Letter to the editor

Effect of vitamin C on prevention of complex regional pain syndrome type I in foot and ankle surgery

We read with great interest the article by Besse et al. on preventive effect of vitamin C on complex regional pain syndrome type I (CRPS) [1]. Indeed, CRPS is an annoying disease for the patient as well as for the surgeon and the successful use of vitamin C as a prophylaxis will indeed go a long way in improving the patient care in predisposed individuals. Lest we forget that all substances are poisons! It’s the appropriate dose that differentiates between a poison and a treatment.

In above study vitamin C was given at a dose of 1000 mg for 45 days which is nearly 10 times the recommended daily dosage of 90–100 mg [2,3]. Trauma is known to increase vitamin C requirement and in addition to the injury itself; surgery itself in an insult but 1 g vitamin C is too high a dose [2]. Levine et al. [3] studied the relationship between vitamin C doses and steady-state concentrations in healthy young women, by using a dose range of 30–2500 mg wherein they described a steep sigmoidal relationship between vitamin C doses and resulting concentrations for doses of 30–100 mg daily, with an approximate 5-fold increase in plasma concentration over this dose range. Further at doses of 200 mg daily and higher, there was little change in plasma concentrations, with saturation between 200 and 400 mg daily [3]. Circulating neutrophils, monocytes, and lymphocytes contained 0.5–4.0 mM concentrations of vitamin C and also saturated between 200 and 400 mg daily [3]. At doses of 400 mg daily and higher, vitamin C plasma concentrations did not increase, in part because of increasing vitamin C excretion in urine [3]. Zollinger et al. [4] also in their study of prevention of CRPS in wrist fractures recommended a daily dosage of 500 mg for 50 days. In a study by Taylor and Curhan [5] participants consuming 1000 mg/day or more of vitamin C excreted 6.8 mg/day more urinary oxalate than participants consuming <90 mg/day (P trend < 0.001) and that the multivariate relative risk of kidney stone formation for men consuming 1000 mg or greater of vitamin C per day was 41% higher than those consuming less than the recommended dietary allowance of 90 mg/day.

Vitamin C in high doses is also known to induce hemolysis in glucose-6-phosphatase dehydrogenase deficient individuals which is the most common disease producing enzymopathy in humans with high prevalence rates amongst persons of African, Asian, or Mediterranean descent which otherwise is mostly asymptomatic [6].

We would want to know from the authors if they have encountered such cases and like to suggest caution at prophylaxis with such a high dose of vitamin C.

References


Ashish Jaiman MBBS, MS (Ortho)
Max Super-speciality Hospital, I Press Enclave Road, Saket, New-Delhi, Pin 110017, India

M. Lokesh MBBS, MS (Ortho)
Kempegowda Institute of Medical Sciences & Hospital, K R Road, Bangalore, Karnataka, India

Devdatta Suhas Neogi MS (Ortho), DNB, M.Ch.Orth, MRCS(Ed), Dip.SICOT*
ESI Post Graduate Institute of Medical Sciences & Research, Andheri East, Mumbai 400093, India

*Corresponding author at: 1/26, Ambekar Nagar, Near Chuna Bhatti rly. stn., Sion, Mumbai 400022, India.
Tel.: +91 9930723436; fax: +91 836 2313625
E-mail address: drdevdatt@gmail.com (D.S. Neogi)

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