An extremely rare case of an incidentally detected renal vein aneurysm and review of literature

Diliraj Prabakar, Nupur Bit, Thiruvengadam Vidyasagar, Joseph Amalorapavanathan, Narayanan Srinathan, Kalyanaraman Elancherabalathan
Department of Vascular Surgery, Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai, Tamil Nadu, India

Abstract

Congenital renal vein aneurysms are a trun- cular type of venous malformation and are believed to be the outcome of defective de velopment during the later stage of embryogene sis while the venous trunk is being formed. There have been 9 case reports so far. Here, we add the report of a patient who was incidentally detected to have a renal vein aneurysm on computed tomography angiogram. In addition, this is the first description of inferior vena cava thrombosis associated with a thrombosed saccular aneurysm of the renal vein.

Case Report

A 29-year old Asian male underwent pre-employment medical screening and was detected to have inferior vena cava (IVC) thrombosis on ultrasound abdomen. He was asymptomatic and had no co-morbid illnesses. His physical examination was unremarkable. There was no varicocele. Basic blood laboratory investigations were all normal. Serum virology markers were negative. His procoagu lant workup was negative. Contrast-enhanced computed tomography (CT) abdomen revealed a thrombosed saccular venous aneurysm of size 3.9x3.7 cm arising from the mid-segment of the left renal vein (Figure 1). Retrohepatic IVC was thrombosed; infrahepatic IVC, common iliac and external iliac vein were dilated. Since he was asymptomatic and the renal vein aneurysm was already thrombosed, it was decided to manage him conservatively. At follow up 1-year later, he remains asymptomatic and the aneurysm has maintained the same size. Our radiology colleagues contributed CT angiogram images of another patient with renal vein aneurysm (Figure 2). However, his clinical details could not be retrieved.

Discussion and Conclusions

Primary venous aneurysms are an uncom mon entity. Aneurysms involving the popliteal, jugular, superior vena cava, intracranial, and axillary veins have been described. However, involvement of visceral veins is considered rare. Nevertheless now due to the easy availability of advanced diagnostic methodologies, an increasing number of asymptomatic venous aneurysms are being detected and their management debated. The potential complications of these untreated venous aneurysms are rupture, thrombosis and pressure effects on adjacent structures. The risk of pulmonary embolism also cannot be ignored.

In a systematic review, Syfroeras et al. identified 93 reports, including 176 patients with 198 visceral venous aneurysms. Portal venous system (3%) was found to be the commonest site of involvement, often associated with cir rhosis and portal hypertension. The extremely high operative risk precludes their surgical management. Complete thrombosis occurred in 24 (13.6%) and non-occlusive thrombus was found in 6 patients. Four of the visceral aneurysms ruptured (2.2%), one of them during the postpartum period. Two of these four ruptures were splenic vein aneurysms, one intrahepatic and one aneurysm of the right portal vein. The authors concluded that those who present with rupture or thrombosis warrant surgical intervention.

Renal vein aneurysms are rare. Syfroeras et al. discovered only 6 case-reports. The ages of the patients ranged from 33 to 73 years. Five were male and 3 had abdominal pain. The remaining 3 were discovered incidentally or during laparotomy. In 4 cases, the aneurysm was located in the left renal vein. Aneurysm diameter ranged from 4 to 5.5 cm. Three patients were operated; aneurysm resection and reconstruction of the renal vein (two) and nephrectomy (one). There was no report of aneurysm rupture or associated IVC thrombosis. A MEDLINE search revealed an additional 3 cases which were published after the review by Syfroeras. In 2007, Chung et al. described a venous aneurysm which was discovered on pathological evaluation after laparoscopic resection of a 3 cm retroperitoneal mass at the junction of the left para-aortic and perirenal hilar regions. Another 3.5x3.1 cm saccular lesion was described on duplex and magnetic resonance imaging in a 36-year old Taiwanese woman by Lin et al. in 2010. The patient opted for conservative management and had no complications till follow up at 18 months.

In the latest report in 2011, Rao et al. have described a similar left renal vein aneurysm detected incidentally during a laparoscopic radical nephrectomy in a 66-year old male with a 5 cm right upper pole renal mass. It is interesting to note that these lesions are usually asymptomatic and the left renal vein is most often involved, which has been attributed to its more complicated embryologic development.

Visceral venous aneurysms can hypotheti cally result in thrombosis, rupture, pressure effects and thromboembolism. However, there is no published report of a renal vein aneurysm presenting with either of these complications. There have been reports of pulmonary embolism arising from popliteal vein aneurysms. Spontaneous or intraoperative inadvertent rupture is a possibility and may result in massive bleeding and difficulties in surgical repair.

True renal vein aneurysms are related to congenital weakness of the venous wall because of lack of development of media. Irace et al. describe that in a true aneurysm the venous wall is quite thin because of marked medial atrophy, with loss of elastic fibers and inconspicuous intima, whereas the histology in a renal varix shows both hypertrophy and thinning of the media with fibrous thickening.

Our two cases add to the slowly expanding list of renal vein aneurysms (Table 1). Our case is probably unique in that the IVC thrombosis could have been due to embolism or progression of thrombus from the renal vein aneurysm. The aneurysm also subsequently thrombosed, presumably due to obstructed outflow. It could also be debated that both the thrombosis of the cava and the renal vein may have occurred simultaneously due to a common etiology. Moreover, the thrombosis of the aneurysm may have occurred independently of an obstructive flow. It lends credence to the theory that visceral vein aneurysms require...
intervention to prevent future complications. However, since our patient has remained asymptomatic on conservative management, watchful waiting maybe advocated for thrombosed venous aneurysms.

**Conclusions**

Renal vein aneurysms are being detected more often now due to advancements in imaging methodologies. They are potentially at risk of thrombosis, rupture, pressure effects on adjacent structures and pulmonary embolism. Management has to be individualized to the patient. The patient should be carefully monitored for embolism to IVC and pulmonary vasculature. A thrombosed renal vein aneurysm maybe managed conservatively.

**References**

1. Sfyroeras GS, Antoniou GA, Drakou AA, et al. Visceral venous aneurysms: clinical presentation, natural history and their management: a systematic review. EJVES 2009;38:498-505.
2. Yoneyama T, Baba Y, Fujiyoshi F, et al. Left renal vein aneurysm: imaging findings. Abdom Imaging 2003;28:233-5.
3. Val-Bernal JF, Fernández N, López-Rasines G. Symptomatic solitary right renal vein aneurysm: a case report. Cardiovasc Pathol 2000;9:29-32.
4. Khader SM, Saleeb SF, Teplick SK. General case of the day. Left renal vein aneurysm. Radiographics 1999;19:1683-5.
5. Kabaalio lu A, Yilmaz S, Apaydin, A et al. Renal vein aneurysm: diagnosis with color Doppler sonography. AJR Am J Roentgenol 1997;168:645-6.
6. Krinsky G, Johnson G, Rosfsky N, et al. Venous aneurysms: MR diagnosis with the “layered gadolinium” sign. J Comput Assist Tomogr 1997;21:623-7.
7. Irace L, Gossetti B, Benedetti-Valentini F, et al. Aneurysm of the left renal vein: a case report. J Vasc Surg 1994;19:943-4.
8. Chung SD, Huang KH, Tai HC, et al. Perirenal venous aneurysm presenting as retroperitoneal tumour treated successfully by laparoscopic excision. J Endourol 2007;21:1329-31.
9. Lin TC, Lim CM, Chang HC, et al. A left circum-aortic renal vein aneurysm. Am J Surg 2010;200:37-8.
10. Rao MV, Polcari AJ, Sundaram V, et al. Right renal vein aneurysm discovered incidentally during laparoscopic nephrectomy. Urology 2011;77:323-2.