

Posterior Nutcracker Syndrome: A Case Report

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| Received: 24.08.2024 | Accepted: 03.10.2024 | Published: 10.10.2024

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Abstract

Case Report

Posterior nutcracker syndrome (PNCS) refers to left renal venous hypertension secondary to compression of the retro aortic left renal vein between the aorta and the vertebral column. We report the case of a 48-year-old man being monitored for a plasmacytoma of the femur, in whom a CT scan of the abdomen and pelvis was performed as part of the staging workup, revealing an incidental finding of posterior nutcracker syndrome.

Keywords: Posterior nutcracker syndrome, CT, aorta, renal vein.

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INTRODUCTION

The term posterior nutcracker syndrome refers to compression of retro aortic left renal vein between the aorta and the vertebral column leading to stenosis of this portion of the left renal vein and dilation of its distal segment [1, 2].

While rare, this condition is a significant diagnosis due to the high morbidity linked to the risk of secondary anemia from hematuria, long-term left renal vein hypertension, vascular thrombosis, and potential blood clots in the urinary system [2].

CASE

We report the case of a 48-year-old man being monitored for a plasmacytoma of the femur, in whom a CT scan of the abdomen and pelvis was performed as part of the staging workup, revealing an aberrant retro-aortic course of the left renal vein, which is slightly dilated upstream of an aorto-vertebral pinch, along with mild dilation of the left lumbar vein and the inferior hemiazygos vein, both of which remain patent.

During the interview, the patient complained of intermittent atypical left lumbar pain.

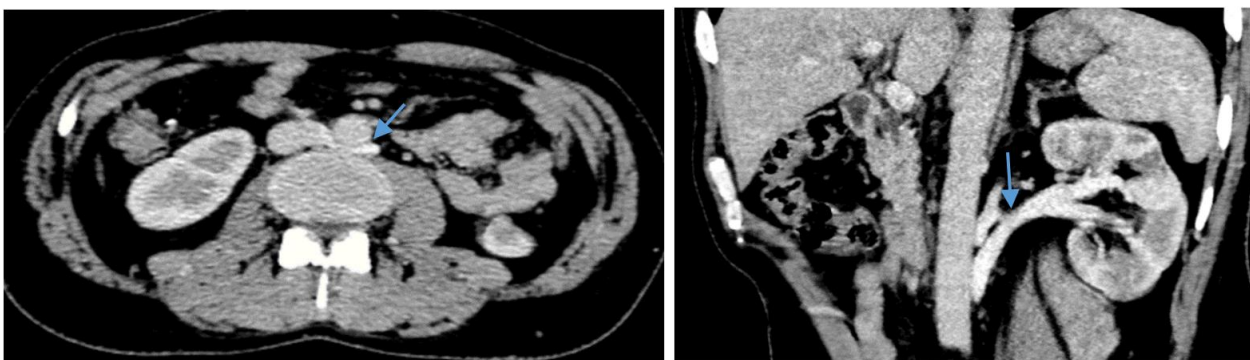


Figure 1 and 2: Axial and coronal CT scan with contrast injection: retro-aortic course of the left renal vein (blue arrow)

DISCUSSION

Less common than anterior nutcracker syndrome, PNCS may be caused by an underlying anatomical variant, such as a retro-aortic left renal vein or renal collar, or by aortic and vertebral pathologies,

including abdominal aneurysms or lumbar osteophytosis [3, 4].

PNCS may present clinically with intermittent hematuria, gonadal or spermatic reflux, and pelvic varices. It is important to differentiate between

nutcracker syndrome and nutcracker phenomenon, the latter being generally asymptomatic [5, 6].

The diagnosis of PNCS primarily relies on modern imaging techniques.

CT, with its multiplanar acquisitions, provides a significant advantage for diagnosis by highlighting various criteria, including compression of the retro-aortic left renal vein, distension of the gonadal veins, pelvic congestion, and dilation of the renal-azygos-lumbar arc [6, 7]. Unlike ANCS, there is currently no established aorto-vertebral distance cutoff for PNCS. Determining a threshold value below which the syndrome manifests would be highly beneficial for diagnosis.

If the diagnosis remains uncertain, the pressure gradient between the left renal vein (LRV) and the inferior vena cava (IVC) plays an important role in diagnosing nutcracker syndrome. This gradient is measured during a Doppler examination, but phlebography remains the most accurate method, with both being considered the gold standard [8].

Ultrasound is a highly sensitive technique that carries no risks and, when performed by experts, can identify all the typical signs of PNCS: stenosis of the left renal vein, flow congestion, secondary varicocele, and potential renal failure [6].

Various treatment options have been suggested for this syndrome. For cases of occasional left flank pain or mild microscopic hematuria, the preferred approach is longitudinal observation. In contrast, severe persistent pain or significant hematuria indicate the need for intervention. In the absence of treatment, stenosis can predispose patients to venous thrombosis with consequent irreversible kidney damage [9].

CONCLUSION

The posterior nutcracker syndrome is a rare condition that should be considered in the differential diagnosis of unusual causes of unexplained abdominal pain in young patients, especially when the pain is left-sided and accompanied by hematuria.

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