Journal of Clinical and Medical Images

Clinical Image

ISSN: 2640-9615 | Volume 7

Cystinuria and Hypertension – By Chance?

Dees A[1*] and Nienhuis J[2]

[1]Department of Medicine, Ikazia Hospital, Rotterdam, The Netherlands

[2]Department of Urology, Ikazia Hospital, Rotterdam, The Netherlands

[*]Corresponding author:

Ad Dees,
Department of Medicine, Ikazia Hospital,
Rotterdam, The Netherlands

Received: 07 Oct 2023
Accepted: 08 Nov 2023
Published: 17 Nov 2023
J Short Name: JCMI

Citation:

Ad Dees, Cystinuria and Hypertension – By Chance?. J Clin Med Img. 2023; V7(7): 1-2

1. Clinical Image

A 22-year-old woman was admitted to the hospital due to a case of symptomatic hypertension for three weeks. She complained of palpitations and headaches. Her blood pressure in the emergency department was 180/115 mmHg and her pulse rate was 124 beats per minute. In the ward and several hours later, her blood pressure persisted at 160/120 mmHg and her pulse was 110 beats per minute. The history and physical examination of the patient were unremarkable, with the exception of her family history. The father and grandfather were known to suffer from hypertension, while the mother and grandmother had kidneystones. Blood samples were taken before starting antihypertensive medication. Laboratory results were Hb 8.5 mmol/l (normal 8.5-10.0), Na 141 mmol/l (135-145), K 3.6 mmol/l (3.5-4.5), creatinine 113 µmol/l (60-105), renin 93.7 mU/ml (10-60) and Aldosterone 0.52 nmol/l (0.04-0.35). The 24-hour urine collection subsequently demonstrated no increased (nor)metanephrin excretion. Ultrasound of the kidneys showed right-sided hydronephrosis and an obstructing pyelum stone was suspected. On intravenous pyelography (IVP) the silhouette of a large 'staghorn' stone was seen, with delayed excretion of contrast (Figure 1). Percutaneous nephrolithotripsy was performed successfully. Stone analysis revealed the etiology of the problem here: it was shown to be cystine driven. Cystinuria is an autosomal recessive metabolic disorder, leading to excessive amounts of poorly soluble cystine in the urine. Over the course of two months, her bloodpressure, kidney function and hormone levels recovered completely. Renin decreased to 6.7 mU/l and Aldosterone decreased to 0.22 nmol/l, respectively.

Hypertension, due to an activated renin-aldosterone axis, is a rare presentation of unilateral kidney obstruction. Bilateral obstruction in cases of urologic or atherosclerotic renal disease, presenting with hypertension, renal failure or volume overload (edema), is far more common in older patients specifically. The results of minimally invasive techniques, by means of percutaneous or surgical endourological interventions, to remove obstructive stones, have improved over time [1]. Longstanding pyelouretral obstruction will lead to renal fibrosis and loss of kidney function [2]. The full recovery and transient type of renin-dependent hypertension suggests that the unilateral obstruction in this young patient had only existed for a short time [3].

Figure 1: IVP demonstrating a normal pyelum on the left side, and a dilated pyelum with suspicion of a large staghorn stone on the right side (arrows).

References

1. Antoniou V, Pietropaolo A, Somani BK. Lithotripsy devices for percutaneous nephrolithotomy (PNL) - new developments. Curr Opin Urol. 2022; 32(4): 405-10.
2. Nørregaard R, Mutsaers HAM, Frøkiær J, Tae-Hwan Kwon. Obstructive nephropathy and molecular pathophysiology of renal interstitial fibrosis. Physiol Rev. 2023; 103(4): 2827-72.
3. Wanner C, Lüscher TF, Schollmeyer P, Vetter W. Unilateral hydronephrosis and hypertension: cause or coincidence? Nephron. 1987; 45(3): 236-41.