HIGH FLUID INTAKE OR PHARMACOLOGICAL THERAPY IN RECURRENT STONE FORMER PATIENTS?


Ospedale Maggiore di Milano, *Istituto di Urologia dell’Università di Milano, †Ospedale Cà Granda, Milan, Italy

Summary

In order to evaluate whether therapy can reduce relapses of urinary stone formation, we have retrospectively analysed the long-term follow-up of 55 recurrent stone former patients either treated with high fluid intake and moderate low calcium and low oxalate diet alone (Group A 18 patients), or with the same dietetic advice plus hydrochlorothiazide, amiloride and allopurinol (Group B 37 patients).

In group A, stone recurrence was completely abolished in 14 patients without hypercalciuria and hyperuricuria, but not in the four patients with hypercalciuria and hyperuricuria.

In group B, no relapses were observed in 19 hypercalciuric and hyperuricuric patients during a cumulative follow-up of 91 years. Even if the other 18 patients had relapses during a cumulative follow-up of 89 years, they showed a significant decrease in stone/patient and stone/year rates.

It is concluded that high fluid intake and diet can actually prevent stone recurrence in patients without hypercalciuria and hyperuricuria, but in hypercalciuric and hyperuricuric patients treatment with diuretic and allopurinol is better.

Introduction

The management of recurrent stone former (RSF) patients still remains controversial. A controlled study did not show any difference in the incidence of relapses between RSF patients who were advised to maintain high fluid intake and those who were given thiazide [1]. However in another report a strong reduction of relapses was observed in RSF patients after the introduction of thiazide alone or in association with amiloride and/or allopurinol [2].
In order to elucidate whether the latter pharmacological approach is or is not superior to a high fluid intake alone, we retrospectively analysed the results of a long-term follow-up in 55 RSF patients either treated with high fluid intake and moderate low calcium and low oxalate diet alone or with the same prescriptions plus diuretic agents and allopurinol.

Patients and methods

For the purposes of this study, only patients who had passed at least three stones in the last two years were considered RSF. Fifty-five patients entered the study. In all patients basal urinary excretion of calcium, phosphate, uric acid, sodium creatinine on various dietetic regimens were investigated. Hypercalciuria was defined as a urinary calcium excretion >100mg/24hr on low calcium diet, in at least two different determinations; hyperuricuria was defined as a urinary uric acid excretion >600mg/24hr.

Among the 55 patients admitted to the study, 14 patients showed normal urine excretion of calcium and uric acid, while 41 patients were hypercalciuric and 43 per cent of them were also hyperuricuric. High fluid intake and moderate low calcium (<600mg/day) and low oxalate (<80mg/day) were prescribed to the patients without metabolic disorder and to four hypercalciuric patients who refused pharmacological therapy (group A); the same dietetic measures plus hydrochlorothiazide (HCT) (50mg/day) and allopurinol (200mg/day) were prescribed to 37 hypercalciuric and hyperuricuric patients (group B). In 15 patients with calciuria higher than 300mg/day, in spite of therapy, the dose of HCT was raised to 100mg/day. Allopurinol dosage was increased to 300mg/day in 10 patients in order to reduce urate excretion below 600mg/24hr.

The mean follow-up was 4.2 ± 1.2 years for group A, and 4.1 ± 0.9 years for group B. Urinary calcium and uric acid excretion were assessed every three months during the first year of therapy and then every 12 months. Abdominal X-ray was performed every 12–18 months. Relapses were defined as a stone passage or evidence of new stone formation on abdominal X-ray.

Statistical analysis was performed by variance Turkey's test.

Results

During follow-up, urinary calcium (UCa mg/24hr) and uric acid (UUA mg/24hr) excretion did not modify in group A patients, while it significantly decreased in the 19 non-relapers of group B while remaining unchanged in the relapers (Table I). In particular, in 22 patients calciuria decreased below 200mg/24hr with a low dosage of HCT and amiloride and maintained relatively unchanged throughout the study. Despite 100mg/day of HCT, only four of 15 patients showed a persistent reduction of UCa below 300mg/day. UCa did not decrease below 300mg/24hr in seven relapers and in four non-relapers. Urate excretion did not decrease below 600mg/day in six relapers and in one non-relaper, despite the increase of allopurinol to 300mg/day.

In group A the cumulative number of stones decreased from 92 in 73 years
TABLE I. Urinary calcium and uric acid excretion in RSF patients: group A without hypercalcuria and hyperuricuria; group B with hypercalcuria and hyperuricuria. Basal values and after 1, 3, 5 years of treatment are reported. All values are mean ± SD and differ from basal values. *=p<0.01

<table>
<thead>
<tr>
<th>Number of patients</th>
<th>Group A</th>
<th></th>
<th>Group B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-relaper</td>
<td>Relaper</td>
<td>Non-relaper</td>
<td>Relaper</td>
</tr>
<tr>
<td>14</td>
<td>328±138</td>
<td>326±143</td>
<td>349±169</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>140±98</td>
<td>286±103</td>
<td>194±93*</td>
<td>307±145</td>
</tr>
<tr>
<td>19</td>
<td>101±119</td>
<td>334±137</td>
<td>236±98*</td>
<td>310±110</td>
</tr>
<tr>
<td>18</td>
<td>107±105</td>
<td>290±111</td>
<td>225±104*</td>
<td>324±144</td>
</tr>
</tbody>
</table>

Urinary Calcium Excretion (mg/24hr)

- basal: 121±82
- 1 year: 140±98
- 3 years: 101±119
- 5 years: 107±105

Urinary Uric Acid Excretion (mg/24hr)

- basal: 511±150
- 1 year: 518±185
- 3 years: 490±224
- 5 years: 464±149

Urine volume and pH, phosphate and sodium excretion did not significantly differ between relapsers and non-relapsers in both groups.

Discussion

This study confirms the usefulness of high fluid intake and dietetic manipulations in normocalciuric and normouricuric RSF patients [3]. However, in our experience hypercalcicuric patients did not have any benefit from these measures. On the other hand administration of HCT, amiloride and allopurinol to a group of hypercalcicuric and hyperuricuric patients abolished the formation of stones, for the time being. In 19 of 37 patients. Moreover, the other 18 patients had a significant reduction of new stone formation during treatment. Whether these

745
patients relapsed because of a low compliance to therapy or represent a sub-
group of partial responders to therapy remains to be elucidated; this data strongly
supports the efficacy of combined therapy with HCT, amiloride and allopurinol
in preventing stone formation in patients with metabolic disorder.

References