CASE REPORT

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A Rare Cause of Unexplained Left Flank Pain: Nutcracker Syndrome

ABSTRACT

Nutcracker syndrome refers to the compression of the left renal vein, usually between the aorta and the superior mesenteric artery. Flank pain is the most common complaint and hematuria can be seen among the laboratory findings. This syndrome, which is more common in women with low body mass index, can be difficult to diagnose.

A 41-year-old female patient with persistent left flank pain was admitted to our family medicine outpatient clinic. Despite many polyclinic applications, there was no finding that could explain the pain in the patient, who did not have any features in her history. Computed tomography requested in our family medicine outpatient clinic revealed that the left renal vein was compressed between the aorta and the superior mesenteric artery, and the patient was diagnosed with nutcracker syndrome.

Nutcracker syndrome is difficult to diagnose and is a diagnosis of exclusion to be considered in patients presenting with atypical left flank pain. A wide variety of methods are used in the treatment, from conservative treatment to the endovascular stent and surgical treatment, depending on the severity of the symptoms.

Keywords: Nutcracker Syndrome, Pain, Family Medicine

Sol Yan ağrısının Açıklanamayan Nadir Bir Sebebi: Nutcracker Sendromu

ÖZET

Nutcracker sendromu, genellikle aort ve superior mezenterik arter arasında, sol renal venin sıkışmasını ifade eder. Yan ağrısı en sık yakınmadır ve laboratuvar bulguları arasında hematüri görülebilir. Vücut kitle indeksi düşük olan kadınlarda daha sık görülen bu sendromun teşhisi zor olabilir.

41 yaşında kadın hasta kalıcı sol yan ağrısı şikâyeti ile aile hekimliği polikliniğimize başvurdu. Özgeçmişinde herhangi bir özellik bulunmayan hastada birçok poliklinik başvurusuna rağmen ağrıyı açıklayacak bir tanı konulamadı. Aile hekimliği polikliniğimizde istenen bilgisayarlı tomografide sol renal venin aorta ile süperior mezenterik arter arasında sıkıştığı saptandı ve hastaya Nutcracker sendromu tanısı konuldu.

Nutcracker sendromunun tanısı zordur ve atipik sol yan ağrısı ile başvuran hastalarda düşünülmesi gereken bir ekartasyon tanısıdır. Tedavide semptomların şiddetine göre konservatif tedaviden endovasküler stent ve cerrahi tedaviye kadar çok çeşitli yöntemler uygulanmaktadır.

Anahtar Kelimeler: Nutcracker Sendromu, Ağrı, Aile Hekimliği

INTRODUCTION

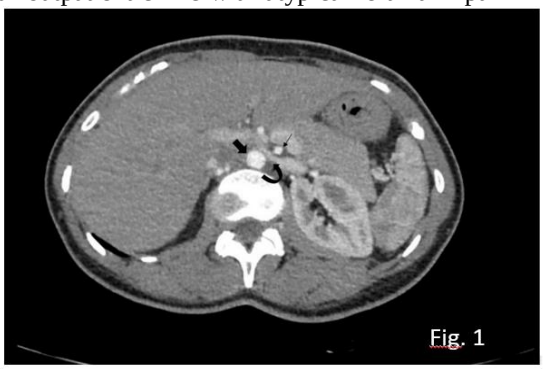
The nutcracker phenomenon (NF) was first described in 1950 as compression of the left renal vein (1). The left renal vein usually passes between the aorta and the superior mesenteric artery and joins the Vena Cava Inferior (VCI). During this transition, the left renal vein can become compressed between the aorta and the superior mesenteric artery (SMA), and this is called NF. More rarely, the renal vein has a retro-aortic or circumaortic course and is compressed between the aorta and the vertebral body (2). Distal dilatation and venous HT occur as a result of renal vein compression. The combination of NF with clinical complaints was defined as Nutcracker Syndrome (NS). While NS can progress asymptomatically, it also produces severe and persistent symptoms (3). Flank pain is the most common complaint and the most common finding is microscopic hematuria. The prevalence of NS has not been revealed yet, but it is known that it is slightly more common in women. Most symptomatic patients are female patients in their second or third decades with a low body mass index. NS, of which diagnostic and therapeutic criteria have not yet been sufficiently defined, is a disease that is usually diagnosed late and with difficulty (4).

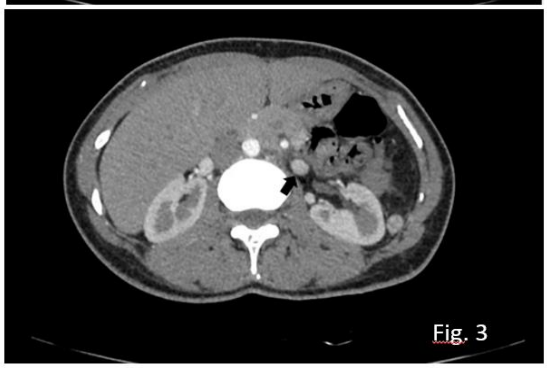
In this case, we aimed to present our patient who presented with complaints of long-term flank pain and chest pain in the lower left side, which are common complaints in our family medicine units.

CASE REPORT

A 41-year-old female patient was admitted to our outpatient clinic with atypical left flank pain that had been present for a long time but had been exacerbated recently. The patient had a body mass index of 17.4 and did not have any chronic disease. The pain, which did not change with breathing and had no difference between day and night, was exacerbated by physical activity and radiated to the left leg. There were multiple emergency service and polyclinic applications with this pain complaint, which did not impair his daily functionality, but significantly reduced his quality of life. There was no finding that could explain the pain in the patient who applied to cardiology, neurosurgery, chest diseases, physical therapy and rehabilitation, psychiatry outpatient clinics. The patient, who regularly used Selectra 50 mg and NSAIDs, applied to our family medicine outpatient clinic because his complaints continued and increased recently. There were no pathologic findings in laboratory parameters. Contrast-enhanced thorax computed tomography (CT) and abdominal ultrasonography were requested by us.

The obtained CT noted significant compression of the left renal vein as it passes between the aorta and the SMA. (Fig. 1) In the angle measurement, the aortomesenteric angle was found to be 24.1 degrees. (Fig. 2) A significant enlargement of the ovarian vein was observed secondary to this compression. (Fig. 3) In the ultrasonography performed later, the left renal vein was again shown to be compressed between the aorta and the SMA. The left ovarian vein was measured at 8 mm. When all imaging findings were combined with clinical data, the patient was diagnosed with NS.





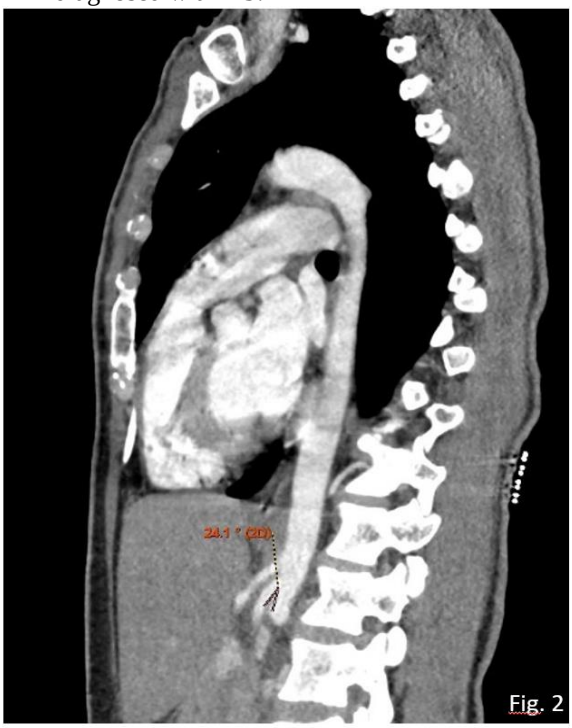


Fig 1. Compression of the left renal vein (↷) as it passes between the aorta (➡) and the SMA (➞) **Fig2.** Aortomesenteric angle; 24.1 degrees **Fig 3.** Enlargement ovarian vein (➡).

DISCUSSION

Patient-centered clinical management is one of the main features that make family medicine a discipline. According to the principle of a comprehensive approach, which is one of the basic competencies of Family Medicine, it should include systematic evaluation in detail and have a holistic perspective. As in our case, the patient's advocacy and ability to make the necessary coordination in solving medical problems is an important part of the Family Medicine discipline.

The nutcracker phenomenon, also known as left renal vein impingement syndrome, was first reported in 1950, and De Schepper, a Belgian radiologist, named it nutcracker syndrome for the first time in 1972. Although NF and NS are often used interchangeably, NS refers to the disease with typical signs and symptoms. There are two main types of NS. In anterior NS, which is the more common type, the left renal vein is compressed between the aorta and the SMA, and the Retro aortic or circumaortic renal vein compression between the aorta and the vertebral body is called posterior NS. It's much rarer causes include pancreatic neoplasms, para-aortic lymphadenopathy, retroperitoneal masses, abdominal aortic aneurysm, and lumbar lordosis. Although the exact prevalence is not known, it is more common in young women with asthenic structures (5).

NS can be asymptomatic or cause severe and permanent complaints. The most common complaints are atypical left flank and lower rib pains that increase with physical activity. These pains, which sometimes radiate to the left posteromedial thigh and hip, are also exacerbated by standing and increasing lumbar lordosis. Hematuria is the most common finding and microscopic hematuria is frequently seen. This is explained by the increase in venous pressure secondary to the distal stasis with the compression of the renal vein and rupture of the capillary veins into the collecting system. Rarely, macroscopic hematuria may also be seen, which may require a blood transfusion (6). In approximately half of the cases, pelvic congestion syndrome and varicocele occur, respectively, due to enlargement of the ovarian vein or testicular vein draining into the left renal vein.

NS should be considered in the presence of atypical left flank pain and hematuria, which is a diagnosis of exclusion and the cause of which cannot be found (7). Diagnosis should be confirmed by ultrasonography, computed tomography, or magnetic resonance imaging. Imaging findings include a left renal vein diameter with a hilar/aortomesenteric ratio ≥4.9, the 'beak sign' defined as severe narrowing of the SRV in the aortomesenteric segment, and the angle between the aorta and SMA <41°. When all these findings are detected, the sensitivity increases considerably (8).

In the treatment, depending on the severity of the symptoms, a wide range of methods are applied, from conservative treatment to endovascular stenting and surgical treatment (9). Since most of the patients under the age of 18 have spontaneous regression, only conservative treatment is chosen. While symptomatic treatment is preferred in mild microscopic hematuria, surgical treatment should be considered in cases that do not respond adequately to the treatment for 24 months, and who develop severe pain and renal failure (10,11).

CONCLUSION

NS is an important cause of morbidity that should be considered in patients presenting with atypical left flank pain, which is difficult to diagnose and is diagnosed by evaluating clinical suspicion and imaging findings together. This clinical picture, which has many treatment options from symptomatic treatment to surgical methods, should be considered in the differential diagnosis.

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