

INTRAVENOUS VITAMIN C AND CANCER

**Prolonged Survival Linked to Intravenous Vitamin C Seen in Three Cancer Patients
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NEW YORK (Reuters Health) Apr 10 - Researchers at the National Institutes of Health and colleagues in Canada report three cases in which high-dose intravenously administered vitamin C apparently led to longer-than-expected survival in patients with advanced cancer. Two of them show long-term survival without evidence of disease.

While early clinical trials of intravenous and oral vitamin C showed benefit in cancer patients, randomized controlled trials of oral vitamin C failed to show benefit. In these case reports, described in the March 28th issue of the Canadian Medical Association Journal, vitamin C was given intravenously at doses ranging from 15 g to 65 g, to produce plasma concentrations that cannot be achieved with oral administration. Dr. Mark Levine of the National Institutes of Health in Bethesda, Maryland, and colleagues note that, in vitro, vitamin C is toxic to some cancer cells but not normal cells at concentrations above 1000 mol/L. IV doses in the range of 50-100 g result in plasma levels of about 14,000 mol/L.

The team analyzed clinical and histological data from three patients with advanced cancer who responded to high-dose IV vitamin C.

The first patient was a 51 year-old-woman with advanced renal cell carcinoma, treated with nephrectomy, and several small lesions in the lung "consistent with metastatic cancer." She received IV vitamin C 65 g twice a week for 10 months, in combination with other alternative therapies, including thymus protein extract. Repeat chest radiography revealed one small spot, assumed to be a scar. Five years later, new lung masses were detected. The patient again received intravenous vitamin C, with unsuccessful results.

The second patient, a 49-year-old man, had bladder cancer with multiple satellite tumors. He received IV vitamin C 30 g twice a week for three months, followed by 30 g vitamin C once every 1-2 months for four years. Nine years after diagnosis, the patient is in good health, without signs of disease.

Case three was a 66-year-old woman with B-cell lymphoma invading paraspinal muscle and bone at L4-5. She received IV vitamin C 15 g twice weekly for 7 months, then 15 g every 2-3 months for about one year. Ten years after diagnosis, the patient is in good health.

Dr. Levine and colleagues note that all three patients survived for longer than expected for the types and stages of cancers that they had. At the doses delivered, vitamin C "is a pro-drug for hydrogen peroxide formation in extracellular fluid," they explain. Histology results also showed evidence of tumor hemorrhage, attributable to ascorbate. The investigators conclude that "the role of high-dose intravenous vitamin C therapy in cancer treatment should be reassessed."

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