Lit-Control devicare

V Edition of the Clinical Cases Contest on

non-surgical clinical management of Kidney Stones

Official template

Title: Lit-Control® pH Balance as a urolithiasis preventive treatment in a high-risk patient.

Author/s: Z. Ribokaite, D. Carrasco Gómez, P. Molina Díaz.

Affiliation 1st author: Urology Department, Hospital Regional Universitario de Malaga, Malaga, Spain

Key words: Vesicoureteral reflux, anatomical anomalies, urolithiasis, Lit-Control® pH Balance.

1. Abstract.

Objective: To evaluate the use of Lit Control pH Balance as a preventive treatment in high-risk stone former and highlight the need for individualized patient management.

Methods: We present the case of a 22-year-old man with history of vesicoureteral reflux (VUR) and right kidney hypotrophy is followed up for urolithiasis in adulthood, likely linked to anatomical abnormalities. These abnormalities are a risk factor for recurrent stone formation. Additionally, in this particular case, there is a risk of progression to chronic kidney disease (CKD) due to the patient being functionally single-kidney. Therefore, treatment with Lit-Control® pH Balance was proposed as a preventive measure for lithiasis development.

Results: In follow-up the patient remains asyntomatic without recurrence or growth of residual stones.

Conclusion: Lit-Control® pH Balance may be a promising adjuvant treatment for this kind of patients. Further comparative clinical trials are needed to stablish its evidence.

2. Introduction

Urolithiasis incidence varies depending on several factors as genetics, dietetics, geographical, climatic or ethnical. Prevalence rate oscillates between 1-20% (1).

Determination of the risk for stone formation is an important well-known practice for individualizing treatment (2). Urinary tract anomalies such as vesicoureteral reflux is a risk factor for developing new or recurrent lithiasis (3). It is also a logical thought that a single-kidney patient suffers a higher risk for developing chronic kidney disease so prevention of recurrent lithiasis seems critical to avoid acute kidney injury in these cases (1).

A clinical trial showed a higher recurrence rate in small, no treated, asymptomatic lithiasis (4). Thus, prevention plays a major role in this patients' management (5). The most important dietary habits for lithiasis prevention are a high daily water intake and avoid salt and high-protein food (6). Furthermore, recent research has shown that phytate (the main component of Lit-Control® pH Balance) consumption may prevent pathological calcifications, such as kidney stones (7).

3. Clinical Case description

a. Patient information / Medical records

A 22-year-old man referred from primary care with two episodes of macroscopic haematuria. No fever, urolithiasis expulsion or renal function deterioration was refered.

Clinical background:

- No known allergies.
- No cardiovascular risk factors.
- Bilateral vesicoureteral reflux treated at 8 months of age endoscopically. At 22 months, a Lich-Gregoir extravesical surgery was performed on the right side.
- Hypotrophic right kidney (previous gammagraphy of 22%).
- Hydrocele and right inguinal repair surgery at 7 and circumcision at 18 years of age.

The patient presents with normal abdominal physical examination and a negative bilateral kidney percussion test.

An ultrasound examination was performed with left renal microlithiasis as a probable cause for his haematuria.

The study was completed with blood test, urine culture and a non-contrast-enhanced computed tomography (CT).

After diagnostic tests, the patient was re-evaluated: he reported renal colic symptons at least once a month, requiring the use of NSAIDs for control. He had also presented sand-like and stone fragments corresponding to the 6-millimetre juxtavesical urolithiasis observed in CT scan. A biochemical study was performed on the stone fragment and a metabolic urine study was requested.

b. Diagnostic support studies and results

- Blood test: Creatinine 0.83 mg/dl, GFR > 90 mL/min/1.73m2. Sodium and potassium were normal. Urine analysis: pH 6, no anomalies detected.
- Urine culture: negative.
- Abdominal ultrasound exam: Bigger left kidney. Left renal sinus microcalcification. A 9.3-millimetre no-obstructive left inferior calyceal lithiasis that produces a mild pyelocaliceal dilation.

- Non-contrast-enhanced CT: small right kidney. Left inferior 6-millimetre calyceal lithiasis. Another 6-millimetre lithiasis in the left uretheral distal region that produces mild uretheral and pyelocaliceal dilation II/IV.

- Normal metabolic evaluation.

- Analysis of stone composition: Stones composed of calcium oxalate and calcium phosphate.

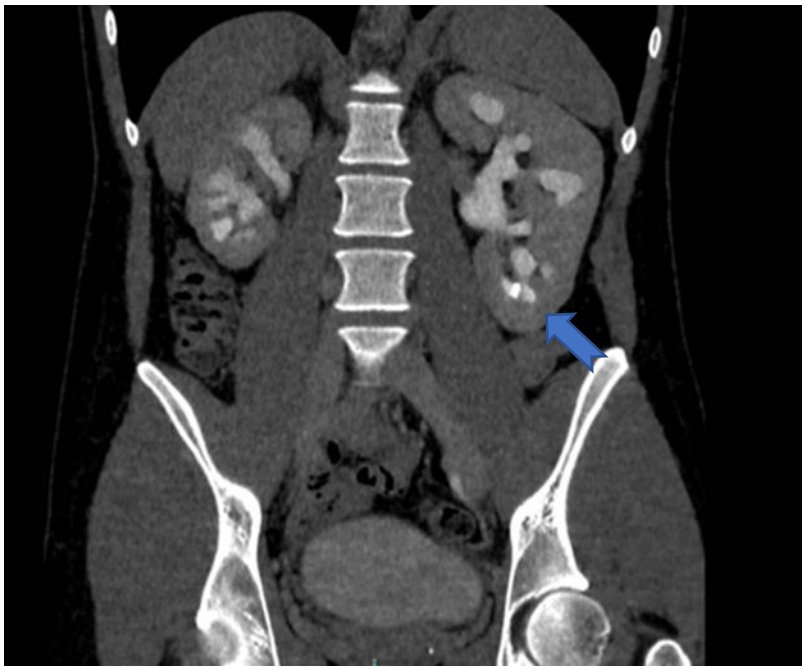

Figure 1: left inferior calyceal lithiasis (arrowhead). Notice the different kidney sizes.

c. Diagnosis

Renal stone in a functionally single-kidney patient with anatomical anomaly in urinary tract.

d. Treatment

Dietary habits recommendations were advised: high daily water intake (at least 2.5-3 litres per day), and a low sodium, low protein and fat diet. Lit-Control® pH Balance was added as a nutritional supplement (1-0-1). Acetaminophen and metamizole were prescribed in case of renal colic associated pain.

e. Evolution and progress

After completing the study and because of this patient has a high-risk of stone formation because of his anatomical anomaly, treatment with Lit-Control® pH Balance was initiated in addition to hygienic-dietary measures. A 6 months follow-up was scheduled to check the clinical evolution, analytical control and a simple abdominal X-ray.

f. Clinical results

After 6 months, he had no further renal colic episodes since the previous expulsive episode. There were also no changes of the left lower calyceal group lithiasis and, in addition, no new lithiasis was observed in the follow-up imaging tests.

Figure 2: AP abdominal X-ray: persistence of inferior left kidney calyceal lithiasis (arrowhead). No other lithiasis can be seen.

4. Discussion

The use of Lit-Control® pH Balance was chosen as a preventive treatment for this patient with a clinical history of calcium oxalate stones and a normal urinary pH (urinary pH of 6). In the short term of his follow-up, no new lithiasis or growth of the previous one was observed. Although, in my opinion, a longer follow-up is necessary to assess long-term efficacy, along with the use of more sensitive imaging test for stone visualization such as non-contrast-enhanced CT.

5. Conclusions and recommendations

The aim of this clinical case is to demonstrate the importance of individualising patients´ management. When facing an acquired single-kidney and high-risk stone former patient, it is important to actively monitor at least once a year (8). In this case, in addition to hygienic-dietary measures, the use of Lit-Control® pH Balance was chosen, obtaining good results so far. Despite the promising results in this patient, long-term follow-up from the introduction of the dietary supplement is necessary, and comparative studies are needed to support its efficacy.

6. Bibliographic references (* of special interest, ** of extraordinary interest)

1. ** EAU Guidelines. Edn. presented at the EAU Annual Congress Paris 2024. ISBN 978-94-92671-23-3.

2. Strohmaier, W.L. Course of calcium stone disease without treatment. What can we expect? Eur Urol, 2000. 37: 339. https://pubmed.ncbi.nlm.nih.gov/10720863
3. Baştuğ F, Gündüz Z, Tülpar S, Poyrazoğlu H, Düşünsel R. Urolithiasis in infants: evaluation of risk factors. World J Urol. 2013 Oct; 31(5):1117-22. doi: 10.1007/s00345-012-0828-y. Epub 2012 Jan 19. PMID: 22258667.
4. Sorensen, M.D., et al. Removal of Small, Asymptomatic Kidney Stones and Incidence of Relapse. NEngl J Med, 2022. 387: 506. https://pubmed.ncbi.nlm.nih.gov/35947709
5. Hesse, A.T., Tiselius H-G., Siener R., et al. (Eds.), Urinary Stones, Diagnosis, Treatment and Prevention of Recurrence. 3rd edition. 2009, Basel.

6. Gul Z, Monga M. Medical and dietary therapy for kidney stone prevention. *Korean J Urol*. 2014; 55:775—779.
7. * Grases, F, Costa-Bauzá, A, Calvó, P, Julià, F, Dietrich, J, Gomila, R.M; Martorell, G, Sanchis, P. Phytate Dephosphorylation Products Also Act as Potent Inhibitors of Calcium Oxalate Crystallization Molecules (2022).
8. Inci, K., et al. Prospective long-term followup of patients with asymptomatic lower pole caliceal stones. J Urol, 2007. 177: 2189. https://pubmed.ncbi.nlm.nih.gov/17509315