Enigma of uric acid stones associated with rotavirus-associated gastroenteritis

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Sirs,

We are grateful to Dr. Fujieda for suggesting another possibility as the cause for uric acid stones associated with rotavirus-associated gastroenteritis [1].

The pathogenesis of urate stone formation in children with human rotavirus (HRV)-associated gastroenteritis, which was mainly reported from Japan, remains unknown. As formation of urolithiasis consisting of urate, which is rarely seen in children, is generally associated with increased urinary excretion of uric acid, previous reports have proposed several possibilities of hyperuricemia being the cause.

Possible causes of hyperuricemia in this condition include:

1. Hyperuricemia due to massive breakdown of intestinal cells due to HRV [2]
2. Severe dehydration caused by HRV infection [2]
3. Renal hypouricemia associated with mutation of human urate transporter 1 (URAT1) gene [3]

Fujieda et al. [1] suggest another intriguing hypothesis that HRV might infect not only small intestinal cells, but also renal tubular cells, which leads to increased urinary concentration of uric acid in conjunction with increased excretion of beta-2-microglobulin and N-acetyl- β -glucosaminidase

However, none of the possibilities mentioned above has clearly answered the following questions:

1. Why is this condition reported mainly in Japan?
2. Do other viruses causing gastroenteritis, such as norovirus or adenovirus infect renal tubular cells?
3. Is an infection of the renal epithelial cells exclusively characteristic of HRV?
4. Why do most of the children with HRV-associated gastroenteritis not have the complication of urate urolithiasis?

Until these questions have been clarified, the pathogenesis of urolithiasis in children with HRV-associated gastroenteritis will remain enigmatic.

References

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