Abstract

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Renal lithiasis and benefit of mineral water with low sodium and calcium content on uric acid excretion and reduction of BP values: Preliminary data

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Background

Oligomineral waters have traditionally been favored in the secondary prevention of nephrolithiasis due to their diuretic effect and low calcium content. It has also been reported that some specific types of mineral waters affect uric acid metabolism by decreasing renal excretion.

Aim

The aim of our study was to verify the effect of a 3-day treatment with low-sodium, low-calcium oligomineral water on urinary lithogenic risk factors in a small cohort of hyperuricosuria and normotensive kidney stone formers.

Materials and methods

Twenty-one patients (14 M, 7 F; mean age 58±14 years) with recurrent kidney stones and high urinary uric acid excretion (> 600 mg/24 h) were consecutively enrolled. At the time of enrollment, each patient was prescribed hydrotherapy (in order to maintain the daily urine volume above 2 liters) and then underwent a 24-hour urine collection to determine the urinary lithogenic risk profile (including sodium, calcium, phosphorus, oxalate, uric acid, magnesium, potassium) without further dietary advice. In addition, clinical blood pressure measurement was performed showing BP values ≥ 140/90 mmHg and ≤ 160/100 mmHg. Then prescribed a 3-day period of habitual diet with the ingestion of a low-sodium-calcium mineral water (courtesy of Acqua&Terme Fiuggi S.U.p.A., Frosinone, Italy) instead of their favorite water. A new 24-hour urine collection was performed for the lithogenic risk profile, while BP values were checked after 3, 6, 10 days.

Results

All patients experienced a decrease in urinary uric acid excretion. The mean decrease was 145±95 mg/24 h. Mean values were 804±143 mg/24 hours at baseline and 654±104 mg/24 hours (p=0.025) after the 3-day mineral water trial. All other lithogenic risk parameters did not show significant differences in the two urine collections. Mean urine volume was 1.8±0.3 L/24 hours at baseline and 2.1±0.5 L/24 hours postoperatively (p=0.172). Furthermore, BP values at 3, 6 and 9 days were ≥ 140/90 mmHg but ≤ 150/95 mmHg.

Conclusions

Mineral water with a low sodium and calcium content seems to have beneficial effects on the urinary excretion of uric acid and on the reduction of BP values in normotensive subjects; therefore it can be a useful adjuvant in the medical treatment of the secondary prevention of nephrolithiasis associated with hyperuricosuria.