Asymptomatic left renal vein aneurysm with thrombosis

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Section: Uroradiology & genital male imaging
Area of Interest: Kidney
Procedure: Diagnostic procedure
Technique: CT
Special Focus: Aneurysms Case Type: Clinical Cases
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Patient: 64 years, female

Clinical History:

A woman with history of chronic headache, hypertension and dyslipidaemia on medical treatment, presented to emergency department complaining of malaise, nausea and vague abdominal pain. Physical examination revealed low-grade fever, mild pelvic tenderness without peritonism. Routine laboratory assays were within normal limits for age.

Imaging Findings:

Urgent multidetector CT (Fig. 1) did not confirm the clinical suspicion of acute diverticulitis or pyelonephritis, and detected a 1.5 cm well-demarcated roundish lesion with 15 Hounsfield Units precontrast attenuation, abutting the left renal vein. Multiplanar review of contrast-enhanced acquisition allowed to characterise the finding as saccular outpouching consistent with primary aneurysm of the renal vein, with internal nonenhancing thrombus which partially extended in the main venous lumen. No other abnormal findings were noted, particularly in the urogenital tract. Considering the absence of symptoms, vascular surgeons opted for surveillance, and the patient received antibiotics under diagnosis of uncomplicated urinary infection.

Repeated CT six months later (Fig. 2) showed unchanged size and morphology of the saccular venous aneurysm, with thin arterial-phase hyperenhancement surrounding the thrombus partially extending in the left renal vein. Further follow-up CT (Fig. 3) 18 months after initial diagnosis confirmed persistently stable venous aneurysm.

Discussion:

A primary venous aneurysm (VA) is defined as a focal dilatation of a vein, which communicates with the main vessel through a single channel, in the absence of varicose veins, arterio-venous communication or pseudoaneurysm. Very uncommon compared to arterial aneurysms, VAs may be either developmental (probably from congenital weakness of elastic fibres in the venous wall) or acquired (secondary to trauma, inflammation or degenerative changes).

Histologically, VAs retain the normal structure of the normal vein wall, with thinned elastic and muscular layers. Most VAs occur in the jugular, popliteal and saphenous veins. Albeit very uncommon, visceral VAs will be increasingly encountered due to the widespread use of cross-sectional imaging: among them, the majority involve the portal-mesenteric system (usually associated with portal hypertension) and inferior vena cava [1, 2].

Few (less than 20) cases of renal vein aneurysms (R-VAs) have been reported, in patients with a mean age of 52 years. While initial reports suggested that left-sided involvement was more frequent due to the greater length of renal vein, recent reviews did not confirm this side prevalence. Symptoms such as abdominal pain or haematuria are reported in less than 50% of patients. Therefore, R-VAs are often detected incidentally during surgery,
ultrasound, CT or MRI studies [1-7]. Often sizeable (median 4-5 cm), R-VAs sonographically appear as anechoic oval or saccular-shaped lesions with internal slow venous flow. Cross-sectional imaging depicts fusiform or saccular structures in continuity and with synchronous contrast opacification with the renal vein. As this case exemplifies, partial or complete thrombosis represents the main complication, and is heralded by intraluminal CT hyperattenuation with corresponding filling defect in the venous post-contrast phase and peripheral “rim” enhancement. Occlusive thrombosis is reported in 13.6-23% of cases. Occasional cases of aneurismal rupture have been reported [1-7].

At CT differential diagnosis includes the normal variant represented by distended left renal vein, the possible “nutcracker” compression between aorta and superior mesenteric artery, splenic-renal shunt in the setting of portal hypertension, renal vein varicosities from congenital or acquired (generally iatrogenic) arterio-venous fistulization, arterial aneurysms, renal or pancreatic cystic lesions, and lymphadenopathy [3, 5, 7-9].

Symptomatic or complicated R-VAs require intervention with aneurysmectomy or aneurysmorrhaphy. Conversely, incidentally detected R-VAs may have limited clinical importance, and the therapeutic approach varies from “watchful waiting” using serial imaging follow-up in asymptomatic patients, to anticoagulation or endovascular stenting. Surgery is ultimately required in approximately one-half of patients [1-4].

**Differential Diagnosis List:** Partially thrombosed primary aneurysm of the left renal vein., Non-thrombosed renal vein aneurysm, Distended left renal vein (normal variant), Nutcracker phenomenon, Splenic-renal shunt in portal hypertension, Arterio-venous fistula, Renal artery aneurysm, Lymphadenopathy

**Final Diagnosis:** Partially thrombosed primary aneurysm of the left renal vein.

**References:**


Figure 1

Description: CT performed for unrelated reasons detected a well-demarcated roundish lesion (arrowheads) abutting the left renal vein (*), measuring approximately 15 Hounsfield Units (HU) attenuation on unenhanced images. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**Description:** Multiplanar reformatted images (b..d) from portal venous phase acquisition depicted the lesion (arrowheads) as a saccular outpouching of the left renal vein (*), with internal nonenhancing tissue (thin arrows) representing intraluminal thrombus. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
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**Description:** Venous phase images (c..e) confirmed saccular aneurysm (arrowheads) with unchanged size and morphology of the left renal vein (*), and persistent internal thrombosis. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**Description:** The main left renal vein (*) showed normal calibre and patency. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
Description: 18 months after initial incidental diagnosis, the saccular aneurysm (arrowheads) of the left renal vein (*) showed persistently unchanged size and morphology on both unenhanced (a) and post-contrast (b,c) acquisitions. Origin: Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
**Description:** The saccular aneurysm (arrowheads) of the left renal vein (*) showed unchanged size and morphology on post-contrast (b, c) acquisitions, persistent internal thrombosis (thin arrows). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco” University Hospital – Milan (Italy)
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