E-ISSN: 2708-1508
P-ISSN: 2708-1494
IJCRS 2024; 6(2): 87-89
www.casereportsofsurgery.com
Received: 30-07-2024
Accepted: 07-08-2024

Axel Adonai Tolstano
Department of Cardiovascular Surgery, Organización Clinica General del Norte, Barranquilla, Colombia

Ricardo Romero Figueroa
Department of Intensive Unit Care and Internal Medicine, Organización Clinica General del Norte, Barranquilla, Colombia

Belkys Palacio Villalba
Department of epidemiology, Organización Clinica General del Norte, Barranquilla, Colombia

Alfonso Parra Pertuz
Department of Intensive Unit Care General Doctor, Organización Clinica General del Norte, Barranquilla, Colombia

Sharon Cañate Segura
Internal doctor, Organización Clinica General del Norte, Barranquilla, Colombia

Jean Pierre Matias Acosta
Department Intensive Unit Care General Doctor, Organización Clinica General del Norte, Barranquilla, Colombia

Corresponding Author:
Axel Adonai Tolstano
Department of Cardiovascular Surgery, Organización Clinica General del Norte, Barranquilla, Colombia

Nutcracker syndrome, diagnostic challenge: Case report

Axel Adonai Tolstano, Ricardo Romero Figueroa, Belkys Palacio Villalba, Alfonso Parra Pertuz, Sharon Cañate Segura and Jean Pierre Matias Acosta

DOI: https://DOI.org/10.22271/27081494.2024.v6.i2b.120

Abstract
Nutcracker syndrome is a rare vascular abnormality caused by decreased aortomesenteric compass causing compression of the superior mesenteric artery. We present the case of a 23-year-old female with a known and under study gastrointestinal pathological and surgical history, consulted to the emergency department for clinical symptoms characterized by epigastric pain associated with nausea, abdominal distention, and oral intolerance. Subjected to multiple imaging studies, it was not possible to identify the etiology of the symptoms, so a contrasted double abdominal CT scan was requested, which evidenced the probable mesenteric impingement, a diagnosis that was confirmed by abdominal CT angiography. She received endovascular treatment with Wrapsody Merit Stent placement in the left renal vein, achieving a complete recovery.

Keywords: Nutcracker síndrome, Superior mesenteric artery, abdominal pain, endovascular surgery

Introduction
The Nutcracker Syndrome is a rare condition caused by the compression of the left renal vein between the aorta and the superior mesenteric artery. Clinical presentation includes hematuria, proteinuria, abdominal pain, and renal hypertension, and treatment varies based on symptom severity and the patient's age. Management options range from simple observation to endovascular surgical intervention [1]. This report presents a case involving endovascular diagnosis and treatment.

Case report
A 23-year-old female with recurrent consultations was admitted to the emergency department with a three-day history of abdominal pain, described as colicky with an intensity of 10/10 on the pain analog scale, localized in the epigastric region and associated with nausea, vomiting, mild abdominal distention, and intolerance to oral intake. Medical history included segmental cesarean section, recent cholecystectomy, and erythematous pangastritis. The general surgery team requested imaging studies that revealed sigmoiditis under investigation, grade I/IV internal hemorrhoids, and moderate duodenogastric bile reflux, with pathology reports showing mild non-atrophic superficial corporal chronic gastritis, negative for Helicobacter pylori, and a sigmoid colon with histological changes within normal parameters, as well as terminal ileum with follicular lymphoid hyperplasia, managed with a proton pump inhibitor. Admission paraclinical and complementary studies reported normal hemogram, coagulation profile, electrolyte panel, renal, and liver function, with mildly elevated pancreatic function but no diagnostic criteria for pancreatitis. The patient was evaluated by gastroenterology, who, upon receiving a positive fecal calprotectin report, requested follow-up, magnetic resonance enterography, and a plain CT of the abdomen and pelvis, which showed no apparent pathology. Due to a high risk of active Inflammatory Bowel Disease, intravenous ursodeoxycholic acid was initiated for 5 days.
Upon receiving the plain abdominal and pelvic CT report (Fig. 1) showing no apparent pathology, a contrast-enhanced abdominal CT (Fig. 2) was requested, which suggested a probable mesenteric compression with suspected Nutcracker Syndrome. Following this finding, cardiovascular and endovascular surgery evaluation was requested, leading to an abdominal CT angiography (Fig. 3), which confirmed the diagnosis. Endovascular surgery was proposed for management, involving the placement of a Merit Wrapsody Stent in the

left renal vein (Fig. 4), a procedure that was successfully performed with oral dual antiplatelet therapy and good tolerance. The patient had an adequate recovery and was discharged with follow-up by gastroenterology and cardiovascular and endovascular surgery.

Discusión

Chronic abdominal pain has a wide range of etiologies, making it challenging to identify the cause [2]. While guiding the study of abdominal pain is difficult, correlating the pain location with organ location, innervation, and potential radiation allows for a more targeted approach to the clinical picture [3]. Symptoms associated with abdominal pain are sometimes nonspecific, often requiring diagnostic imaging [4].

A thorough medical history and physical examination can raise suspicion for left renal vein compression; however, given the anatomical importance of the aortomesenteric angle-which generally forms an acute angle at its origin from the aorta-imaging studies become essential. In this case, the contrast-enhanced abdominal CT raised diagnostic suspicion, and abdominal CT angiography was necessary to confirm the Nutcracker Syndrome diagnosis. The superior mesenteric artery usually forms an acute angle at its origin from the aorta [5], and when this angle narrows, it compresses the renal vein, resulting in Nutcracker Syndrome and its complications.

Fig 1: Plain Abdominal CT: No apparent pathology.

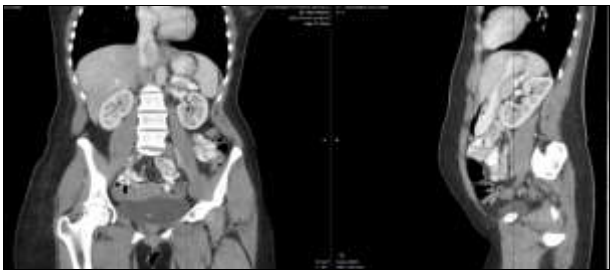

Fig 2: Significant reduction in the amplitude of the aortomesenteric angle with probable narrowing of the passage of the third portion of the duodenum and likely luminal narrowing at this level, resulting in ectasia of the left renal vein.

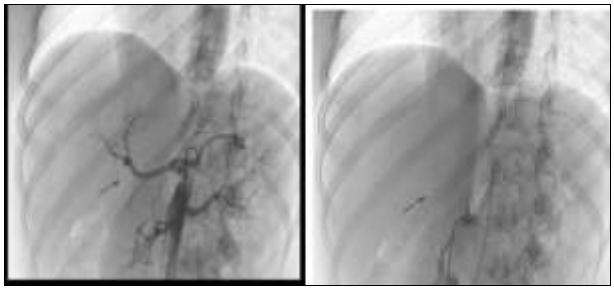

Fig 3: Abdominal CT angiography: Superior mesenteric artery with a sharp angle from its origin. The left renal vein shows immediate collapse due to compression at its entry into the inferior vena cava.

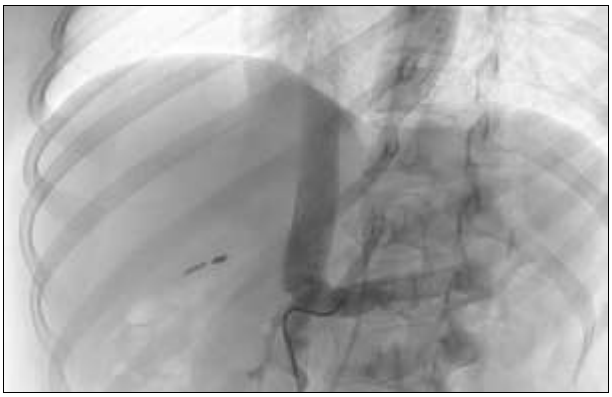

Fig 4: Abdominal CT angiography: Left renal vein with a Wrapsody Merit stent in place.

Conclusion

Nutcracker Syndrome, although rare, should be included in the differential diagnosis for patients with chronic abdominal pain, particularly in younger individuals presenting with atypical symptoms for their age, such as hypertension, proteinuria, or hematuria without any previously described risk factors. Therefore, it is essential for clinicians to individualize each case and conduct appropriate diagnostic studies, such as contrast-enhanced abdominal CT and angiography, to confirm the presence of a narrowed aortomesenteric angle and venous compression. This approach also helps in defining the most suitable treatment for the patient.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Hermida Pérez JA. Síndrome de cascanueces. Med Gen Fam [Internet]. 2016;5(1):21–4. Disponible en: http://dx.DOI.org/10.1016/j.mgyf.2015.11.005
2. Ringel-Kulka T, Ringel Y, Ringel A. Evaluación del dolor abdominal crónico [Internet]. BMJ Best Practice. 2023. Disponible en: https://bestpractice.bmj.com/topics/es-es/767
3. Ugarte MJ. Enfrentamiento del paciente con dolor abdominal. Rev médica Clín Las Condes [Internet]. 2021;32(4):457–65. Disponible en: http://dx.DOI.org/10.1016/j.rmclc.2021.06.005
4. Paba M, Hernández Pinzón J, Jeanmaire E, Larrañaga N, Espil G, Kozima S. Dolor abdominal: causas poco

frecuentes. Rev Argent Radiol / Argent J Radiol [Internet]. 2021;85(S 01):S1–10. Disponible en: http://dx.DOI.org/10.1055/s-0038-1676496
5. Gulleroglu K, Gulleroglu B, Baskin E. Síndrome del cascanueces. Mundial J Nephrol 2014; 3(4): 277-281 [PMID: 25374822 DOI: 10.5527/wjn.v3.i4.277]
6. Kolber MK, Cui Z, Chen CK, Habibollahi P, Kalva SP. Nutcracker syndrome: diagnosis and therapy. Cardiovasc Diagn Ther. 2021 Oct;11(5):1140-1149. DOI: 10.21037/cdt-20-160. PMID: 34815965; PMCID: PMC8569268.
7. Ananthan K, Onida S, Davies AH. Nutcracker Syndrome: An Update on Current Diagnostic Criteria and Management Guidelines. Eur J Vasc Endovasc Surg. 2017 Jun;53(6):886-894. DOI: 10.1016/j.ejvs.2017.02.015. Epub 2017 Mar 27. PMID: 28356209.
8. Ismailoglu T. The Nutcracker Syndrome. J Radiol Case Rep. 2022 May 1;16(5):17-23. DOI: 10.3941/jrcr.v16i5.4339. PMID: 35711687; PMCID: PMC9165612.
9. Venkatachalam S, Bumpus K, Kapadia SR, Gray B, Lyden S, Shishehbor MH. The nutcracker syndrome. Ann Vasc Surg. 2011 Nov;25(8):1154-64. DOI: 10.1016/j.avsg.2011.01.002. Epub 2011 Mar 25. PMID: 21439772.
10. Chait J, Sen I, Kalra M. Nutcracker Syndrome: How to Diagnose It and When/How Should It Be Treated in the Pelvic Venous Disease Population. Tech Vasc Interv Radiol. 2021 Mar;24(1):100734. DOI: 10.1016/j.tvir.2021.100734. Epub 2021 Apr 16. PMID: 34147193.

How to Cite This Article
Tolstano AA, Figueroa RR, Villalba BP, Pertuz AP, Segura SC, Acosta JPM. Nutcracker syndrome, diagnostic challenge: Case report. International Journal of Case Reports in Surgery 2024; 6(2): XX-XX