
Contr. Nephrol., vol. 58, pp. 184–186 (Karger, Basel 1987)

The Effect of Fenquizone on the Urinary Inhibitors of Calcium Oxalate Urolithiasis

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In a recent work we demonstrated that fenquizone (Idrolone[®], Farmaceutici Maggioni, Milano, Italy), a quinazolinone diuretic, exerts a significant hypocalciuric effect in patients with recurrent calcium oxalate stone disease and hypercalciuria [1].

The aim of the present investigation was to evaluate the effect of fenquizone therapy on the urinary excretion of some inhibitors of calcium oxalate crystallization, such as citrate, glycosaminoglycans and magnesium in patients with calcium oxalate nephrolithiasis.

Patients and Methods

We studied 16 normo- or hypercalciuric patients (11 males and 5 females) aged between 24 and 52 years, with recurrent calcium oxalate urolithiasis, before and during fenquizone therapy (10 mg daily by mouth as a single dose in the morning). During the study period (2.7 ± 1.0 months) they followed a free-mixed diet with a controlled calcium content (1 g/day). The 24-hour urine output was collected during 3 consecutive days immediately before and at the end of the study period without any preservative, for the determination by methods described elsewhere of the daily excretion of calcium (uCa), oxalic acid (uOx), citrate (uCit), glycosaminoglycans (uGAG), magnesium (uMg) and urinary volume. The uCa/uCit ratio was also evaluated as an index of lithogenic activity [2].

The statistical analysis of the results was performed by using Student's t-test for paired data.

Results

During fenquizone therapy the uCit increased significantly as compared with the values observed in the control period (from 2.84 ± 1.11 to 3.60 ± 1.59 mmol/day; $p < 0.001$, table I). The uGAG showed a similar

Table 1. Effects of fenquizone therapy (mean \pm SD)

	uCa mg/day	uCit mmol/day	uGAG mg/day	uCa/uCit mmol/mmol
Control	288.5 \pm 62.5	2.84 \pm 1.11	68.1 \pm 33.4	3.10 \pm 1.76
Treatment	209.8 \pm 56.5 $p < 0.001$	3.60 \pm 1.59 $p < 0.001$	111.8 \pm 48.8 $p < 0.005$	1.69 \pm 0.77 $p < 0.001$
	Urinary volume ml/day	uOx mg/day	uMg mg/day	
Control	1,994 \pm 796	25.3 \pm 6.8	69.8 \pm 20.1	
Treatment	2,300 \pm 840 $p < 0.05$	24.7 \pm 7.0 n. s.	76.2 \pm 30.8 n. s.	

significant increase (from 68.1 \pm 33.4 to 111.8 \pm 48.8 mg/day; $p < 0.005$) while the uMg was unchanged (table I). The uOx excretion did not decrease, while the uCa was significantly reduced (from 288.5 \pm 62.5 to 209.8 \pm 56.5 mg/day; $p < 0.001$, table I). The daily urinary volume slightly increased and, finally, the uCa/uCit ratio was significantly lowered from 3.1 \pm 1.76 to 1.69 \pm 0.77; $p < 0.001$ (table I).

Discussion

These results confirm the hypocalciuric effect of fenquizone in hypercalciuric as well as in normocalciuric patients with calcium oxalate stone disease. In addition, this drug shows other beneficial properties, as the increase in the urinary excretion of some inhibitors of calcium oxalate crystals growth, such as uCit and uGAG [3]. The thiazide diuretics also reduce the uCa excretion, but they do not have any hypercitraturic action. On the contrary, some authors described a decrease of uCit during thiazide therapy [4].

As a consequence of the lowering of uCa and the increase of uCit, the fenquizone treatment causes a significant reduction of the uCa/uCit ratio which must be regarded as an important index of lithogenic activity [2]. We can then conclude that fenquizone, for its properties and its good tolerance [5], may be safely used for the long-term prevention of relapses in patients with calcium oxalate stone disease.

References

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