

Integr Cancer Ther. 2006 Mar;5(1):63-82.

Should patients undergoing chemotherapy and radiotherapy be prescribed antioxidants?

Moss RW.

Source

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Abstract

In September 2005, CA: A Cancer Journal for Clinicians published a warning by Gabriella D'Andrea, MD, against the concurrent use of antioxidants with radiotherapy and chemotherapy. However, several deficiencies of the CA article soon became apparent, not least the selective omission of prominent studies that contradicted the author's conclusions. While acknowledging that only large-scale, randomized trials could provide a valid basis for therapeutic recommendations, the author sometimes relied on laboratory rather than clinical data to support her claim that harm resulted from the concurrent use of antioxidants and chemotherapy. She also sometimes extrapolated from chemoprevention studies rather than those on the concurrent use of antioxidants per se. The article overstated the degree to which the laboratory data diverged in regard to the safety and efficacy of antioxidant therapy: in fact, the preponderance of data suggests a synergistic or at least harmless effect with most high-dose dietary antioxidants and chemotherapy. The practical recommendations made in the article to avoid the general class of antioxidants during chemotherapy are inconsistent, in that if antioxidants were truly a threat to the efficacy of standard therapy, antioxidant-rich foods, especially fruits and vegetables, ought also be proscribed during treatment. Yet no such recommendation is made. Furthermore, the wide-scale use by both medical and radiation oncologists of synthetic antioxidants (eg, amifostine) to control the adverse effects of cytotoxic treatments is similarly overlooked. In sum, this CA article is incomplete: there is far more information available regarding antioxidant supplements as an appropriate adjunctive cancer therapy than is acknowledged. Patients would be well advised to seek the opinion of physicians who are adequately trained and experienced in the intersection of 2 complex fields, that is, chemotherapeutics and nutritional oncology. Physicians whose goal is comprehensive cancer therapy should refer their patients to qualified integrative practitioners who have such training and expertise to guide patients. A blanket rejection of the concurrent use of

antioxidants with chemotherapy is not justified by the preponderance of evidence at this time and serves neither the scientific community nor cancer patients.

PMID:

16484715

[PubMed - indexed for MEDLINE]

Altern Ther Health Med. 2007 Jan-Feb;13(1):22-8.

Antioxidants and other nutrients do not interfere with chemotherapy or radiation therapy and can increase kill and increase survival, part 1.

Simone CB 2nd, Simone NL, Simone V, Simone CB.

Source

Simone Protective Cancer Institute in Lawrenceville, NJ, USA.

Abstract

PURPOSE:

Some in the oncology community contend that patients undergoing chemotherapy and/or radiation therapy should not use food supplement antioxidants and other nutrients. Oncologists at an influential oncology institution contended that antioxidants interfere with radiation and some chemotherapies because those modalities kill by generating free radicals that are neutralized by antioxidants, and that folic acid interferes with methotrexate. This is despite the common use of amifostine and dexrazoxane, 2 prescription antioxidants, during chemotherapy and/or radiation therapy.

DESIGN:

To assess all evidence concerning antioxidant and other nutrients used concomitantly with chemotherapy and/or radiation therapy, the MEDLINE and CANCERLIT databases were searched from 1965 to November 2003 using the words vitamins, antioxidants, chemotherapy, and radiation therapy.

Bibliographies of articles were searched. All studies reporting concomitant nutrient use with chemotherapy and/or radiation therapy (280 peer-reviewed articles including 62 in vitro and 218 in vivo) were indiscriminately included.

RESULTS:

Fifty human clinical randomized or observational trials have been conducted, involving 8,521 patients using beta-carotene; vitamins A, C, and E; selenium;

cysteine; B vitamins; vitamin D3; vitamin K3; and glutathione as single agents or in combination.

CONCLUSIONS:

Since the 1970s, 280 peer-reviewed in vitro and in vivo studies, including 50 human studies involving 8,521 patients, 5,081 of whom were given nutrients, have consistently shown that non-prescription antioxidants and other nutrients do not interfere with therapeutic modalities for cancer. Furthermore, they enhance the killing of therapeutic modalities for cancer, decrease their side effects, and protect normal tissue. In 15 human studies, 3,738 patients who took non-prescription antioxidants and other nutrients actually had increased survival.

PMID:

17283738

[PubMed - indexed for MEDLINE]

Integr Cancer Ther. 2004 Dec;3(4):310-22.

Multiple dietary antioxidants enhance the efficacy of standard and experimental cancer therapies and decrease their toxicity.

Prasad KN.

Source

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Abstract

Cancer patients can be divided into 3 groups: those receiving standard or experimental therapy, those who have become unresponsive to these therapies, and those in remission at risk for recurrence or a second new cancer. While impressive progress in standard cancer therapy has been made, the value of this therapy in the management of solid tumors may have reached a plateau. At present, there is no strategy to reduce the risk of recurrence of the primary tumors or of a second cancer among survivors. Patients unresponsive to standard or experimental therapies have little option except for poor quality of life for the remainder of life. Therefore, additional approaches should be developed to improve the efficacy of current management of cancer. In this review, the author proposes that an active nutritional protocol that includes high doses of multiple dietary antioxidants and their derivatives (vitamin C, alpha-tocopheryl

succinate, and natural beta-carotene), but not endogenously made antioxidants (glutathione- and antioxidant enzyme-elevating agents), when administered as an adjunct to radiation therapy, chemotherapy, or experimental therapy, may improve its efficacy by increasing tumor response and decreasing toxicity. This nutritional protocol can also be used when patients become unresponsive to standard therapy or experimental therapy to improve quality of life and possibly increase the survival time. The authors also propose that after completion of standard therapy and/or experimental therapy, a maintenance nutritional protocol that contains lower doses of antioxidants and their derivatives, together with modification in diet and lifestyle, may reduce the risk of recurrence of the original tumor and development of a second cancer among survivors. Experimental data and limited human studies suggest that use of these nutritional approaches may improve oncologic outcomes and decrease toxicity. This review also discusses the reasons for the current debates regarding the use of antioxidants during radiation or chemotherapy.

PMID:

15523102

[PubMed - indexed for MEDLINE]

Cancer Treat Rev. 2007 Aug;33(5):407-18. Epub 2007 Mar 23.

Impact of antioxidant supplementation on chemotherapeutic efficacy: a systematic review of the evidence from randomized controlled trials.

Block KI, Koch AC, Mead MN, Tothy PK, Newman RA, Gyllenhaal C.

Source

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Abstract

PURPOSE:

Much debate has arisen about whether antioxidant supplementation alters the efficacy of cancer chemotherapy. Some have argued that antioxidants scavenge the reactive oxygen species integral to the activity of certain chemotherapy drugs, thereby diminishing treatment efficacy. Others suggest antioxidants may mitigate toxicity and thus allow for uninterrupted treatment schedules and a reduced need for lowering chemotherapy doses. The objective of this study is to

systematically review the literature in order to compile results from randomized trials that evaluate concurrent use of antioxidants with chemotherapy.

DESIGN:

MEDLINE, Cochrane, CinAhl, AMED, AltHealthWatch and EMBASE databases were searched. Only randomized, controlled clinical trials that reported survival and/or tumor response were included in the final tally. The literature searches were performed in duplicate following a standardized protocol. No meta-analysis was performed due to heterogeneity of tumor types and treatment protocols used in trials that met the inclusion criteria.

RESULTS:

Of 845 articles considered, 19 trials met the inclusion criteria. Antioxidants evaluated were: glutathione (7), melatonin (4), vitamin A (2), an antioxidant mixture (2), vitamin C (1), N-acetylcysteine (1), vitamin E (1) and ellagic acid (1). Subjects of most studies had advanced or relapsed disease.

CONCLUSION:

None of the trials reported evidence of significant decreases in efficacy from antioxidant supplementation during chemotherapy. Many of the studies indicated that antioxidant supplementation resulted in either increased survival times, increased tumor responses, or both, as well as fewer toxicities than controls; however, lack of adequate statistical power was a consistent limitation. Large, well-designed studies of antioxidant supplementation concurrent with chemotherapy are warranted.

PMID:

17367938

[PubMed - indexed for MEDLINE]

Rejuvenation Res. 2011 May 19. [Epub ahead of print]

Platinum-Based Compounds and Risk for Cardiovascular Toxicity in the Elderly: Role of the Antioxidants in Chemoprevention.

Ferroni P, Della-Morte D, Palmirota R, McClendon M, Testa G, Abete P, Rengo F, Rundek T, Guadagni F, Roselli M.

Source

1 Department of Laboratory Medicine & Advanced Biotechnologies , IRCCS San Raffaele Pisana, Rome, Italy .

Abstract

Abstract Cancer in elderly patients is an increasingly common problem. Older patients have more co-morbidity, therefore the toxic effects of chemotherapy treatment are less tolerable compared to younger patients. Platinum-based compounds (PBCs) are commonly used cytotoxic agents in the treatment of several solid tumors; however, their application is still limited in elderly patients, due to the risks in cardiovascular toxicity. The increased risk for myocardial ischemia, stroke, and vascular thrombosis linked with PBCs treatment is mainly due to reactive oxygen species (ROS) production and the subsequent induction of oxidative stress and switch to a prothrombotic condition. Recently, studies have shown a different genetic susceptibility in cardiovascular toxicity induced by therapy with PBCs. Antioxidants, such as vitamin E, selenium, lycopene, melatonin, and resveratrol, have been implicated in cancer treatment by their property to suppress the oxidant injury. Resveratrol, especially, has been shown to increase the antineoplastic activity of cisplatin. In addition, resveratrol's ability to activate the sirtuin1 (SIRT1) pathway has been heavily implicated in the mechanisms controlling longevity and quality of life in the aged population. This article reviews the current state of treatment with PBCs and their associated risk for cardiovascular disease. It discusses the most powerful antioxidant supplementation options as a possible strategy to reduce the cardiovascular toxicity effects of chemotherapy in the elderly.

PMID:

21595514

[PubMed - as supplied by publisher]

J Int Med Res. 2009 Nov-Dec;37(6):1961-71.

Improved survival in patients with end-stage cancer treated with coenzyme Q(10) and other antioxidants: a pilot study.

Hertz N, Lister RE.

Source

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Erratum in

- J Int Med Res. 2010 Jan-Feb;38(1):293.

Abstract

This pilot study evaluated the survival of patients with end-stage cancer who received supplements of coenzyme Q(10) and a mixture of other antioxidants (e.g. vitamin C, selenium, folic acid and beta-carotene). During a period of 9 years, 41 patients who had end-stage cancer were included. Forty patients were followed until death and one patient was lost to follow-up and presumed dead. Primary cancers were located in the breast, brain, lungs, kidneys, pancreas, oesophagus, stomach, colon, prostate, ovaries and skin. The median predicted survival time was calculated from Kaplan-Meier curves for each patient at inclusion. Median predicted survival was 12 months (range 3 - 29 months), whereas median actual survival was 17 months (1 - 120 months), which is > 40% longer than the median predicted survival. Mean actual survival was 28.8 months versus 11.9 months for mean predicted survival. Ten patients (24%) survived for less time than predicted, whereas 31 (76%) survived for longer. Treatments were very well tolerated with few adverse effects.

PMID:

20146896

[PubMed - indexed for MEDLINE]

Altern Ther Health Med. 2007 Jan-Feb;13(1):22-8.

Antioxidants and other nutrients do not interfere with chemotherapy or radiation therapy and can increase kill and increase survival, part 1.

Simone CB 2nd, Simone NL, Simone V, Simone CB.

Source

Simone Protective Cancer Institute in Lawrenceville, NJ, USA.

Abstract

PURPOSE:

Some in the oncology community contend that patients undergoing chemotherapy and/or radiation therapy should not use food supplement antioxidants and other nutrients. Oncologists at an influential oncology institution contended that antioxidants interfere with radiation and some chemotherapies because those modalities kill by generating free radicals that are neutralized by antioxidants, and that folic acid interferes with methotrexate. This is despite the

common use of amifostine and dexrazoxane, 2 prescription antioxidants, during chemotherapy and/or radiation therapy.

DESIGN:

To assess all evidence concerning antioxidant and other nutrients used concomitantly with chemotherapy and/or radiation therapy, the MEDLINE and CANCERLIT databases were searched from 1965 to November 2003 using the words vitamins, antioxidants, chemotherapy, and radiation therapy.

Bibliographies of articles were searched. All studies reporting concomitant nutrient use with chemotherapy and/or radiation therapy (280 peer-reviewed articles including 62 in vitro and 218 in vivo) were indiscriminately included.

RESULTS:

Fifty human clinical randomized or observational trials have been conducted, involving 8,521 patients using beta-carotene; vitamins A, C, and E; selenium; cysteine; B vitamins; vitamin D3; vitamin K3; and glutathione as single agents or in combination.

CONCLUSIONS:

Since the 1970s, 280 peer-reviewed in vitro and in vivo studies, including 50 human studies involving 8,521 patients, 5,081 of whom were given nutrients, have consistently shown that non-prescription antioxidants and other nutrients do not interfere with therapeutic modalities for cancer. Furthermore, they enhance the killing of therapeutic modalities for cancer, decrease their side effects, and protect normal tissue. In 15 human studies, 3,738 patients who took non-prescription antioxidants and other nutrients actually had increased survival.

PMID:

17283738

[PubMed - indexed for MEDLINE]

Altern Ther Health Med. 2007 Mar-Apr;13(2):40-7.

Antioxidants and other nutrients do not interfere with chemotherapy or radiation therapy and can increase kill and increase survival, Part 2.

Simone CB 2nd, Simone NL, Simone V, Simone CB.

Source

Simone Protective Cancer Institute in Lawrenceville, NJ, USA.

Abstract

PURPOSE:

Some in the oncology community contend that patients undergoing chemotherapy and/or radiation therapy should not use food supplement antioxidants and other nutrients. Oncologists at an influential oncology institution contended that antioxidants interfere with radiation and some chemotherapies because those modalities kill by generating free radicals that are neutralized by antioxidants, and that folic acid interferes with methotrexate. This is despite the common use of amifostine and dexrazoxane, 2 prescription antioxidants, during chemotherapy and/or radiation therapy.

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CONCLUSIONS:

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Comment in

- [Altern Ther Health Med. 2007 Sep-Oct;13\(5\):13.](#)
PMID:

[PubMed - indexed for MEDLINE]

Altern Med Rev. 1999 Oct;4(5):304-29.

Antioxidants in cancer therapy; their actions and interactions with oncologic therapies.

Lamson DW, Brignall MS.

Source

Tahoma Clinic, Kent, WA, USA.

Abstract

There is a concern that antioxidants might reduce oxidizing free radicals created by radiotherapy and some forms of chemotherapy, and thereby decrease the effectiveness of the therapy. The question has arisen whether concurrent administration of oral antioxidants is contraindicated during cancer therapeutics. Evidence reviewed here demonstrates exogenous antioxidants alone produce beneficial effects in various cancers, and except for a few specific cases, animal and human studies demonstrate no reduction of efficacy of chemotherapy or radiation when given with antioxidants. In fact, considerable data exists showing increased effectiveness of many cancer therapeutic agents, as well as a decrease in adverse effects, when given concurrently with antioxidants.

Comment in

- Altern Med Rev. 1999 Oct;4(5):303.

PMID:

10559547

[PubMed - indexed for MEDLINE]

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