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Letters to the Editor

Intravenous ascorbic acid infusions and oxalate production

To the Editor:

Robitaille et al [1] studied the extent of the autooxidation of ascorbate to oxalate after the intravenous administration of megadoses of ascorbic acid to patients with advanced cancers of a variety of types. They found that when 100 g of ascorbate was delivered over 1.5 to 2 hours, urinary oxalate excretion reached an average of 81 mg over a 6-hour period. A portion of this oxalate increase was due to the 26 mg present in the infusate. They concluded that this increase in oxalate excretion would not be clinically significant. This degree of oxalate excretion for the 6-hour period is higher than that of most patients with primary hyperoxaluria and is compatible with that seen with ethylene glycol toxicity [2], the latter being an acute event usually after a single oral dose. Severe renal oxalosis can follow ethylene glycol toxicity in some instances and can lead to renal failure. We feel that the authors should temper their conclusion that this amount of oxalate excretion is only of moderate risk until they have longer follow-up on a larger number of subjects, especially examining parameters of renal function and injury.

Their study does raise additional points. The oxalate generated in vivo from ascorbate could occur intracellularly or extracellularly. One might hypothesize that ascorbate oxidation to oxalate occurs in cells and tissues when ascorbate is exposed to a peroxidative environment. Alternatively, the mild alkaline environment of the extracellular compartment may promote oxidation of ascorbate. The observation that significant breakdown (18%) of ascorbate at a concentration of 5.7 mmol/L apparently occurred in urine stored at room temperature for 24 hours at pH 1.7 is a cause for concern for the analysis of oxalate in 24-hour urine collections. This clouds the interpretation of several recent studies that reported that the oral ingestion of 2 g of ascorbate significantly increased urinary oxalate excretion [3-6].

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Reply: Oxalic acid excretion after intravenous ascorbic acid administration

To the Editor:

These correspondents suggest that we were intemperate in considering that the amount of oxalic acid excreted after the intravenous infusion of approximately 100 g ascorbic acid may create only a moderate risk in people with normal renal function. Whether the risk of oxalate stone formation (or acute nephropathy) from high-dose intravenous ascorbic acid is small, moderate, or large in a given situation is a clinical judgment that most physicians would balance against the benefit of the treatment. Undoubtedly, intravenous