# Case 1292

Eurorad

## Renal vein aneurysm associated with varices

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**Section:** Uroradiology & genital male imaging
**Imaging Technique:** Ultrasound
**Imaging Technique:** Ultrasound-Colour Doppler
**Imaging Technique:** CT
**Imaging Technique:** CT
**Imaging Technique:** MR
Case Type: Clinical Cases
**Authors:** N. Tasali, L. Celik, A. Arman, B. Tasel H. Kuyumcu
**Patient:** 40 years, female

**Clinical History:**

The patient presented with hypertension and chronic abdominal pain on the left side. She was referred for renal colour Doppler sonography to rule out renal artery stenosis.
**Imaging Findings:**

The patient presented with hypertension and chronic abdominal pain on the left side. She was referred for renal colour Doppler sonography to rule out renal artery stenosis, which was considered among the possible reasons for her hypertension. There was no sign of haematuria on urine analysis. During the initial part of the renal colour Doppler sonography procedure, B-mode grey-scale examination, an anechoic cyst-like mass, measuring 33 x 47 mm and with regular borders, was detected very close to the left renal hilus. It was thought to be a simple renal cyst with an exophytic origin (Fig. 1). Doppler sonography not only revealed non-homogenous venous flow filling the cystic mass, but also communication between the lesion and the medial part of the left renal vein which crossed between the superior mesenteric artery anteriorly and the aorta posteriorly (Figs 2 and 3). The left renal artery was routed behind the aneurysmatic left renal vein without any tapering or narrowing from its origin to the renal hilus. Spectral Doppler analysis revealed a normal flow patern in all parts (proximal, middle and distal) of the left renal artery (Fig. 4). The kidney was normal in appearance. The right renal artery, renal vein and kidney were also normal. An abdominal CT examination was performed with and without intravenous contrast medium. The contrast-enhanced scan revealed the aneurysm itself associated with modarate dilatations in the renal segmental veins and the left ovarian vein (Figs 5 and 6). In a lumbosacral MRI scan of the patient, obtained about a year before the Doppler sonography examination, a signal-void nodular mass could be seen in the left renal hilus in all sequences (Fig. 7). The size of the lesion measured on the MR images was almost the same as seen on the CT scan.
**Discussion:**

Renal vein aneurysm is a very rare condition that is usually found incidentally during routine abdominal imaging or unrelated surgery. Histologically, true renal vein aneurysms demonstrate lack of development of the tunica media, which weakens the vessel wall. Colour Doppler sonography and abdominal CT examinations are usually adequate for diagnosis, but possible alternative causes that can mimic this entity should be excluded before the final diagnosis. Renal vein aneurysms should be differentiated from varices of the renal veins, a more common condition with diverse causes. Varices have been classified as primary and secondary; most reported cases are secondary

varices, as in this case where renal vein varices were associated with left renal vein aneurysm. Varices of the renal veins may result from renal vein dilatation caused by acquired or congenital arteriovenous malformations, portal hypertension with splenorenal collateral vessels, or shunting of blood into the renal vein caused by renal cell carcinoma. On the other hand varices may be mis-diagnosed as retroperitoneal lymph nodes. Acquired arteriovenous fistulas are usually the result of trauma or biopsy. Renal vein aneurysms demonstrate lack of development of the tunica media, which weakens the vessel wall, whereas fistulas demonstrate hypertrophy of the tunica media with fibrotic thickening. In this case there were no history of penetrating trauma or biopsy and there were no fibrotic thickening on the vessel wall. . Additionally, the flow patern of the renal artery was absolutely normal. Grey-scale sonographic appearances of renal vein aneurysm are similar to those of renal cyst, which is an extremely common finding. Doppler sonographic evaluation is helpful for differentiation, especially for cysts located close to the renal hilus. Compression of the left renal vein as it courses between the superior mesenteric artery anteriorly and the aorta posteriorly is known as the nutcracker phenomenon. This compression causes dilatation of the more proximal part of the vein. Dilation up to four times the diameter of the distal vein has been reported as normal. The renal vein may be dilated because of acquired arteriovenous fistulae which are the result of trauma or abdominal aortic aneurysm compressing the renal vein. Iatrogenic arteriovenous fistulae may occur following renal biopsy procedures. Renal vein aneurysms can be mis-diagnosed as renal tumours. In this case percutaneous biopsy could be potentially hazardous. Contrast-enhanced CT scans showing enhancement similar to other vascular structures may be helpful; otherwise renal venography is indicated for the diagnosis of these lesions. Other entities may also be confused with renal vein aneurysm, including renal artery aneurysm. Computed tomography is adequate for demonstrating anomalies in most cases. Important preoperative evaluation can be provided by routine CT, obviating more invasive procedures in some instances. Differentiation of these anomalies from retroperitoneal pathology can be made by the radiologist. A renal vein aneurysm that is incidentally encountered during laparotomy should be repaired. If the aneurysm is encountered during diagnostic evaluation of an unrelated pathological condition, surgery is still advised, especially if this unrelated condition requires surgical exploration and repair of the aneurysm does not entail significant additional risk.

**Differential Diagnosis List:** Renal vein aneurysm associated with varices

**Final Diagnosis:** Renal vein aneurysm associated with varices

**References:**


Val-Bernal JF, Fernandez N, Lopez-Rasines G.
Symptomatic solitary right renal vein aneurysm: a case report.
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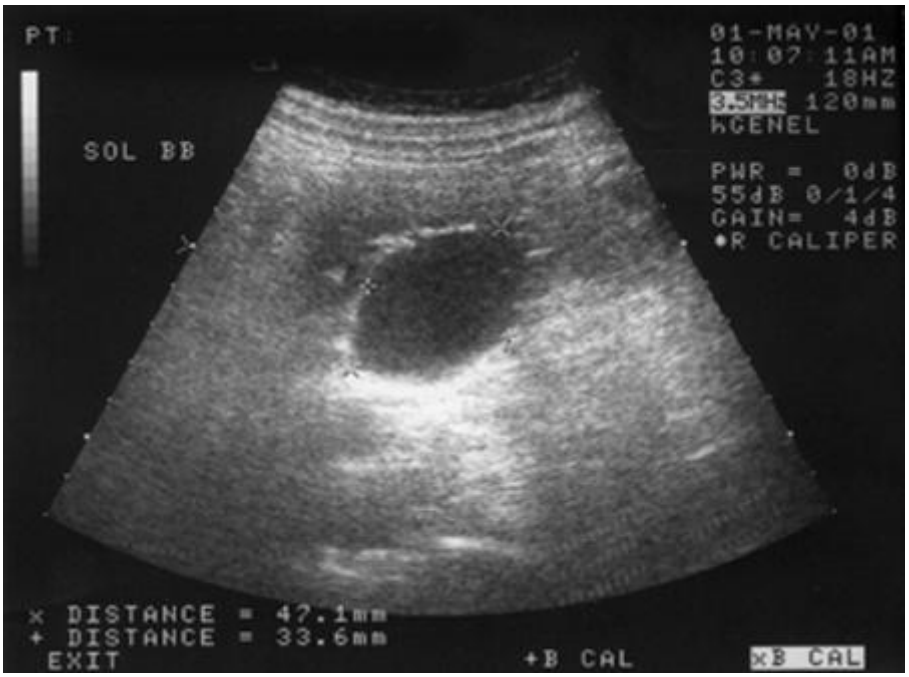
Beckmann CF, Abrams HL. Idiopathic renal vein varices: incidence and significance. Radiology 1982 Jun;143(3):649-52. (PMID: 7079491)
Irace L, Gossetti B, Benedetti-Valentini F, Francalanci P, Gallo P.
Aneurysm of the left renal vein: a case report. J Vasc Surg 1994 May;19(5):943-4. (PMID: 8170052)

# Figure 1

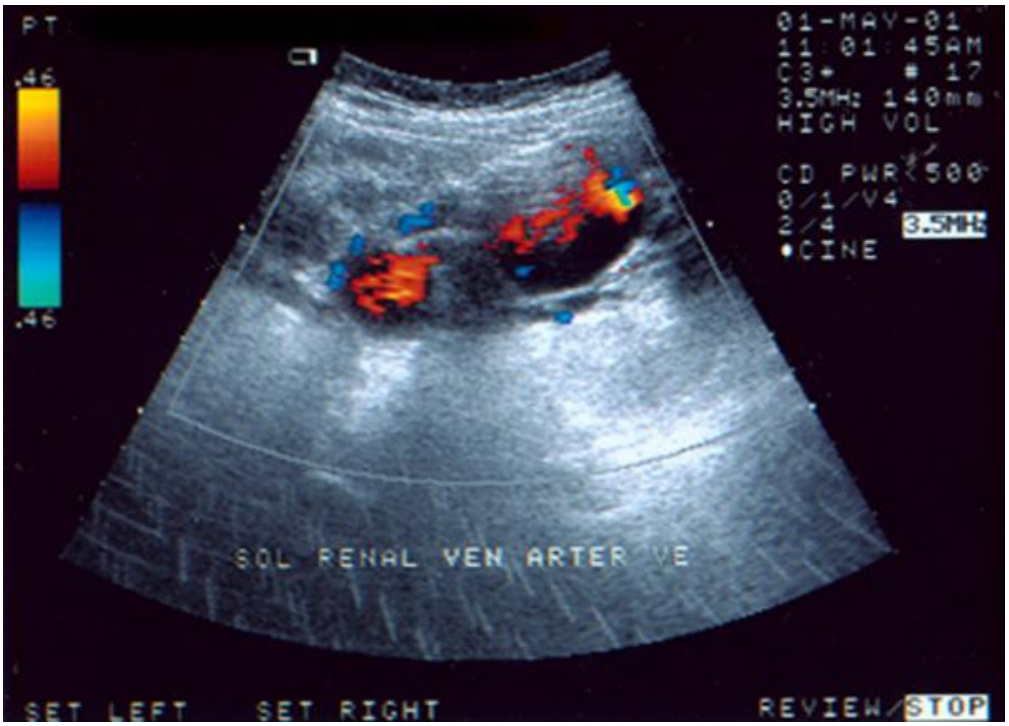
**a**




**Description:** B-mode grey-scale US examination shows an anechoic 33 x 47 mm cyst-like mass with regular borders close to the left renal hilus. It was thought to be simple renal cyst with an exophytic origin. **Origin:**

## Figure 2

**a**

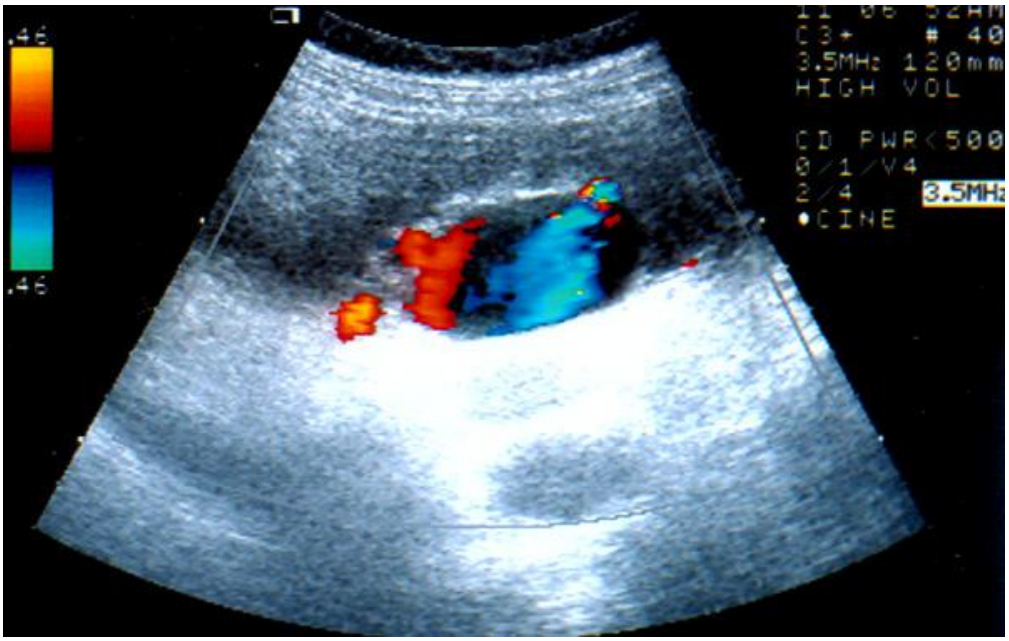



**Description:** Doppler sonography revealing a non-homogenous venous flow filling the cystic mass.

**Origin:**

## Figure 3

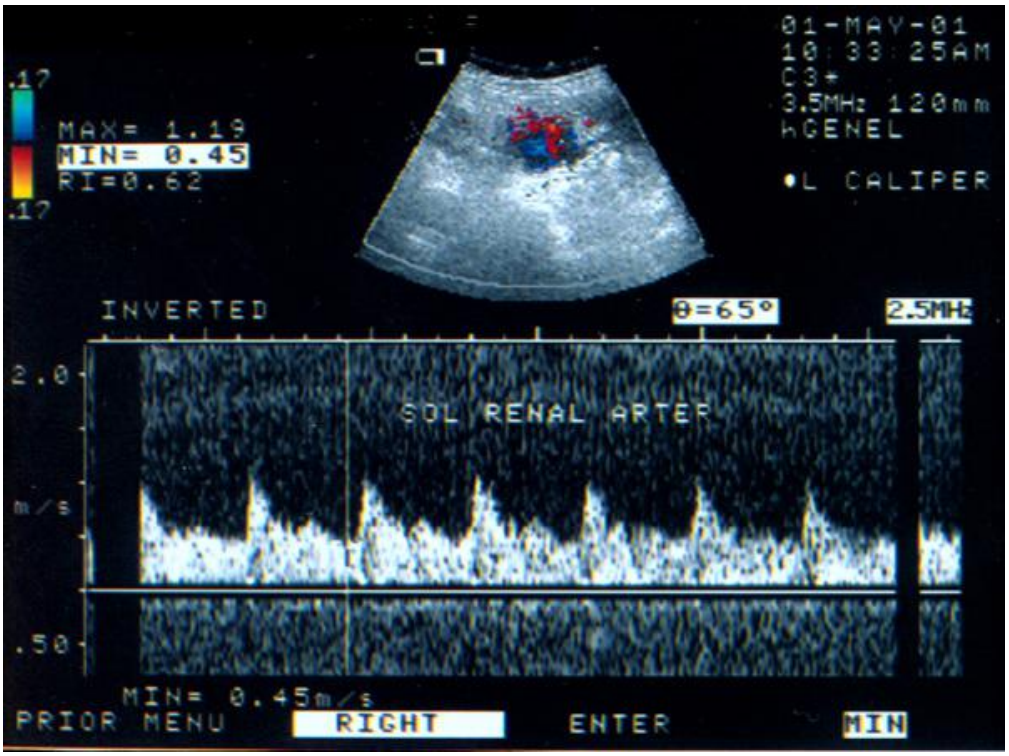
**a**




**Description:** The left renal artery (red coloured) was taking a course inferior to the aneurysmatic left renal vein. **Origin:**

# Figure 4

**a**

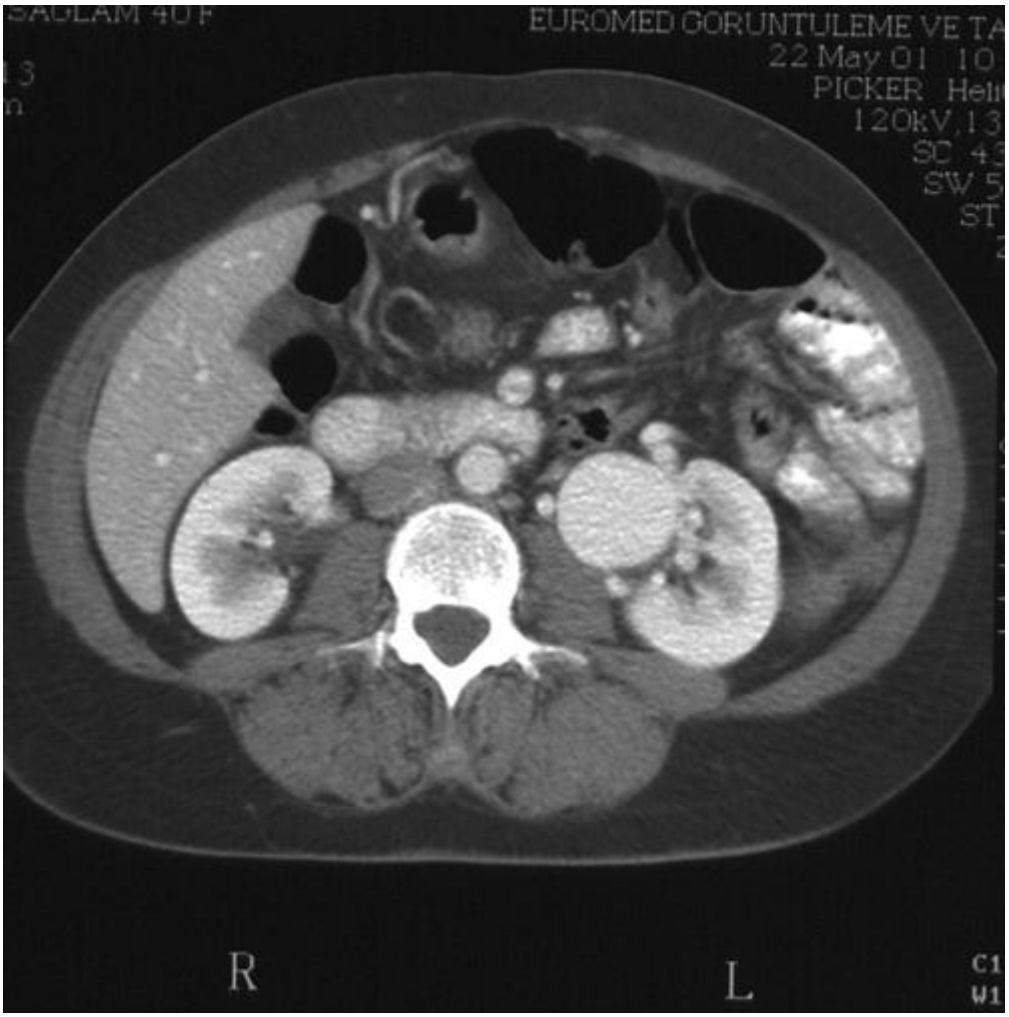



**Description:** Spectral Doppler analysis showed a normal flow patern in all parts of the left renal artery.

**Origin:**

## Figure 5

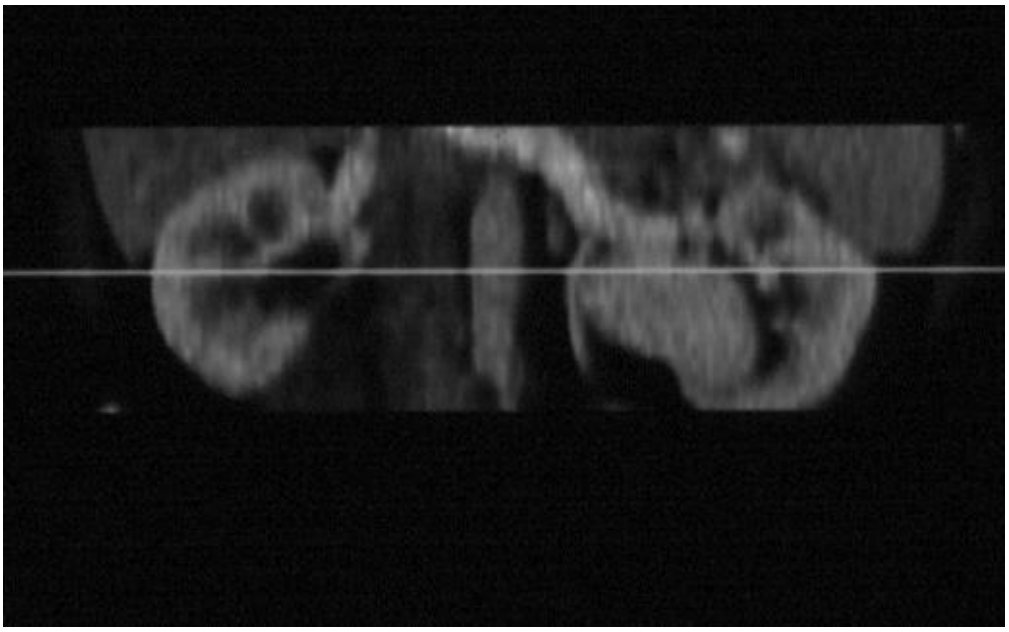
**a**




**Description:** Contrast-enhanced CT scan revealed the aneurysm itself, associated with moderate dilatation in the renal segmental veins and the left ovarian vein. **Origin:**

## Figure 6

**a**



**Description:** Contrast-enhanced CT scan revealed the aneurysm itself, associated with moderate dilatation in the renal segmental veins and the left ovarian vein. **Origin:**

## Figure 7

**a**


**Description:** In the lumbosacral MRI scan of the patient, which was obtained about a year before the Doppler sonography, examimation shows a signal-void nodular mass in the left renal hilus. **Origin:**