1ST EDITION OF THE COMPETITION OF CLINICAL CASES RELATED TO THE NON-SURGICAL CLINICAL MANAGEMENT OF RENAL LITHIASIS.

MEDICAL MANAGEMENT OF URIC ACID KIDNEY STONES, AFTER A CASE REPORT.

Keywords: lithiasis, uricosuria, alkalinization.

SUMMARY

Urinary uric acid stones are a frequent and important pathology in our clinical practice. Conservative treatment by means of hygienic-dietary measures and correct urinary alkalinization by means of citrate and theobromine seems to be a promising combination for the treatment and resolution of these lithiasis. This is shown in one of our cases, where a complete resolution of a coralliform uric acid lithiasis was observed during 12 weeks of treatment with Allopurinol and Lit-Control pH Up® without adverse reactions and avoiding the need for invasive surgical measures.

INTRODUCTION

Urinary calculi are a disease that affects the health and quality of life of patients, they also have a high tendency to recur and their incidence has been increasing significantly in recent years.

CLINICAL CASE

A 51-year-old patient referred to our lithotripsy unit due to multiple lithogenic foci and asymptomatic expulsion of lithiasic fragments. Her medical history included ex-smoker, morbid obesity with BMI 41 and bronchial hyperreactivity. The composition of the fragments expelled and analyzed corresponded to uric acid lithiasis. Abdominal CT scan without contrast, abdominal X-ray and metabolic study were requested.

In 24 h urine, urinary pH <5, severe hypocitraturia 172mg/24h (VN > 320 mg/24h), hypomagnesuria 35 mg/dl (VN > 45mg/24h), normocalciuria 86mg/24h (VN< 250/300 mg/24h) and uricosuria 680 mg/24h (VN <600/700 mg/24h).

In blood, hyperuricemia 8.2mg/dl (VN< 6mg/dl) and alteration of lipid profile: Total cholesterol: 238mg/dl (VN 140-200mg/dl), LDL: 136 mg/dl (VN 10-130mg/dl), Triglycerides: 197 mg/dl (VN 89-150mg/dl).

The requested CT scan (Figure 1 and 2) reports right coralliform lithiasis (15 mm x 41 mm x 33mm) of recent appearance that occupies the renal pelvis and partially occupies the upper and lower calcific groups. In the abdominal X-ray the lithiasis is radiolucent and in the CT measurement of Hounsfield units is 436, findings compatible with uric acid lithiasis.

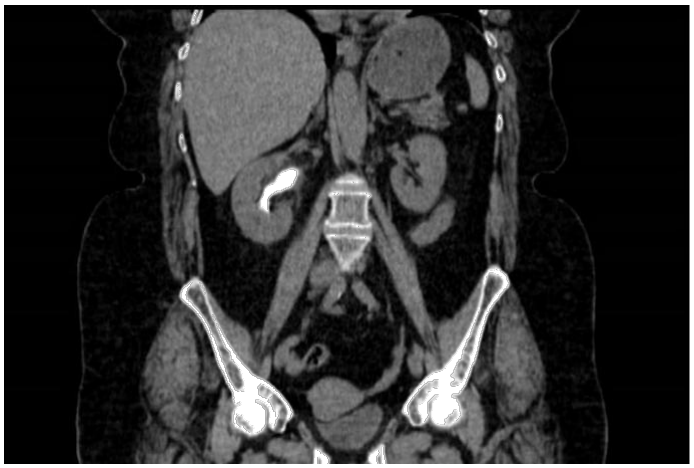

Figure 1: *Coronal slice CT abdomen without VSD*

Figure 2: *Axial CT abdomen without VSD.*

From that moment, given the absence of clinical symptoms, conservative treatment was started, advising weight loss, physical exercise, dietary recommendations and treatment with Lit-Control pH Up® 2 capsules daily (morning and evening) and Allopurinol 300 mg every 24 hours. The patient was seen one month later with urinary pH monitoring since the beginning of chemolysis, providing the following data measured with a pH meter at home (Table 1)*)*:

DAY OF TREATMENT	URINARY pH
1st day	6
10th day	6.5
15th day	6.3
20th day	6.8
30th day	6.5

Table 1: results obtained after 4 weeks of alkalinizing treatment

In view of the results obtained, it was decided to increase the dose of Lit-Control pH Up® to 3 capsules daily.
The pH meter was re-delivered and a subsequent control image test was requested (Table 2).

DAY OF TREATMENT	URINARY pH
40º	6.8
55º	7
70º	7.1
80º	7
90º	7.3

Table 2: results after 12 weeks from the beginning of treatment, observing correct alkalinization of urinary pH

The patient is asymptomatic, has followed the hygienic-dietary recommendations given in the lithiasis consultation of our unit (Table 3) and has lost about 8 kg with physical exercise and diet.

RECOMMENDATIONS FOR PATIENTS URIC ACID LITHIASIS
- Intake of 2-2,5 l/day - Intake of citrus juices (tangerine, orange, lemon...). - Maintain body weight close to the ideal. - Avoid overweight and fat consumption - Physical exercise - Normo-calcium diet - Salt restriction - Vegetables and legumes (40 gr/day) - Limit animal protein and foods rich in purines.

Table 3: Recommendations provided to patients in the Urolithiasis and Lithotripsy Unit consultation

After 5 months from the start of treatment and following dietary recommendations, abdominal CT scan was requested, which showed complete resolution of the coralliform lithiasis (Figure 3 and 4). The control metabolic study shows pH 7, correction of hypocitraturia (380 mg/24h), magnesuria (57mg/dl), uricosuria (420mg/dl) and reduction of uric acid levels in blood (5.8 mg/dl).

Figure 3 and 4: *Abdominal CT coronal and axial slices showing complete resolution of coralliform lithiasis of the characteristics described above.*

DISCUSSION

Uric acid lithiasis accounts for about 15% of urolithiasis in our population. Dry and warm climates cause fluid loss which in turn leads to lower diuresis and an acidic urinary pH. In addition, diets rich in protein together with diseases such as diabetes and obesity carry a higher risk of uric acid lithiasis formation.

The most important etiological factor is the presence of a urinary pH below 5.5 and a high uric acid saturation, which is why the first objective is to maintain an alkaline urinary pH (pH >6.5) through the use of citrate, which is capable of forming soluble complexes and interfering in the formation of crystals (1), increasing the solubility of uric acid and favoring its excretion. The association of citrate and allopurinol (2,3) makes alkalinizing treatment more effective, since the latter, by inhibiting xanthine oxidase, decreases serum uric acid concentrations and reduces oxalate excretion.

Several studies have shown that theobromine is a natural dimethylxanthine present in cocoa and acts as an inhibitor of the nucleation and growth of uric acid crystals (4). The combination of citrate and theobromine versus treatment with citrate alone is a promising alternative in the treatment of uric acid lithiasis (5) , since it increases solubility and favors the excretion of stable stones through urine (6).

CONCLUSIONS

The use of non-surgical medical treatment of uric acid lithiasis should not only be used to avoid lithiasis recurrences, but should also be considered as a safe and active treatment, being able to perform complete chemolysis in spite of large lithiasis loads as in our case. In addition, patients with significant obesity that makes percutaneous access difficult and who present a high surgical risk can benefit even more, and this is why it should be considered as a safe and effective alternative to be taken into account at all times.

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