Case Study: High-Dose Intravenous Vitamin C in the Treatment of a Patient with Adenocarcinoma of the Kidney

Hugh D. Riordan, M.D.[1], James A. Jackson, MT(ASCP)CLS, Ph.D., BCLD[2] and Mavis Schultz, A.R.N.P.[3]

The Case

A 70-year old white male was seen and treated previously at this center for "headaches". In late 1985 he complained of pain in his right side. A urinalysis showed gross hematuria. He was referred to a urologist who, through x-rays and CT. scans, diagnosed the patient as having a small stone in the right kidney, and a large, solid, space occupying mass in the lower pole of the right kidney. Adenocarcinoma was suspected and in December 1985, a radical nephrectomy was performed on the right kidney and adenocarcinoma was confirmed by pathological studies. His left kidney was completely functional.

He was followed by an oncologist at another clinic. About three months after surgery, the patient's x-rays and CT. scan studies showed "multiple pulmonary lesions and lesions in several areas of his liver which were abnormal and periaortic lymphadenopathy". None of the lesions were biopsied.

The patient decided not to undergo chemotherapy, hormone therapy or cytotoxic treatment of any kind. He requested and was started on vitamin C intravenous treatment. He was started on 30 grams of vitamin C (Ascorbic Acid Injection, Sodium Ascorbate equivalent to 250 mg/mL, Steris Laboratories, Inc. Phoenix, Arizona 85043) in 250 mL of Ringer's Lactate given by intravenous injection (60 drops per minute) twice a week.

In April 1986, about six weeks after the x-ray and CT. scan studies, the oncologist's report showed "the patient returns feeling well. His exam is totally normal. His chest x-ray shows a dramatic improvement in pulmonary nodules compared to six weeks ago. The periaortic lymphadenopathy is completely resolved. ... either he has had a viral infection with pulmonary lesions with lymphadenopathy that has resolved or (two) he really did have recurrent kidney cancer which is responding to your vitamin C therapy."

In June 1986, the oncologist reported the patient "has been receiving vitamin C shots now twice weekly, feeling well and playing golf. On exam day, his weight is up a couple of pounds and he looks well. He has absolutely no evidence of progres-sivecancer."... "I recommend you continue your vitamin C shots until he returns in six weeks time for a repeat chest x-ray and CT. scan of his abdomen."

The oncologist's report in July 1986 stated "the patient has been feeling well with no symptoms of cancer ... there is no evidence of progressive cancer. He looks well... chest x-ray today is totally normal. The pulmonary nodules are completely gone. There is no evidence of lung metastasis, liver metastasis or lymph node metastasis today, whatsoever."

The report of September 1986 stated "... over all, the patient is totally well, golfing and having no symptoms from his cancer. On exam today, there is absolutely no evidence of recurrent cancer and we have opted to continue our observation. I suggest he continue with you the vitamin C shots ..."

In March 1987,15 months after surgery, the report stated "... is feeling well, and on exam today there is absolutely no evidence of recurrent cancer. We thus thought (this patient) has no evidence of recurrent cancer

1. Director, The Olive W. Garvey Center for the Improvement of Human Functioning, Inc., 3100 North Hillside, Wichita, KS 67219.
2. Associate Professor and Chair, Department of Clinical Science, The Wichita State University, Wichita, KS 67208.
3. Nurse Clinician, as #1.

and opt to continue his follow-up. The patient wishes to continue his vitamin C shot once weekly as well, which seems reasonable to me."

To date, after 3'/2 years the patient remains cancer free. He will continue to be followed both at our center and by the oncologist. The patient's vitamin C treatment protocol was 30 grams of vitamin C in 250 mL of Ringer's Lactate given by intravenous injection (60 drops per minute) twice a week for seven months. The treatments were then reduced to one per week and 1 mL of magnesium was added to the vitamin C and Ringer's Lactate. This treatment lasted for eight months, then for six months he received 15 grams of vitamin C weekly in 250 mL of Ringer's Lactate with 1.0 mL of magnesium. Today, he returns at irregular intervals for a 30 gram vitamin C intravenous treatment.

During and after the treatments, the patient showed no toxic, or unusual side effects from the high-dosage I.V. vitamin C therapy. Periodic blood chemistry profiles and urine studies were normal.

Comments

The secondary lesions of the lung and liver were not biopsied, therefore, metastasis to these sites was not scientifically confirmed. However, the opinion at the time was that these lesions did represent recurrent cancer.

Various theories have been presented on how vitamin C controls or inhibits the growth of malignant tumors. The antioxidant properties of vitamin C may prevent free radical damage to all tissues.[1] Vitamin C is also thought to increase host resistance against cancer by enhancing lymphocyte functions, increasing the resistance of the intercellular ground substance to hydrolysis produced by tumor cells, and by protecting the pituitary-adrenal axis from the effects of stress.[2] In 1974, Campbell and Cameron treated 50 advanced cancer patients with 10 grams of oral vitamin C daily and reported that 5 had objective tumor reactions.[3] Cameron and Pauling later reported on 100 cancer patients treated with oral vitamin C from the date when the patient's disease became untreatable. When compared to 1000 "historical controls", the survival of the patients taking vitamin C was increased to a mean of 293 days or more compared to the control group of 30 days.[4] Creagan and others in a placebo-controlled double-- blind study gave 10 grams of oral vitamin C to 150 patients with advanced cancer from a variety of sites. They showed no difference in survival time or reduction in symptoms between the vitamin C and placebo groups.[5] There were objections to this study because the patients had received prior chemotherapy before starting the vitamin C treatment. Moertel and others repeated the study with cancer patients who received no prior chemotherapy. One hundred patients with advanced colorectal cancer were tested in a placebo, randomized double-blind controlled study.[6] Ten grams of oral vitamin C or placebo were given daily. The results again showed no difference between the placebo or vitamin C groups. Noto and others showed that vitamin C and vitamin K_3 had a growth inhibiting action at high concentrations on *in vitro* cultured human neoplastic cell lines MCF-7 (breast carcinoma), KB (oral epidermoid carcinoma) and AN_3-CA (endometrial adenocarcinoma) when given separately. When combined, the inhibition of cell growth occurred at 10 to 50 times lower concentrations.[7]

The case study presented here differs from those studies of Cameron, Pauling and Moertel et al. The amount of vitamin C administered was higher (30 grams versus 10 grams) and the route of administration was different (I.V. versus oral).

We continue to follow this patient and would be pleased to hear from any other clinician who may have similar experiences. A detailed treatment protocol used on this patient will be sent to any interested clinician.

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