Case Report

Squamous cell carcinoma kidney in a 29-year-old male: A case report with review of literature

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ABSTRACT

Primary malignant tumors of the renal pelvis are relatively rare with squamous cell carcinoma (SCC) accounting for 0.7-7%. Few cases of primary SCC of kidney have been reported in the world literature. The insidious onset of symptom and lack of any pathognomonic sign, leads to delay in the diagnosis and subsequent treatment, resulting in grave prognosis for these patients. We present a case of 29-year-old male with hydronephrosis of the left kidney with renal pelvis mass where histology of resected specimen shows SCC.

Key words: Chemotherapy, hydronephrosis, renal calculi, squamous cell carcinoma

INTRODUCTION

Squamous cell carcinoma (SCC) of the renal pelvis is a rare tumor. The incidence of this tumor is 1.4% of all renal malignancies.[1] Different etiological factors including renal calculi, infection, endogenous and exogenous chemicals, vitamin A deficiency and hormonal imbalance have been implicated in its pathogenesis. However, tumors have been reported even in the absence of these factors.[2,3] We report a case of SCC of the kidney presenting as hydronephrosis with small renal calculi in a 29 year old male.

CASE REPORT

A 29-year-old non-smoker, non-alcoholic, Muslim, male farmer presented with intermittent pain over left flank region for 1 year associated with intermittent low-grade fever for a similar duration. On examination a lump was palpable in the left hypochondrium and extending into supraumbilical and umbilical area, size approximately 5 cm × 4 cm, tender with ill-defined margin smooth surface, firm to hard in consistency, moving with respiration. The lump was bimanually palpable and ballotable. Complete hemogram, biochemical tests, chest X-ray posteroanterior view was normal.

Urine analysis showed occasional red blood cells, 2-4 pus cells/high power field and urine culture showed no growth. Ultrasonogram whole abdomen showed that left kidney was normal in shape, size (12.9 cm) and position with the loss of corticomedullary differentiation and showed cortical thinning. Gross hydronephrotic changes; seen in the left kidney with soft echoes in the pelvis of the left kidney. A small calculus was seen in lower calyx of the left kidney; right kidney was normal. Contrast enhanced computed tomography (CECT) whole abdomen showed pelvicalyceal system is dilated in left kidney due to obstruction caused by an inhomogeneously enhancing mass lesion measuring 5.8 cm × 5.3 cm in the left renal pelvis without any lymphadenopathy, vascular involvement or free fluid in the abdomen. A small calculus is seen in the lower calyx of the left kidney [Figure 1]. Intravenous pyelography showed that left kidney was not excreting contrast. Patient underwent left radical nephrectomy. Biopsy report showed SCC involving renal pelvis (tumor size = 6 cm × 5 cm × 3 cm) and infiltrating extensively into the surrounding renal parenchyma [Figure 2] and section from lymph nodes showed extensive metastatic deposit of SCC. Immunohistochemistry study shows it to be positive for cytokeratin 7 (CK7) and p63 [Figures 3 and 4]. According to 7th edition AJCC staging the stage of the disease was $pT_{1B}N_1M_0$ (Stage III). Post-operatively patient received six cycle of chemotherapy every 4 weeks with MVAC regimen

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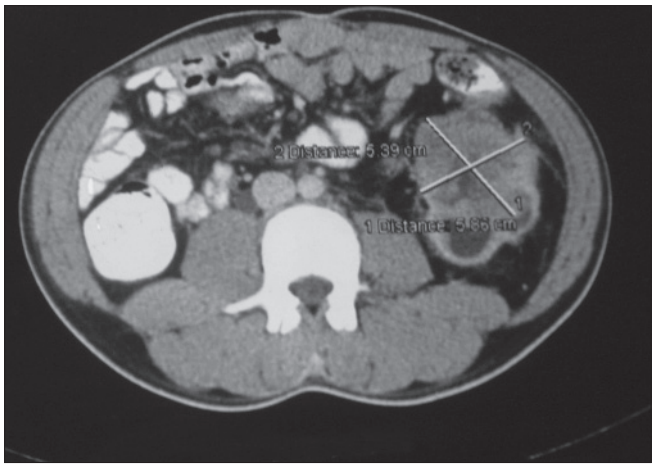

Figure 1: Pretreatment contrast enhanced computed tomography whole abdomen showed pelvicalyceal system is dilated in left kidney due to obstruction caused by an inhomogeneously enhancing mass lesion measuring 5.8 cm × 5.3 cm in the left renal pelvis without any lymphadenopathy, vascular involvement or free fluid in the abdomen. A small calculus is seen in the lower calyx of left kidney

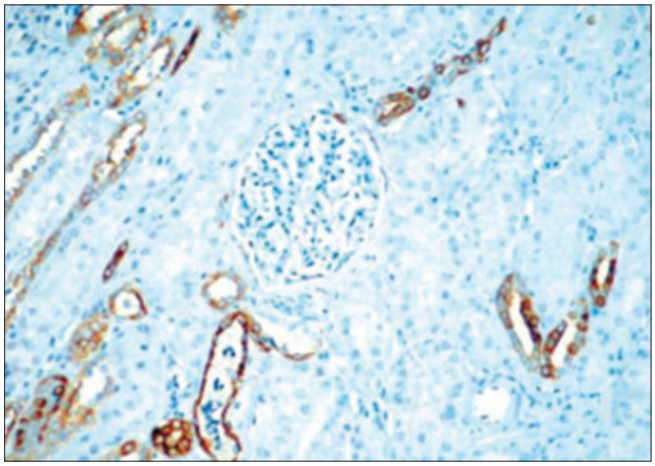

Figure 3: Immunohistochemistry study showing cytokeratin 7 positive (DAB, ×200)

i.e., injection methotrexate 30 mg/m^2 IV push day 1,15,22; injection vinblastine 3 mg/m^2 IV push day 2,15,22; injection doxorubicin 30 mg/m^2 IV push day 2 and injection cisplatin 70 mg/m^2 IV over 60 min day 2. 3 months after completion of chemotherapy CECT whole abdomen was performed, which showed no local recurrence or residual disease. Patient is now under follow-up for last 1 year and at until last follow-up visit on March, 2013 he is apparently well with no evidence of local recurrence or distant metastases.

DISCUSSION

Primary malignant tumors of the renal pelvis are relatively rare and constitute approximately 8% to 14% of all the renal malignancies.[1] Urothelial carcinoma occurs in more than 90% of such cases and SCC in only 0.7-7%.[4] Women are affected more frequently than men, predominantly in the age group of 50-70 years.[2] SCC of the renal pelvis tends to be sessile, ulcerated and infiltrative at the time of diagnosis.

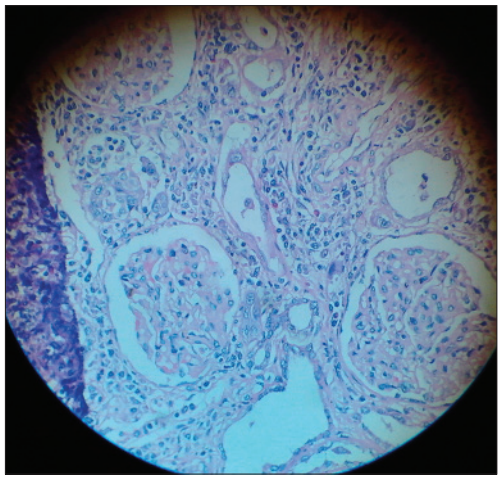

Figure 2: Histopathological examination showed squamous cell carcinoma of renal pelvis. Few entrapped glomeruli surrounded by tumor tissue is noted (H and E, ×400)

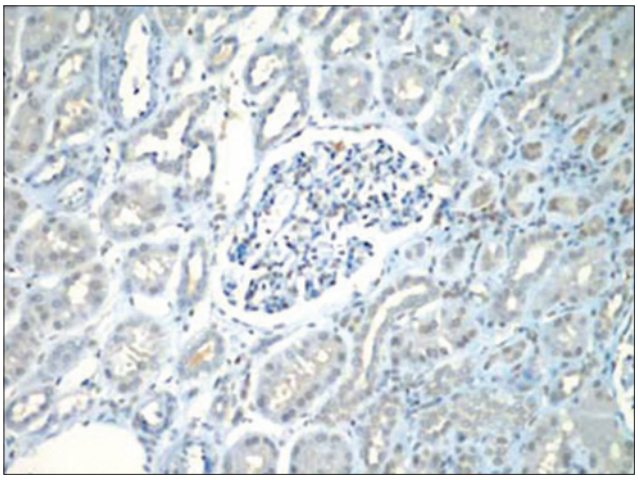

Figure 4: Immunohistochemistry study showing p63 positive (DAB, ×200)

The presence of necrotic material and keratin debris in the surface is a relatively constant feature.

The diagnosis of SCC of the renal pelvis is restricted to tumors showing extensive squamous differentiation. If a significant urothelial element including urothelial carcinoma *in situ* is found, the tumor should be classified as urothelial carcinoma with squamous differentiation. The histologic hallmarks of pearl formation, intercellular bridges and keratotic cellular debris are those of squamous carcinoma at any site. With the exception of the verrucous variant, most of these carcinomas are moderately or poorly differentiated and more deeply invasive at the time of diagnosis than the majority of transitional cell carcinoma.[5] Immunohistochemical study usually positive for AE1/AE3, CK7, vimentin and negative for actin, desmin, S100, synaptophysin, CK20, CEA.[6]

SCC of the urothelial tract is thought to arise through a process of metaplasia of the urothelium. A large percentage

of patients have squamous metaplasia of the adjacent urothelium. Various etiological features have been held responsible for squamous metaplasia and subsequent carcinoma. Of these, renal calculi and infection are the leading ones. Other factors implicated include exogenous and endogenous chemicals, vitamin A deficiency and hormonal imbalance, schistosomiasis and smoking.[1] However, cases have been reported, in which no apparent etiological factor could be detected.[2,3] In our case, there was a mass lesion in the left renal pelvis associated with small renal calculi in lower calyx causing hydronephrosis of the left kidney. Hydronephrosis and even pyonephrosis with peritoneal abscess formation have been reported in upper urinary tract carcinomas.[7] Ng *et al*., have described hydronephrosis to be strongly related to the advanced pathologic stage, mostly with diseases extending beyond the kidney and those showing metastasis.[8] They have also noted that hydronephrosis is more common in renal tumors than the renal pelvic ones.

Surgery is the mainstay of therapy in SCC of renal pelvis and may result in cure in low stage patients. Systemic chemotherapy has only marginal benefit. Cisplatin based chemotherapy regimen i.e., cisplatin-5fu, MVAC have been used commonly.[9] The prognosis of SCC of the renal pelvis is very poor with a median survival of 3.5 months. Their generally poor prognosis can be attributed to the typically advanced stage at diagnosis, but stage for stage, prognosis is similar for squamous and usual urothelial carcinoma.[10] In the present case, patient received 6 cycle of chemotherapy every 4 weeks with MVAC regimen i.e., injection methotrexate 30 mg/m^2 IV push day 1,15,22; injection vinblastine 3 mg/m^2 IV push day 2,15,22; injection doxorubicin 30 mg/m^2 IV push day 2 and injection cisplatin 70 mg/m^2 IV over 60 min day 2. Patient is now under follow-up for last 1 year and at until last follow-up visit on March, 2013 he is apparently well with no evidence of local recurrence or distant metastases.

CONCLUSION

To conclude, SCC of the renal pelvis may present as hydronephrosis and a careful search for any abnormal area in the wall should be attempted. A diagnosis of malignancy should be considered in cases of inflammatory pathology involving the renal pelvis, who has no known risk factor such as calculi or diabetes mellitus.[2] Careful history taking may give some clue for the presence of risk factors, but SCC of the renal pelvis may occur in the absence of any of the predisposing conditions.

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