



## Internal Medicine Flashcard

## A middle-aged woman with microscopic hematuria detected at a medical check-up

Yusaku Kajihara\*

Department of Gastroenterology, Fuyoukai Murakami Hospital, Japan



## ARTICLE INFO

## Keywords:

Hematuria

Nutcracker phenomenon

## 1. Case description

A 56-year-old woman presented to the author's hospital with microscopic hematuria detected at a medical check-up. Vital signs were normal, and the patient had no symptoms. Laboratory evaluation showed that hemoglobin and serum creatinine levels were 12.1 g/dL and 0.74 mg/dL, respectively. Urine cytology confirmed no evidence of malignancy. Ultrasonography (USG) revealed compression of the left renal vein between the aorta and the superior mesenteric artery, with impaired blood outflow accompanied by distention of the distal portion of the vein (Fig. 1). What is the diagnosis?

## 2. Discussion section

This finding is known as nutcracker phenomenon (NCP). Spontaneous resolution of microhematuria was obtained by conservative approach. The first clinical report of NCP was by El-Sadr and Mina [1] in 1950. The exact prevalence of NCP is unknown, and why NCP occurs in adults is less clear [2]. However, a decrease in retroperitoneal fat is believed to reduce the aortomesenteric angle; thus, lower body mass index (BMI) correlates positively with NCP [3]. In fact, the patient's BMI was 20.0 (height: 166.3 cm, weight: 55.4 kg).

Several imaging methods, including USG, computed tomography angiography, magnetic resonance angiography and retrograde venography, have been used to diagnose NCP. Especially, USG is useful for the noninvasive diagnosis of NCP; Doppler USG has a sensitivity of 78% and a specificity of 100% [4].

The term *nutcracker syndrome* should be reserved for patients with characteristic clinical symptoms associated with demonstrable nutcracker morphologic features [2], such as hematuria and left flank pain. The severity of the syndrome varies from asymptomatic microhematuria to severe pelvic congestion, and hematuria is the most

commonly reported symptom. Management options range from observation to nephrectomy, depending on the severity of symptoms; conservative treatment is recommended for mild hematuria [5].

## Conflict of interest

None declared.

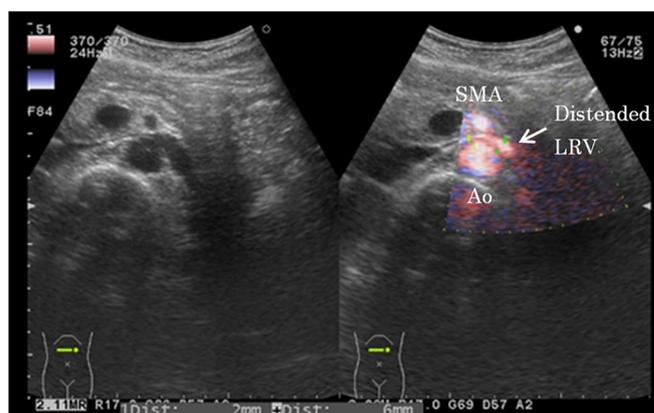


Fig. 1. Ultrasonography revealing entrapment of the left renal vein (LRV) between the abdominal aorta (Ao) and superior mesenteric artery (SMA).

\* Corresponding author at: 3-3-14 Hamada, Aomori 030-0843, Japan.

E-mail address: [yukajihara-gi@umin.ac.jp](mailto:yukajihara-gi@umin.ac.jp).

## References

- [1] El-Sadr AR, Mina E. Anatomical and surgical aspects in the operative management of varicocele. *Urol Cutaneous Rev* 1950;54:257–62.
- [2] Kurklinsky AK, Rooke TW. Nutcracker phenomenon and nutcracker syndrome. *Mayo Clin Proc* 2010;85:552–9.
- [3] Ozkurt H, Cenker MM, Bas N, Erturk SM, Basak M. Measurement of the distance and angle between the aorta and superior mesenteric artery: normal values in different BMI categories. *Surg Radiol Anat* 2007;29:595–9.
- [4] Takebayashi S, Ueki T, Ikeda N, Fujikawa A. Diagnosis of the nutcracker syndrome with color Doppler sonography: correlation with flow patterns on retrograde left renal venography. *Am J Roentgenol* 1999;172:39–43.
- [5] Dever DP, Ginsburg ME, Millet DJ, Feinstein MJ, Cockett AT. Nutcracker phenomenon. *Urology* 1986;27:540–2.