Asymptomatic nutcracker phenomenon: entrapment of the left renal vein shown by CT without left flank or pelvic pain, or macroscopic haematuria

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DESCRIPTION

A 65-year-old woman presented with a 6-month history of mild epigastric pain without weight loss, left flank pain, pelvic pain, or macroscopic haematuria. Previously, during a routine medical check-up, she had been shown to have liver dysfunction. Subsequent abdominal ultrasonography incidentally revealed dilatation of the left renal vein. At the present evaluation, urinalysis showed no microscopic haematuria. Corticomedullary phase images of abdominal contrast-enhanced CT (CE-CT) revealed dilatation of the left renal vein in the upper stream of the region compressed between the superior mesenteric artery (SMA) and the aorta (figures 1 and 2). They also showed a dilated left lumbar vein with possible collateral circulation (figure 3), suggesting a diagnosis of the asymptomatic nutcracker phenomenon (NCP).

NCP is defined by its imaging findings, that is, entrapment of the left renal vein between the SMA and the aorta, regardless of the presence of symptoms. Among its presentations, symptomatic NCP, identified by such symptoms as haematuria or left flank or pelvic pain, has been designated the nutcracker syndrome (NCS). Its clinical features are thought to be caused by dilatation of the renal veins or formation of varices in the testicular or ovarian veins that flow into renal veins due to obstruction.

Figure 1  Corticomedullary-phase, axial, contrast-enhanced CT image shows the beak sign and a dilated left renal vein that is compressed between the superior mesenteric artery and the aorta (arrowhead).

Figure 2  The reconstruction contrast-enhanced CT image reveals that the left renal vein is entrapped between the superior mesenteric artery and the aorta (asterisk).

Figure 3  Corticomedullary-phase, axial, contrast-enhanced CT image shows that the left lumbar vein is dilated to 4.2 mm diameter with signs of reflux (arrows).

Figure 4  The sagittal reconstruction contrast-enhanced CT image shows an superior mesenteric artery—aortic angle of 20° (arrows).
of their normal venous return. In contrast, NCP without any symptoms, despite displaying typical imaging findings, is called the asymptomatic NCP.

Useful CE-CT clues for diagnosing NCP include (1) the beak sign, (2) a hilar diameter-to-aortomesenteric diameter ratio of ≥4.9, or (3) a combination of a superior mesenteric artery—aortic angle <25° and visualisation of a dilated collateral vein with signs of reflux. The sensitivity and specificity of these three diagnostic clues are 91.7% and 88.9%; 66.7% and 100%; 80.0% and 88.2%, respectively. Our patient exhibited the beak sign (figure 1) and the combination of an SMA—aortic angle <25° (figure 4) and visualisation of a dilated collateral vein with signs of reflux (figure 3). The large diameter ratio was not present.

Epigastric pain is not a typical symptom of NCS, although a patient with NCP and epigastric pain due to a complicated SMA syndrome has been reported. CE-CT revealed no findings of SMA syndrome in the present patient.

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