

# Cavernous hemangioma of the kidney: A report of two cases and review of the literature

Somika Sethi, Vikash Agarwal<sup>1</sup>, Prem Chopra

Departments of Pathology, <sup>1</sup>Radiology, Sir Ganga Ram Hospital, New Delhi, India

**Abstract** Hemangioma of kidney is a rare benign tumor. Although it may be clinically silent, their main symptom is hematuria, sometimes profuse and relapsing. We report two such cases which presented with episodes of hematuria and were clinically and radiologically diagnosed as transitional cell carcinoma. Nephrectomy was performed in both cases and the histopathological appearance were those of a cavernous hemangioma. A literature review of renal hemangioma is also presented.

**Key Words:** Hematuria, hemangioma, kidney

## Address for correspondence:

Dr. Somika Sethi, Department of Pathology, Sir Ganga Ram Hospital, New Delhi – 110 060, India. E-mail: somika@gmail.com

Received: 11.02.2011, Accepted: 09.04.2011

## INTRODUCTION

Renal hemangiomas are slowly growing benign vascular tumors, which rarely involve the kidney.<sup>[1-3]</sup> They are usually single, seldom multiple or bilateral, and there is no predilection for race, sex or side of the kidney.<sup>[1]</sup> The condition may appear at any age from infancy to as late as 80 years, although 85% occur in individuals less than 40 years of age.<sup>[1,2]</sup> Although the tumor is clinically benign, the initial symptom of hematuria is alarming. The clinical diagnosis of this benign lesion is difficult, and they are rarely diagnosed preoperatively. We report two such cases one of which was in an elderly individual and while the other was a young adult.

## CASE REPORTS

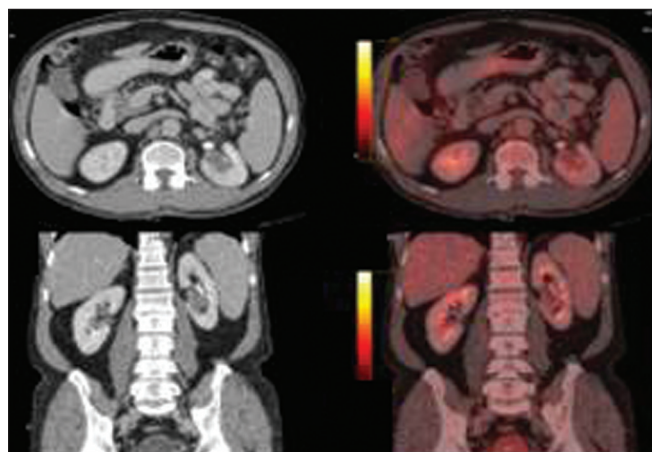
### Case 1

A 65-year-old man presented in the Urology department with complaints of hematuria of one month duration. The patient

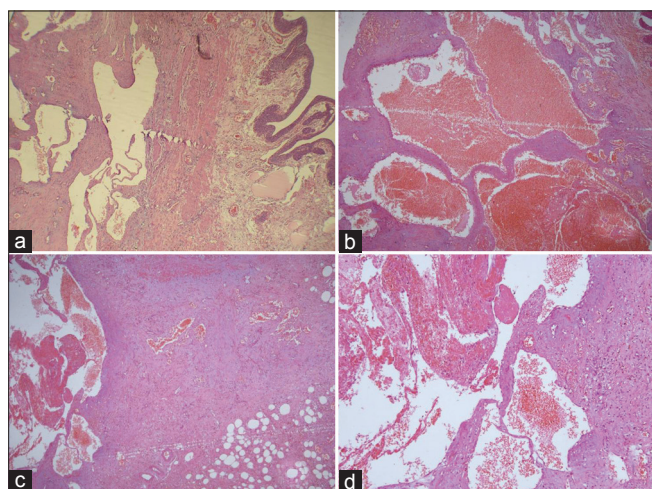
was apparently well when he had an episode of hematuria, which lasted for three days and resolved on its own. The hematuria was painless, gross, and associated with clots. There was no dysuria, gravaluria, or pyuria. No other lower urinary tract symptoms were present. There was no history of fever, weight loss, or anorexia. There was no history of renal stone disease, trauma, or bone pains. Patient was non-diabetic and non-hypertensive. No significant family history was elicited. He had no allergies or addictions. On general physical examination patient was conscious and cooperative. He was afebrile, pulse was 80/min, regular, full volume, and blood pressure was 120/84 mm Hg. There was no pallor, icterus, cyanosis, lymphadenopathy, or thyromegaly. Examination of respiratory, cardiovascular, and central nervous systems was normal. On per abdomen examination no lump/ mass were palpable. There was no tenderness in the renal angles. Laboratory investigations revealed normal hemogram and blood chemistry. Urine analysis revealed numerous red blood cells in urine. Computed tomography (CT) scan showed a hypodense lesion in the left renal pelvis at the lower pole which on positron emission tomography (PET) CT was non-fluoro-2-deoxy-D-glucose Fluorodeoxyglucose (FDG) avid hypodense soft tissue lesion, which shows mild heterogeneous post contrast enhancement [Figure 1]. Cystoscopy findings revealed concentric rings in bulbar urethra and a normal urinary bladder. Ureteroscopy did not show any growth or ulceration in the ureter. Kidney

Access this article online	
Quick Response Code:	Website: www.urologyannals.com
	DOI: 10.4103/0974-7796.102674

could not be reached but there was blood staining of distal part of endoscope. Radical nephrectomy was performed. He had an uneventful operation and recovery. Nephrectomy specimen reveal a well delineated mass which was composed of cystic spaces giving a honeycomb appearance filled with blood, in the medullary pyramid in the lower calyx [Figure 2]. Microscopy revealed a vasoformative tumor in the pelvis and lower calyx composed of numerous vascular spaces some of which were cavernous while others were thick walled; some vessels showing smooth muscle in the wall [Figure 3]. Capillaries sized vessels were also dispersed. Intervening stroma revealed hemosiderin laden macrophages and chronic inflammation. Pelvis showed moderate-to-marked urothelial hyperplasia with chronic inflammation and increased vascularity in the wall [Figure 3]. Based on the above features a diagnosis of cavernous hemangioma was made. The patient was doing well on his last follow-up.



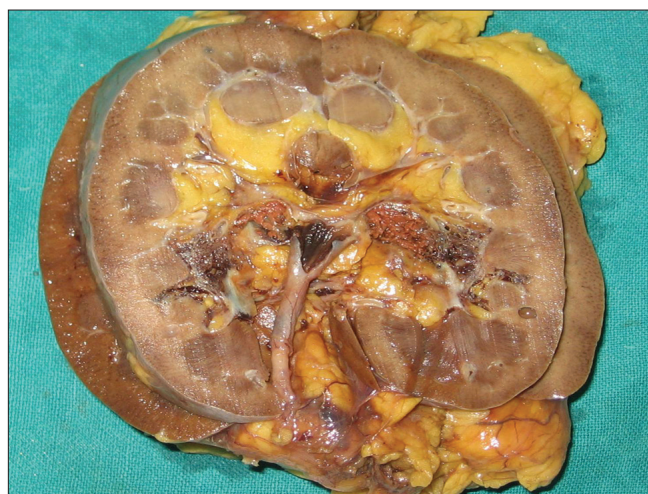
**Figure 1:** CT picture of case 1 (left side) reveal hypodense lesion in left renal pelvis while PET-CT (right side) shows hypodense soft tissue lesion



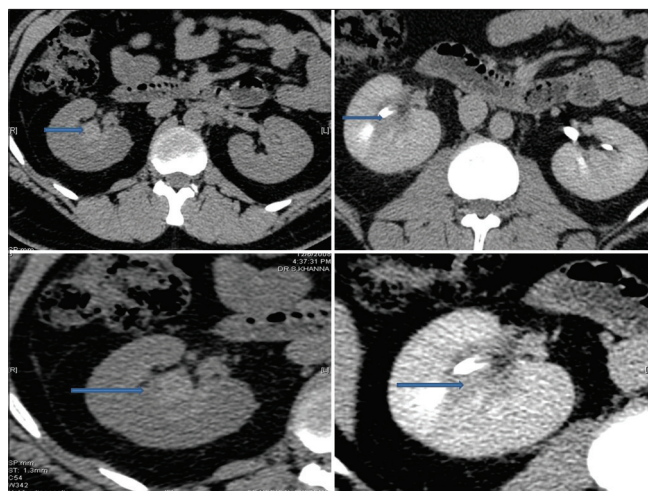
**Figure 3:** Photomicrograph of case 1 showing (a) pelvis lined by urothelium with large cavernous channels (10x, H and E stain), (b) cavernous spaces filled with blood (20x, H and E), (c) large vessel with thrombus and surrounding renal parenchyma (10x, H and E stain), (d) thrombus in the vessel (20x, H and E stain)

## Case 2

A 30-year-old man presented with complaint of passage of blood in urine without clots not associated with pain and burning. He had no complaint of fever, urinary tract infection, or graveluria. He also had a past history of hepatitis E infection two years back for which he was treated appropriately. Patient is a known case of hypertension since 5 years well controlled on anti-hypertensive. On general physical examination, patient was conscious and cooperative. He was afebrile, pulse was 80/min, regular, full volume and blood pressure was 120/84 mm Hg. There was no pallor, icterus, cyanosis, lymphadenopathy, or thyromegaly. Examination of respiratory, cardiovascular and central nervous systems was normal. On per abdomen examination no lump/ mass were palpable. There was no tenderness in the renal angles. CT findings revealed an ill defined hyperdense SOL in the mid/interpolat region of right kidney [Figure 4]. Right renal pelvis was mildly enlarged



**Figure 2:** Gross photograph of bisected left kidney with a cystic lesion in the pelvis and lower calyx containing blood in case 1



**Figure 4:** CT scan of case 2 reveal an ill defined hyperdense SOL in the mid/interpolat region of right kidney



with evidence of air in the lumen. Later he underwent flexible ureteroscopy, which could not be negotiated beyond L3 and a biopsy was taken. Histopathological examination did not reveal any malignancy. He also underwent a CT-guided fine needle aspiration cytology FNAC of the SOL, which revealed many transitional cells, few showing atypia. The patient was taken up for radical nephrectomy. Kidney measured  $13 \times 7 \times 6$  cm. Outer surface was smooth. Pelvis showed double ureter measuring 20 and 22 cm in length each. Pelvis showed an irregular hemorrhagic lesion measuring approximately  $2 \times 2$  cm extending into the calyces [Figure 5]. Microscopy revealed numerous cavernous channels in the pelvis, calyces and in the peripelvic fat. The pelvic lining epithelium shows focal urothelial hyperplasia with regenerative changes [Figure 6]. The final diagnosis was cavernous hemangioma with double ureter. Convalescence was uneventful, and the patient is doing well till date.

## DISCUSSION

Hemangiomas are one of the most common vascular tumors. They generally occur in the soft tissues in the head and neck region and visceral organs like liver. Organs like kidney are rarely involved and bilaterality is still rarer.<sup>[1-4]</sup> Multiple hemangiomas in the same kidney occur in upto 12 % cases.<sup>[4]</sup> Renal hemangiomas may vary in size from few millimeters to several centimeters in diameter. They are missed often, both clinically and radiologically. The most common clinical manifestation of renal hemangioma is hematuria leading to the diagnosis of malignancy.

Hemangiomas are most commonly situated in the pelvis or at the tip of papilla (91%) but they can occur anywhere in the renal cortex.<sup>[1,4]</sup> Sometimes renal hemangioma is a

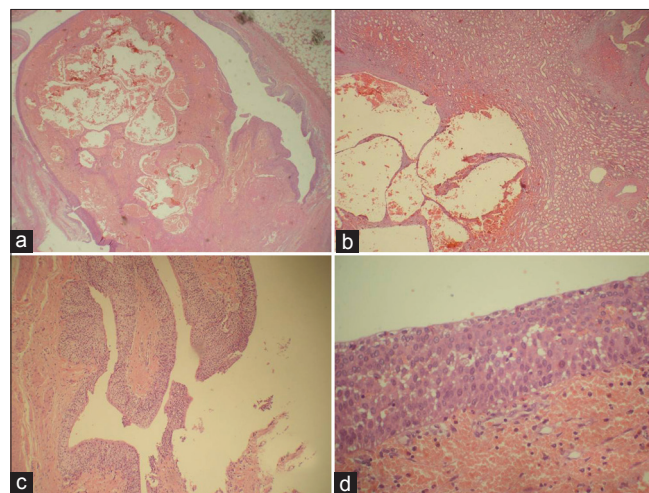
manifestation of a generalized hemangiomatosis that is they are associated with hemangiomas in liver, bowel, bone, or brain.<sup>[5]</sup> Patients usually present with profuse or relapsing painless gross hematuria, sometimes pain may be present, which mimics renal colic. When the mass extends into the pelvis and erodes the epithelium then the patient bleeds. Certain cases remain asymptomatic and are detected incidentally or at autopsy. Preoperative diagnosis of renal hemangioma is very difficult or even impossible. Renal angiography and CT may be helpful but are seldom diagnostic. In both our cases, there were findings which were not diagnostic of hemangioma rather it favored a transitional cell carcinoma or cystic renal cell carcinoma RCC. Moody *et al* (1996) reported that on enhanced CT, the hemangioma appears as a homogenous enhancement in the lobulated areas, probably representing contrast material in large vascular spaces.<sup>[6]</sup> But in our patients, one showed hypodense mildly heterogeneous soft tissue lesion while the other was a hyperdense ill-defined lesion on CT imaging. Magnetic resonance imaging (MRI) has assumed increasing importance in the radiologic evaluation of urologic masses. Rueckforth *et al.* (1995) stated that MRIs of renal hemangioma usually display hypointense areas on T1W images and hyperintense areas on T2W images, and marked signal increase after contrast application.<sup>[7]</sup>

The differential diagnosis of renal hemangioma includes papillary necrosis, ectopic papilla, hemorrhagic papillitis, and urothelial carcinoma.<sup>[8]</sup>

Surgical treatment is controversial due to the benign nature. In a small localized tumor, a nephron sparing surgery may be tried but when malignancy cannot be ruled out, like in our cases, radical nephrectomy is considered.<sup>[1-4,8]</sup> Radiation therapy and



**Figure 5:** Gross photograph of right kidney in case 2 (a) Outer surface showing double ureter, (b) Cut surface with an ill defined hemorrhagic lesion in the pelvis in mid pole



**Figure 6:** Photomicrograph of case 2 (a) pelvis with polypoidal projection into lumen (4x, H and E stain), (b) Anastomosing cavernous channels with surrounding renal parenchyma (10x, H and E stain), (c) Pelvic lining showing hyperplasia (10x, H and E stain), (d) urothelium with regenerative changes (40x, H and E stain)

recently laser-assisted ablation have been successful in small lesions diagnosed before surgery.<sup>[8-10]</sup>

## CONCLUSION

Renal hemangioma is a rare entity, which is usually solitary and seldom diagnosed preoperatively. In some case reports where diagnosis was made, flexible ureterorenoscopy has been the method of choice for diagnosing this kind of lesion and renal angiography and MRI findings have also been beneficial.<sup>[10]</sup> If the lesion is diagnosed preoperatively, partial nephrectomy or laser-assisted ablation may be the treatment of choice; but when malignancy cannot be ruled out radical nephrectomy is performed.

## REFERENCES

1. Juang Gd, Hwang Tis, Chen He. Hemangioma of the kidney: A case report and review of literature. *J Urol* 2000;11:78-81.
2. Gogus C, Kilic S, Ataoglu O, Gogus O. Large cavernous hemangioma of the kidney presenting as a solid renal mass. *Int Urol Nephrol* 2001;33:615-6.
3. Virgili G, Stasi Sm, Bove P, Orlandi A, Preziosi P, Vespasiani G. Cavernous hemangioma of the renal hilum presenting as an avascularised solid mass. *Urol Int* 2003;71:325-8.
4. Akel Sr, Rassi A, Tawil A, Musallam S, Makhlof Akel M. Isolated renal hemangioma in children: Presentation and management. *Bju Int* 2002;90:758-60.
5. Ducassou J, Ruchard C, Durinage Jf. Renal hemangioma: 3 observations. *J Urol Nephrol (Paris)* 1988;83:460-3.
6. Moody Ja, Litwin Ms, Cochran St, Moe A, Sahmedini D. Renal cavernous hemangioma in a patient with the acquired immunodeficiency syndrome. *J Urol* 1996;156:1759-60.
7. Rueckforth J, Rhode D, Baba H, Adam G. Renal capsular hemangioma: Unusual mr findings. *J Comput Assist Tomogr* 1995;19:817-8.
8. Costa Neto Tf, Renteria Jm, Di Biase Filho G. Renal hemangioma. *Int Braz J Urol* 2004;30:216-8.
9. Matheson Tb, Hatcher Pa. Laser-assisted ablation of renal hemangioma. *South Med J* 1995;88:759-60.
10. Tawfik Er, Bagley Dh. Ureteroscopic evaluation and treatment of chronic unilateral hematuria. *J Urol* 1998;160:700-2.

**How to cite this article:** Sethi S, Agarwal V, Chopra P. Cavernous hemangioma of the kidney: A report of two cases and review of the literature. *Urol Ann* 2012;4:187-90.

**Source of Support:** Nil, **Conflict of Interest:** None.

## New features on the journal's website

### Optimized content for mobile and hand-held devices

HTML pages have been optimized of mobile and other hand-held devices (such as iPad, Kindle, iPod) for faster browsing speed.

Click on **[Mobile Full text]** from Table of Contents page.

This is simple HTML version for faster download on mobiles (if viewed on desktop, it will be automatically redirected to full HTML version)

### E-Pub for hand-held devices

EPUB is an open e-book standard recommended by The International Digital Publishing Forum which is designed for reflowable content i.e. the text display can be optimized for a particular display device.


Click on **[EPub]** from Table of Contents page.

There are various e-Pub readers such as for Windows: Digital Editions, OS X: Calibre/Bookworm, iPhone/iPod Touch/iPad: Stanza, and Linux: Calibre/Bookworm.

### E-Book for desktop

One can also see the entire issue as printed here in a 'flip book' version on desktops.

Links are available from Current Issue as well as Archives pages.

Click on  View as eBook