Reviewer's report

Title: Study of the factors that affect the regrowth of calcium oxalate dihydrate fragmented calculi

Version: 1 Date: 28 March 2006

Reviewer: nagaraja rao

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General

Extracorporeal shock wave lithotripsy is still the mainstay in the management of renal stones. However, the issue of residual fragments and their fate continue to attract debate. Despite decades of research, effective prophylaxis for stones still eludes us. Costa-Bauza et al attempt to answer some of the question in an in vitro study using a well tried and proven crystallization chamber.


The main difference between the current study and the above two is in the use of Calcium oxalate dihydrate (COD) (rather than COM) stone fragments in the current study. 48 spontaneously passed COD stone fragments were placed in an experimental chamber. Synthetic urine was circulated around the stone at a rate of 750ml/day. The growth of the fragments was measured under “normocalciuric and hypercalciuric” concentrations of calcium and at pH 5.5 and 6.5. The inhibition of the growth was investigated by adding citrate (range 1.32-5.29 mM), phytate (range 0.15-4.55 µM) and pyrophosphate (range 11.5-69 µM).

At urine pH 5.5 and “normocalciuric” concentrations mainly COM crystals formed over COD stone fragments and at higher pH and calcium concentrations, there was tendency for COD crystal formation. Addition of phytate and pyrophosphate inhibited to stone growth rate where as citrate has had no inhibitory effect.

SPECIFIC COMMENTS

1. The observation that COD crystal formation occurs at higher pH and calcium concentrations is consistent with the clinical observation (Trinchieri et al 2005) that calcium excretion and calcium oxalate Supersaturation were lower in COM stoneformers when compared to COD stoneformers
2. I am not entirely sure why additional calcium was added in experiments with citrate. Had they not added calcium, citrate would probably had inhibited by stone growth as shown previously by others (ref 16 in their paper)
3. Apart from the use of COD stone fragments, the current study and the results are very similar to the two previous publications by this group. I am not entirely sure this paper adds much to the previous publications by this and other groups.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)