CASE REPORT

Success of nephron-sparing surgery in the treatment of localized renal cell carcinoma

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Abstract

Advancement in imaging techniques has now made it possible for small renal tumors to be detected incidentally. This has led to the use of minimally invasive techniques for treatment of these cases. A 33-year-old woman was diagnosed to have a small renal mass after routine abdominal ultrasonography for epigastric discomfort. Computed tomography scan was used to characterize the mass, and an elective partial nephrectomy was successfully carried out. The procedure is safe, less morbid, and has good oncological outcome.

Key words: Partial nephrectomy, nephron-sparing surgery, renal cell carcinoma

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Introduction

Kidney tumors are the third most common genitourinary malignancy in adults, after prostate and bladder tumors.[1,2] They constitute about 3% of all human malignant tumors.[3] Renal cell carcinoma (RCC) is the most common primary malignant neoplasm of the kidney constituting about 85–90% of all renal tumors.[4] Before the advent of modern imaging techniques, most patients diagnosed with RCC presented with tumor-related symptoms.[5] In recent series from developed countries, 60–70% of patients with RCC are diagnosed asymptomatically and their tumors detected incidentally.[6] This has been attributed to the routine use of abdominal cross-sectional imaging to evaluate unrelated abdominal symptoms. In turn, this has led to the increasing use of minimally invasive techniques, for example, open partial nephrectomy, laparoscopic partial nephrectomy, robotic surgery, radiofrequency ablation, and cryotherapy.

This case report is aimed at highlighting the asymptomatic presentation and incidental detection of RCC and the success of elective partial nephrectomy in the treatment of localized RCC in this environment.

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Case Report

A 33-year-old unmarried woman was referred to a Catholic specialist hospital in Onitsha, Southeast Nigeria, with a 4-year history of epigastric discomfort and dysmenorrhea. Routine abdominal ultrasonography revealed a mass in the right kidney prompting a referral to the urologist. Further inquiry revealed that the mass was noticed 4 years earlier following a similar abdominal ultrasound. No attempt was made to characterize the mass at that time.

Medical history revealed that she had been on treatment for peptic ulcer disease for 4 years before presentation with occasional relief of the epigastric discomfort. She did not smoke or take alcohol. There was no family history of renal tumors.

A review of the abdominal ultrasound revealed a normal left kidney. The right kidney was enlarged with a soft tissue mass at its inferior pole. The mass measured 50.2 mm × 45.6 mm. The mass had a rim that was partly calcified. The uterus contained multiple fibromyomata. Intravenous

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urography revealed prompt excretion of contrast from both kidneys and a soft tissue mass in the inferior pole of the right kidney. There was no calyceal dilatation. Computed tomography (CT) scan was requested to further characterize the mass. This showed a lobulated mass in the inferior pole of the right kidney with rim calcification. The mass had a precontrast density of 3.694HU and a postcontrast density of 70.27 HU, suggesting some degree of vascularity [Figures 1 and 2]. The renal capsule appeared to have been broken through in some slices. The mass measured 43.9 mm × 56.6 mm × 45.5 mm. Again both kidneys showed prompt excretion of contrast and no calyceal dilatation. The patient was counselled for renal exploration with a possible partial nephrectomy.

Renal exploration was performed via a right subcostal flank incision, and the intraoperative finding was a well encapsulated mass in the inferior pole measuring 5 cm × 4 cm [Figures 3-5]. A partial nephrectomy was carried out after an initial occlusion of the renal artery and a cold ischemia obtained using ice slush application over the kidney for 15 min. The mass was excised by blunt and sharp dissection with 1 cm margin. The collecting systems were noted to be intact without tumor infiltration. Hemostasis was secured, and the defect was closed with interrupted absorbable sutures over a Leostypt® (synthetic collagen, Emzor Hesco limited 37 Osolo way, Ajao Estate Isolo- Lagos). Recovery after surgery was uneventful. She was discharged on the seventh day. Histology of the excised mass revealed a chromophobe RCC with sarcomartoid differentiation. She has been followed up for 11 months. Follow-up abdominal ultrasonography after 6 months revealed a small sized right kidney with no evidence of tumor recurrence. She will be followed up with regular ultrasonography and CT scanning.

Discussion

The incidence of kidney tumors has been noted to increase in the United States by 2.3–4.3% each year during the last three decades.[7] This increase may be due in part to improved diagnostic tests and better imaging techniques (CT scan, magnetic imaging resonance, ultrasonography). Thus, RCC may be referred to as a "radiologist tumor."

The classic triad of loin pain, abdominal mass, and hematuria (too late triad) still remains the predominant mode of presentation of renal tumors in this environment.[8] This is a major setback in the effective management of patients with RCC. With increasing availability of newer imaging techniques such as CT scan and magnetic imaging resonance, the diagnosis and treatment of asymptomatic RCC is expected to increase in the future in our environment. This early detection will certainly improve survival of our patients who hitherto present late with grave implications.

Improved surgical techniques and methods of preventing ischemic renal injury and long-term cancer-free survival data have stimulated the expanded use of nephron-sparing surgery for localized RCC tumors (<4 cm). Studies have shown open partial nephrectomy to be safe, with low morbidity and high patient satisfaction, and provides outstanding oncological and renal functional outcomes than radical nephrectomy.[9,10] Our index case fell into this category and was offered partial nephrectomy. Follow-up has also confirmed the effectiveness of this method of treatment in our index patient. Indications for partial nephrectomy can be absolute or relative. Elective partial nephrectomy is defined as treatment of a single small (<4 cm), clinically localized RCC in a patient with a normal contralateral kidney.[11]

Chromophobe RCC comprises 5–10% of all RCCs and has a better prognosis than other subtypes.[12] The presence of sarcomatoid appearance as noted in the index case has been reported to be a poor prognostic factor.[12] Importantly, some other studies have noted that the term "sarcomatoid" or "sarcomatoid feature" has not been well

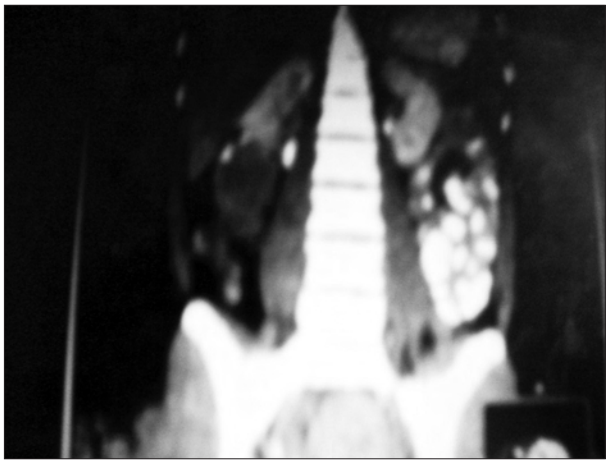

Figure 1: Reformatted CT scan showing right inferior kidney mass

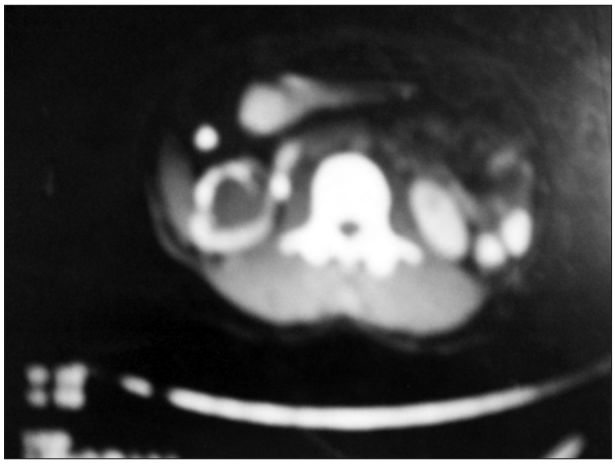

Figure 2: Axial CT scan showing right kidney mass

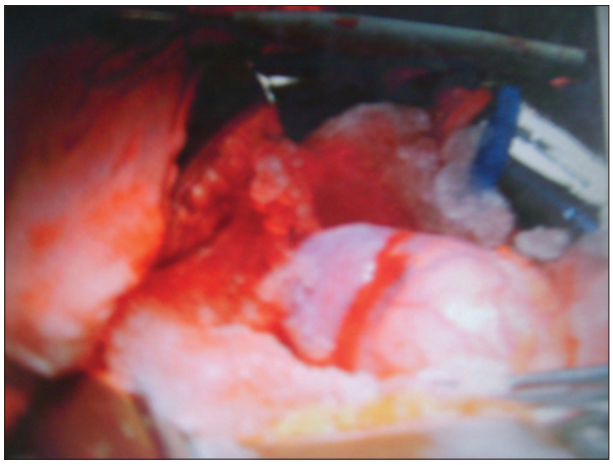

Figure 3: Right kidney inferior pole mass

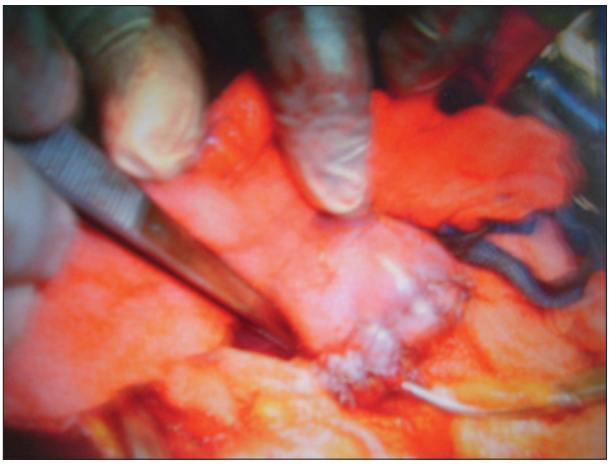

Figure 4: Closure after excision of tumor

Figure 5: Excised mass

standardized, and designation of RCC as sarcomatoid is highly variable.[13]

Oncological outcomes for the subset of patients undergoing elective open partial nephrectomy are particularly outstanding. Cancer-specific survival rates of 94.5–97% at 10 years have been reported and recurrence only common in patients with systemic symptoms, larger tumors, and advanced pathological stage tumors.[10,14]

Conclusions

Incidentally detected asymptomatic renal masses should be properly assessed using the increasingly available high technology imaging techniques to better characterize their nature. This will lead to early detection and treatment with safer, less morbid surgical modalities such as partial nephrectomy. Elective open partial nephrectomy should be considered in all incidentally detected small, clinically asymptomatic renal masses. This procedure has been shown to have good oncological outcome in the long term.[9,10]

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