoms as well as radiological findings, it is often not suspected preoperatively. This pathologic subtype is very aggressive, usually high grade, and presents at an advanced stage. Thus, it is associated with a poor prognosis.

CASE PRESENTATION

A 60-year-old male patient presented with complains of burning micturition and decreased urine output since 2 months at surgery OPD at tertiary health care hospital. Physical examination revealed mild left costovertebral angle tenderness. Routine diagnostic work-up including chest X-ray and laboratory investigations were all within the normal range, however ultrasonography of abdomen revealed gross hydronephrosis with staghorn calculi of right kidney. The patient was treated with right radical nephrectomy and specimen was sent to histopathology section of Pathology department for histopathological examination.

GROSS EXAMINATION

Gross examination of the of right nephrectomy specimen revealed enlargement of the right kidney with irregular and lobulated outer surface. The kidney measuring 15x8x4cm3 in size with one staghorn calculi measuring 6x4x3 cm3 in size. (Figure 1) Cut section showed loss of corticomedullary junction differentiation, dilated pelvicalyceal system along with multiple cystic areas and thinned out renal parenchyma. At upper pole multiple small foci of whitish and brownish areas were identified.

MICROSCOPIC EXAMINATION

Haematoxyline & Eosin stained sections showed renal pelvicalyceal system lined by metaplastic squamous epithelium and at places dysplastic epithelium with focally invading nest of malignant squamous epithelium and keratin pearls. (Figure 2 & 3) Cells were markedly pleomorphic with round/oval/irregular nuclei, coarse/clumped chromatin, prominent nucleoli with moderate amount of dense cytoplasm. Focal atrophied and sclerosed glomeruli, dilated atrophied renal tubules and thyroidization of tubules were seen. Focal dense chronic inflammatory infiltrates in interstitium with formation of micro abscess at places, area of necrosis, hemorrhage, fibrosis and calcification were also seen. The case was diagnosed as Extensive Squamous Metaplasia with foci of Invasive Squamous Cell Carcinoma with changes of Chronic Pyelonephritis. (Figure 4)

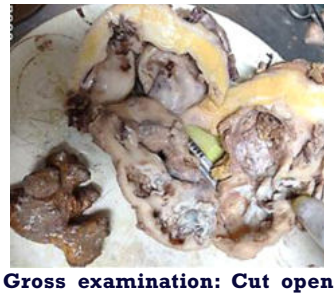

Figure 1: Gross examination: Cut open kidney with staghorn calculi

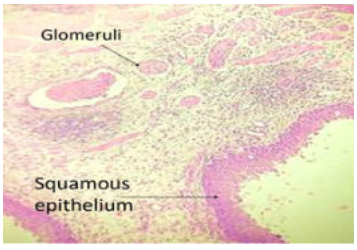

Figure 2: Microscopy: Normal glomeruli adjacent to focus of squamous epithelial carcinoma. H&E stain (10X)

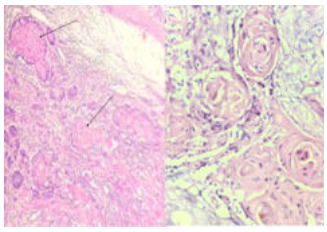

Figure 3: Nests of squamous cell carcinoma with keratin pearls. H&E (10X), Keratin pearls. H&E (40x)

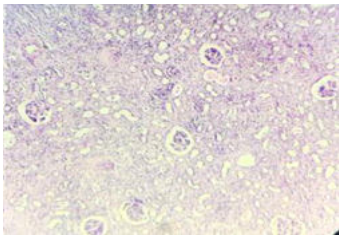

Figure 4: Other areas show atrophied glomeruli, thyroidization of tubules and other features of CPN.

DISCUSSION

Squamous cell carcinoma of kidney is an extremely rare tumour, which accounts for only 0.5-0.8% of all malignant renal tumours. Renal SCC, most of which is known to arise from collecting system, is a rare, exceptional and fatal clinical entity and constitutes less than1% of all urinary tract neoplasm. Its incidence among males and females is almost equal , predominantly in the age group of 50 to 70 years. Manifestation of primary renal SCC tends to occur at an advanced disease stage hence renal squamous cell carcinoma is aggressive with high grade at the time of presentation and diagnosis. Thus, it is associated with a poor prognosis, with an average median survival of less than 1 year.

Establishing a diagnosis via imaging is difficult because SCC of the kidney exhibits no specific radiological features. Due to the rarity of this malignancy and non specific clinical and radiological features, it is infrequently diagnosed preoperatively. It is often diagnosed incidentally on histopathological examination. The primary etiologies associated with the genesis of squamous metaplasia are usually related to irritations e.g. calculi, inflammation or infectious processes. Kidney stones e.g. staghorn calculi are the main carcinogenic risk factor. This squamous metaplasia may progress to dysplasia and then eventually in Squamous Cell Carcinoma in some patients. Clinically, SCC occurs in old aged patients with symptoms including flank pain, hematuria, and an abdominal mass, and is often associated with chronic inflammation, hydronephrosis, and squamous metaplasia . Therefore, it is difficult to differentiate the disease clinically. Histopathologically, squamous components in Squamous Cell Carcinoma of kidney are similar to other Squamous Cell Carcinomas and consist of features of keratin pearls, intercellular bridges, and keratotic cellular debris. Proper imaging and histopathological evaluation should be done to rule out metastatic SCC of kidney or urothelial carcinoma with squamous differentiation of renal pelvis.

There is currently no standardized treatment protocol for management of patients with primary renal SCC. The mainstay of treatment is surgery by either a radical nephrectomy or nephroureterectomy. Adjuvant treatments have marginal benefit.

CONCLUSION

Primary Renal Squamous Cell Carcinoma is very uncommon but aggressive tumor that usually presents in an advanced stage and require thorough clinico-pathological and radiological correlation together with a high index of suspicion and broad differential diagnosis to ensure timeous, appropriate management of the patient. Renal stones and chronic infection should be managed promptly to prevent this rare, but devastating complication.

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