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Effect of oral vitamin C supplementation on serum uric acid: a meta-analysis of randomized controlled trials. Comment on article by Juraschek.

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To the Editors:

We read with great interest the meta-analysis by Juraschek et coworkers [1] regarding the effect of oral vitamin C supplementation on serum uric acid (SUA).

Juraschek et al identified 13 randomized controlled trials (RCTs) with a total number of 556 participants assumed a median dosage of 500 mg/day of vitamin C with a median study duration of 30 days. As a result, they concluded that the effect of this dosage of vitamin C was a significant reduction in SUA of -0.35 mg/dl (p=0.032). On this basis the Authors proposed further trials to determine whether vitamin C supplementation can reduce hyperuricemia or prevent gout.

Gouty nephropathy is a possible complication of chronic hyperuricemia (it is reported in about 20% of patients with gout) and its pathogenesis is mainly correlated both to uric urolithiasis and to interstitial chronic nephropathy. It has been demonstrated that three conditions are related to uric acid stone formation: the quantitative excretion of uric acid, the volume of urine (as it affects the urinary concentration of uric acid) and the urinary pH (that is a prerequisite for uric acid stone formation). In conclusion, uric acid stone formation is due to urinary supersaturation of uric acid, that is a compound poorly soluble in an acid milieu, and urinary alkalization (with mantaining continuously high urinary pH values) is considered the treatment of choice for stone dissolution and prevention of uric acid urolithiasis [2, 3].

Some previous studies demonstrated as a supplementation with ascorbic acid (also in low dosage of 500 mg/day) could significantly reduce urinary pH under values of 6 [4].

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Moreover, the efficacy of vitamin C in reduction of uricemia seems mainly related to an uricosuric effect [1].

On this basis the vitamin C-induced reduction of urinary pH could increase the risk of uric urolithiasis and renal damage, in particular if it is associated to a limited water assumption (with subsequent reduction in volume of urine) and increased renal clearance of uric acid [5].

Moreover, the reviewed studies had a median duration of 30 days, while the uric acid stone formation are a longer process that begin with crystallization of uric acid supersaturated acidic urine. The treatment of hyperuricemia or gout should necessarily require a long term vitamin C supplementation that has not been tested enough, in particular about its potential renal side effects.

In conclusion we think that further studies to determine whether vitamin C can reduce hyperuricemia or prevent gout should be cautiously proposed, also considering that novel and efficacious therapies have been recently proposed in the treatment of hyperuricemia (in particular Febuxostat).

References

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