CHEMICAL DISSOLUTION OF URINARY URIC ACID STONES BY THE USE OF CITRO SODA

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ABSTRACT

Objective: The objective of this study was to find out the role of citrosoda sachet in the chemical dissolution of Urinary uric acid stones.

Material and Methods: This study was conducted from Aug 2000 to Aug: 2002. All patients with urinary uric acid stones were included in the study. Citro soda was used as one sachet in half glass of cold water three times a day for ten to sixty days. All the patients were regularly followed up and pH of the urine was checked regularly in follow-up clinic.

Results: Total number of patients were 30. Out of these 20 were male (67%) and 10 (33%) were female. Age range was from 15—50 years; average 32.5 years. Size of stone was ranging from 9 mm to 2.4 cm. Out of 30 cases 22 (73%) were kidney stones and 8 (27%) were Ureteric Stones. Out of 30 stones 28 (93%) were completely dissolved and two were partially dissolved. Duration of treatment was 10 days to 2 months. The partially dissolved stones were managed by ESWL.

Twenty Eight out of Thirty stones were completely dissolved and two partially which were managed by ESWL making 93.4% and 6.6% respectively.

Conclusion: This Study concludes that Urinary Uric acid stones can be dissolved by the use of citrosoda sachet and can also be prevented by the use of this sachet.

Key words: Chemical dissolution, Uric acid stones, Citrosoda.

INTRODUCTION

History dates back for urinary calculi as long as 7000 year and may be longer. Kidney stones develop in nearly 600,000 Americans every year. At least 100,000 of these people eventually require medical attention for the problem.[1,2]

Recent, understanding regarding the causes of stone disease has resulted in cure of urinary calculi. It has been documented that one of he five major types of urinary calculi now have at least an 80 per cent chance of cure or control with medical therapy alone.[3,4] Once a person has a first kidney stone, he/she has approximately 50% chances of developing another stone sometime later in life.[5,6] Men get stones much more frequently than women.[7] About 5% to 13% kindly stones contain uric acid.[8]

Most animals filter uric acid through the glomeruli and rapidly reabsorb it through renal. Tubular cells. Uric acid re-circulates through blood to the liver, where the enzymes urikase transform it to allantoin. Allantoin then returns to the circulation and is excreted by the kidneys. Only the Dalmantian coach dogs of all mammals has a risk of uric acid lithiasis equal to that of humans but it has a different enzymatic defects. The end result is that human levels of uric acid in their system are 10 times greater than those of other mammals.[9,10] Uric acid stones are formed because of three factors.[11,12]

1. There must be hyper uricsuria or chronic over saturation of urine with uric-acid.
2. Excessive excretion of acidic urine.
3. Excretion of reduce volume of urine due to chronic dehydration by drugs or by Climate.

In the preceding section effect of the citrosoda on uric acid stone has been studied for treating such patients. In case of large stones after treatment with citrosoda the remaining were eliminated by lithotripsy the aim study was to find out the rule of citrosoda sachet in chemolysis of urinary uric acid stones.

MATERIAL AND METHODS

The Selection criteria for this study were:

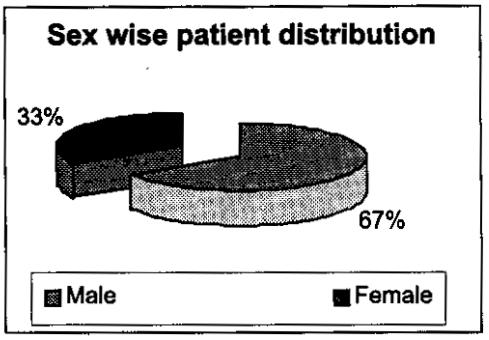
- All male and Female Patients who were having urinary Uric acid Stones were included.
- All those patients who were having deranged renal parameters were excluded.
- All those patients who were hypertensive were also excluded.

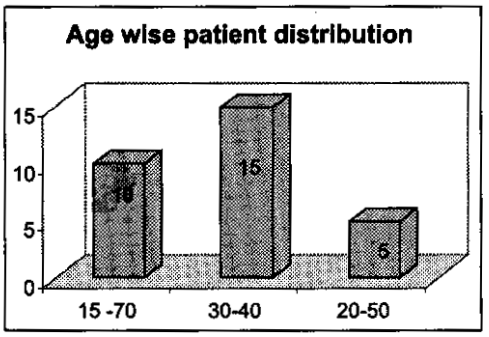
The material used in all these patients was Citro Soda sachet containing Na-bicarbonates 1.716 gm, Na citrate 0.613 gm, Citric acid 0.702 gm and Tartaric acid 0.858 gm. The dose was one sachet in a half glass of water 3 time a day .The patients were advised to have low purine diet and also the urinary PH was kept at 6.5—7.00. Duration of treatment was from 10 days to 2 months depending upon the size of stone. The patients were also advised to have adequate amount of fluid. The patients were advised pain killer like diclofenac 50 mg tab bid sos.

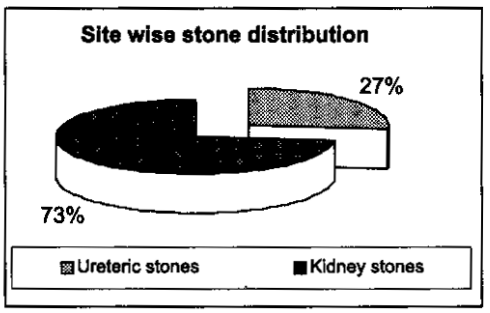
RESULTS

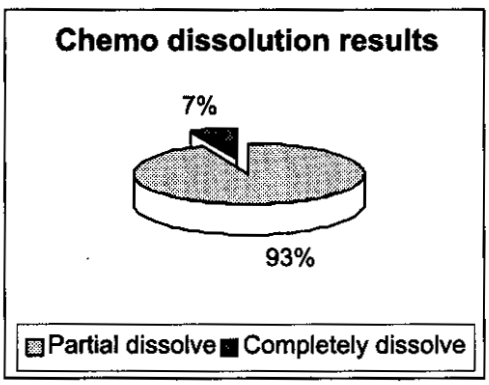
All the patients were regularly followed in the clinic. And the pH of urine was regularly checked by pH strips. Out of 30 patients, stones were completely dissolved in 28 while partially dissolved in 2 cases, making 93.4% and 6.6% respectively. The partially dissolved stone were the biggest one in one male having, multiple calculi of size 1.2 to 2.2 cm, and a female having a solitary stone of 2.4 cm. These were dissolved up to the size of 1.2 cm and the remaining was broken with ESWL.

All these patients were both metabolically and surgically active and were able to develop further stone. All these patients were instructed to take low uric acid diet and low purine diet. Five out of 30 cases were having hyperuricemia and were advised tab: zyloric 300 mg OD. We regularly followed those patients who were metabolically active.









DISCUSSION

As we know that uric acid stones are formed when urine is hyper saturated with uric acid, when the urine is acidic and when urine volume is low, urinary uric acid stones are prevented and dissolved by respecting all the three factors involved in the formation of uric acid stones.[1,2]

If the patients have the renal defect that produces consistently acid urine, they should be given medication to alkalize urine to a level between PHs 6.5—7.00 .It is not necessary to alkalize the urine above PH 7.00 because excessive alkalization is also harmful producing triple phosphate stones. By making the urine alkaline, on one side, the existing stone is slowly and gradually dissolved and on the other hand, it prevents further growth and formation of the stone because uric acid will remain soluble in alkaline urine and will not crystallize. Urinary alkalizers are advised as sodium bicarbonate 650mg, 6hr or 8hr or comparable amount of liquid preparation of balanced citrate in dosage of about 15ml, 8hr or 6hr daily.[3,4]

In addition to Lithotripsy and oral chemolysis, percutaneous chemolitholysis is a well established procedure in the treatment of uric acid stones. Its effectiveness has been proved clinically in cases of primary therapy as well as in cases of adjuvant therapy after ESWL using tromethamine (THAM) or sodium bicarbonate. How ever, in each of this clinical applications a number of variables exists (e.g. flow rate, Interval of irrigation composition in size of stones) preventing easy accurate comparison of the dissolution process.[11]

Since the first report of chemolysis of Kidney Stones allot of solvent have been introduced to dissolve stones by changing PH values. Especially alkaline solutions like THAM and sodium bicarbonate used for uric acid stones have shown their efficacy in

vitro as well as in clinical trials. Thus there are valid reasons to assume THAM and sodium bicarbonate solutions may alter physical properties of Uric acid Stones and thus in impact their treatment efficacy during ESWL.[12]

This study has proved that Citrosoda Sachet used systemically for chemolysis is as good as THAM used for Chemolysis. We have not observed any side effects except that it is not indicated in cases of hypertensive patients and patients having deranged renal parameters.

We have achieved good results and hope that in future we will be able to dissolve the other urinary stones i.e. the commonest stone e.g. Ca-oxalate by medical means . We have also achieved good results with safety in prevention of recurrence of further stone formation, which is the common problem in the urinary stones disease.

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