Renal cell carcinoma in a Horse-shoe kidney

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Abstract:
Horseshoe kidney is one of the most common congenital anomaly involving the kidney. However a malignant tumour involving the renal unit in a horseshoe kidney is rare, with only around 200 cases being reported in world literature. We present a case of renal cell carcinoma involving the right unit of the horseshoe kidney managed by radical nephrectomy along with isthumectomy.

Keyword: Horseshoe kidney, radical nephrectomy, renal cell carcinoma

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Introduction: Horse-shoe kidney is a renal fusion anomaly seen in 0.25% of the population. All urological diseases involving the kidney have been described in the horse-shoe kidney and malignancy is no exception to this. Around 200 such cases of malignancy involving the horse-shoe kidney have been reported so far, with renal cell carcinoma comprising 50% of cases. We report a case of renal cell carcinoma in a horse-shoe kidney in a 50 year old man and discuss the management of the case. Case History: A 50-year old man presented to our department with complaints of discomfort in the right lower abdomen for the past one month. The patient had history of single episode of haematuria 20-days ago which was painless and associated with vermiform clots. There was no history of fever, anorexia or weight loss. On examination he was afebrile and on deep palpation we could feel a vague non tender mass in the right lumbar region. Urinalysis, urine cytology and culture were negative. Basic blood investigations and renal function tests were normal. Ultrasonography showed low lying kidneys on both sides with an 11×5 cm mixed echogenic mass in the right kidney. Computed tomography of the abdomen and pelvis showed a horse-shoe kidney with a mixed dense enhancing lesion in the right unit of the horse-shoe kidney measuring 10×5cm (Figure 1). Liver function test and Chest x-
ray were found to be normal. After preoperative work-up the patient underwent surgical exploration. The ascending colon was reflected medially and the right renal unit was dissected with the Gerota's fascia intact. No retroperitoneal lymphadenopathy was made out. The inferior mesenteric vessels were carefully dissected and the aberrant renal vessels were carefully ligated. Radical nephrectomy of the right renal unit and isthmectomy was done and the cut margins were sutured (Figure 2). Histopathological examination was reported as clear cell type of renal cell carcinoma. Post operative period was uneventful and is being followed up for the past four months.

Discussion: The horseshoe kidney is the most common of all renal fusion anomalies with two distinct renal masses lying vertically on either side, connected at the lower poles by a parenchymatous or fibrous isthmus. They are usually asymptomatic but when symptoms are present they are related to hydronephrosis, infection, or calculus formation. However renal tumour in a horseshoe kidney is rare with 187 cases reported till July 2006 and a few others till date. Renal cell carcinoma comprises 50% of the cases followed by transitional cell carcinoma and Wilms tumour. Transitional cell carcinoma accounts for 28% to 40% of malignancies, the increased incidence being related to an increase in calculus pathology and an increased incidence of chronic infection. The incidence of Wilm's tumour is twice as that expected in the general population, perhaps related to the abnormal migration of the nephrogenic cells. Bilateral incidence of renal cell carcinoma in a horse-shoe kidney has also been reported. Management is same as like any renal tumour and careful attention must be given to the aberrant vasculature, adjacent inferior mesenteric vessels and in suturing the isthmus if is composed of parenchymal tissue. Prognosis is unaffected by the anomaly and it is dependent on the pathology and stage of the tumour as in a normal kidney.

Conclusion: Malignant tumours involving the Horse-shoe kidney are rare and only around 200 cases have been reported in literature. Anomalous vessels must be anticipated during surgery for which a proper preoperative work-up with CT Angiography would be helpful for an early vascular control.

References:
Figure 1 Contrast CT abdomen showing the horse-shoe kidney with tumour in the right renal unit
Figure 2 Figure 2a Post radical nephrectomy specimen of the right renal unit 2b cut section of the specimen