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MEDICAL CENTER

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DEPARTMENT OF IMAGING SCIENCES

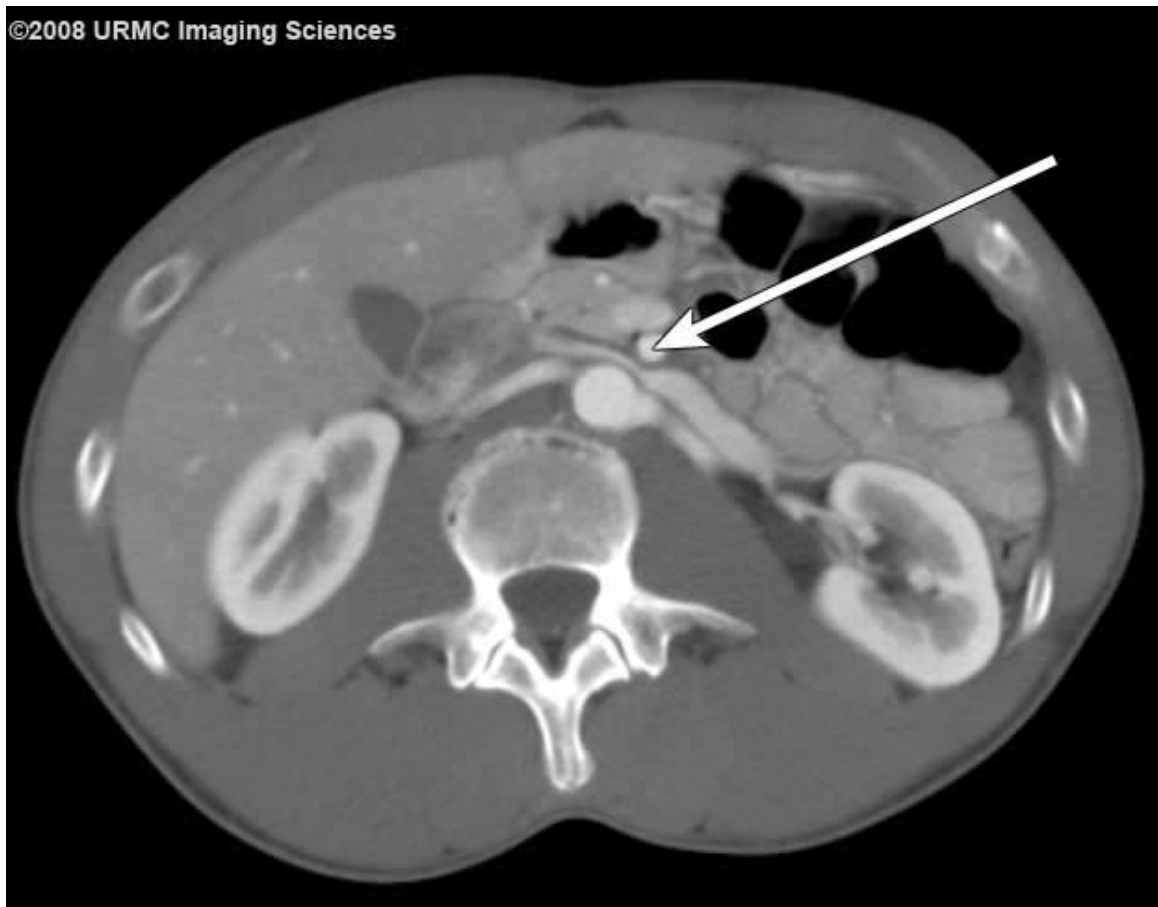
## Imaging Sciences Interesting Cases

### CASE 269

Devang Butani, MD

**CLINICAL PRESENTATION:** Patient is a 50-year-old male with left flank pain and hematuria.

**IMAGING FINDINGS:** CT scan showed narrowing of the left renal vein, at the level of the anterior superior mesenteric artery (SMA).



**Figure 1:** CT scan shows a narrowed left renal vein, due to extrinsic compression from the anteriorly located SMA (arrow).

**DIAGNOSIS: Nutcracker syndrome**

**DISCUSSION:** Nutcracker syndrome, also called left renal vein entrapment syndrome, is defined by non-glomerular hematuria originating from the left collecting system caused by compression of the left renal vein between the aorta and the proximal superior mesenteric artery. The compression of the left renal vein leads to an elevation of left renal venous pressure and the formation of ureteral and renal pelvic venous varicosities and the development of collateral veins. The etiology of nutcracker syndrome has been sug-

gested to be the abnormal branching of the superior mesenteric artery from the aorta. The pathophysiology of nutcracker syndrome is not fully understood. Presumably, the increased pressure in the left renal vein causes rupture of the thin-walled varices surrounding the collecting system in the renal fornix causing bleeding into the left upper urinary tract. The incidence of nutcracker syndrome is unknown; however, the frequency of the syndrome seems to be similar in both genders.

While a similar appearance can be seen in an asymptomatic patient, sterile hematuria, unilateral flank pain and the absence of renal stones should raise the differential of nutcracker syndrome. Subsequent follow-up includes venogram and possible stenting of the renal vein across the stenosis.

#### **REFERENCES:**

1. Russo D, Minutolo R, Iaccarino V, et al. Gross hematuria of uncommon origin: the nutcracker syndrome. *Am J Kidney Dis.* 1998 Sep;32(3):E3. PMID: 10074588 [PubMed]