

Review of: "Ascorbic Acid Therapy in Hematological Malignancies - The Current Knowledge and Future Directions"

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Drs Wing Kit Lam, Chung Yin Ha and Sze Fai Yip present an excellent review of vitamin C therapy in the therapy for cancer in their article, "Ascorbic Acid Therapy in Hematological Malignancies - The Current Knowledge and Future Directions". The article provides an extensive discussion of cancer treatment options that include vitamin C in the form of ascorbic acid. The authors suggest that high dose intravenous ascorbic acid should be used as an adjuvant cancer chemotherapy and hint at the idea of using it as monotherapy. The authors propose additional clinical trials to evaluate the benefit of high dose intravenous ascorbic acid in the treatment of cancers.

Unfortunately, the authors do not give adequate consideration of the toxic potential of high dose ascorbic acid. The risk that high dose intravenous ascorbic acid may cause hemolytic anemia in patients with G6PD deficiency is not given adequate review. The proposal that this risk is low is based on an editorial written by an author who has had one article related to high dose ascorbic acid therapy in Covid-19 retracted after publication and another has been called fraudulent due to data inaccuracies (1,2). The risk of hemolytic anemia with high dose intravenous ascorbic acid may be greater than proposed.

The authors fail to discuss the well-known risk that high dose ascorbic acid causes kidney failure related to oxalate nephropathy. This is a complication from iatrogenic and patient induced ascorbic acid overdosing and has been reported in oral and intravenous administration. Patients treated for sepsis with high dose ascorbic acid have been shown to have a significant increased risk of developing kidney failure (3). The development of acute kidney failure after intravenous ascorbic acid therapy is also associated with an increased

mortality in patients with sepsis (4). Calcium oxalate kidney stones are a minor complication of high dose ascorbic acid when compared diffuse tubular toxicity from calcium oxalate casts.

The authors correctly discuss the fact that a proper therapeutic dose of high dose intravenous ascorbic acid has not been determined. Therefore, before any additional studies of high dose intravenous ascorbic acid are undertaken a therapeutic and non-toxic dose must be identified.

Citations:

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3. Knight J, Madduma-Liyanage K, Mobley JA, Assimios DG, Holmes RP: Ascorbic acid intake and oxalate synthesis. *Urolithiasis*, 44: 289-297, 2016 10.1007/s00240-016-0868-7
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