

REsearch UPDATES

FOR THE LATEST IN WORLDWIDE INTEGRATIVE CANCER CARE

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IN THIS ISSUE: Bayraktar and colleagues found that constipation increases PSA levels in men, and this may have an impact on their test results. Galantino and associates found that yoga was helpful for dealing with the side effects of hormonal therapies for breast cancer survivors. Greenlee and colleagues reported that the use of vitamins C and E helped decrease the risk of recurrence of breast cancer, but that other combinations of carotenoids increased the risk of mortality. McCann and associates found that higher consumption of lignans was associated with a decreased risk of breast cancer and more favorable outcomes. Dehal et al. reported that patients with type 2 diabetes had a higher risk of mortality from colorectal cancer than those with colorectal cancer who did not have diabetes. Wolpin and associates found that patients with a higher level of vitamin D had a decreased risk of pancreatic cancer. Kawakita and colleagues reported that higher pretreatment levels of folate were

associated with improved outcomes in people with head and neck cancer. Wang et al. found that melatonin was associated with improvements in solid tumor remission and helped with radiochemotherapy-related side effects. Yoo and associates reported that C militaris and P notoginseng helped two patients with mucosa-associated lymphatic tissue type lymphoma and pancreatic adenocarcinoma. In our study of the month, McCulloch et al. reported that combining Pan-Asian medicine and vitamins with conventional therapy improved survival when compared with conventional therapy alone.



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PROSTATE CANCER

Bayraktar, Z, E. H. Inan and V. Bayraktar.

Effect of Constipation on Serum Total Prostate-Specific Antigen Levels in Men.

International Journal of Urology. 2012 January 2012; 191: 54-59.

OBJECTIVES: Many factors affecting serum prostate-specific antigen (PSA) levels have been described. The aim of this study was to examine the effect of constipation on serum PSA levels in men. **METHODS:** Serum total PSA values were measured in 136 constipated patients before and after treatment for constipation. Moreover, they were compared with 45 control patients.

RESULTS: Serum total PSA values in the constipated patients before treatment were significantly higher than those in the control group (2.29+/-1.29ng/mL vs 1.28+/-0.86ng/mL, P<0.0001). After the treatment of constipation, serum total PSA values in the constipated patients were still higher than those in the control group, but this difference was not statistically significant (P=0.0871). After the treatment of constipation, prostate biopsy rates were 6.6% and 2.2% in the study and control group, respectively (P=0.2769). No prostate cancer was found in both groups.

CONCLUSIONS: Constipation increases serum PSA levels in men. The presence of constipation must be considered in patients whose PSA is examined, especially in those with PSA levels that are borderline high or in the range of 2-10ng/mL. Constipated patients must be first treated and then re-evaluated.



BREAST CANCER

Fernandez-Lao, C, I. Cantarero-Villanueva, C. Fernandez-De-Las-Penas, et al.

E-VERSION EXTRA

Effectiveness of a Multidimensional Physical Therapy Program on Pain, Pressure Hypersensitivity, and Trigger Points in Breast Cancer Survivors: A Randomized Controlled Clinical Trial.

Clin J Pain. 2012 February 2012; 282: 113-121.



OBJECTIVE: To evaluate the effects of an 8-week multidimensional physical therapy program, including strengthening exercises and recovery massage, on neck and shoulder pain, pressure hypersensitivity, and the presence of active trigger points (TrPs) in breast cancer survivors. **METHODS:** In this randomized controlled clinical trial, 44 breast cancer survivors were randomly assigned into 2 groups: CUIDATE group who received a multidimensional physical therapy program; or CONTROL group who received usual care treatment for breast cancer. CUIDATE program consisted of 24 hours of individual physical training (aerobic, mobility, stretching, and strengthening exercises) and 12 hours of physical therapy recovery (stretching, massage) interventions (3 times/wk, 90 min). Outcomes included neck and shoulder pain (visual analog scale, 0 to 100), pressure pain thresholds over the C5-C6 zygapophyseal joints, deltoid muscles, second metacarpal and tibialis anterior muscles, and the presence of active TrPs in shoulder muscles. Outcomes were assessed at baseline and after the 8-week program by a blinded assessor.

RESULTS: The CUIDATE group showed an estimated improvement for neck pain of -56 mm [95% confidence interval (CI), -71-40, $P < 0.001$; effect size 2.72, 1.94 to 3.44] and for shoulder/axillary of -56 mm (95% CI, -74-38, $P < 0.001$; effect size 2.45, 1.66 to 3.23). Improvements were also noted for pressure pain thresholds levels: C5-C6 zygapophyseal joints (between-group differences 101 kPa, 95% CI, 60-143; effect size 1.68, 1.00 to 2.35; 92 kPa 55 to 129; d: 1.98, 1.18 to 2.77), deltoid muscles (98 kPa, 45 to 149; d: 1.34, 0.62 to 2.04; 75 kPa 18 to 132; d: 1.12, 0.27 to 1.96), second metacarpal (93 kPa, 45 to 134; d: 1.30, 0.63 to 1.86; 99 kPa 59 to 139; d: 1.60, 0.96 to 2.24), and tibialis anterior muscles (71 kPa, 40 to 144; d: 1.16, 0.65 to 2.34; 118 kPa 57 to 178; d: 1.17, 0.56 to 1.77). Finally, patients within the CUIDATE program showed a greater reduction of active muscle TrPs compared with the CONTROL group ($P < 0.01$).

CONCLUSIONS: An 8-week multidimensional program including strengthening exercises, and massage as major components was effective for improving neck and shoulder pain and reducing widespread pressure hyperalgesia in breast cancer survivors compared with usual care treatment.

Galantino, ML, L. Greene, B. Archetto, et al.

A Qualitative Exploration of the Impact of Yoga on Breast Cancer Survivors with Aromatase Inhibitor-Associated Arthralgias.

Explore: The Journal of Science and Healing. 2012 January-February 2012; 81: 40-47.

BACKGROUND: Arthralgia affects postmenopausal breast cancer survivors (BCS) receiving aromatase inhibitors (AI), which may result in reduced function and long-term well-being. This is an exploratory, qualitative investigation of BCS who participated in a yoga-based program to understand impact on joint pain and various aspects of quality of life (QOL) through a yoga program. **METHODS:** Social cognitive theory was used and provided the foundation for developing a yoga intervention through sources of efficacy information: (1) performance accomplishment, (2) structured experience, (3) verbal support from instructor and group, and (4) physical feedback. Ten postmenopausal women with stage I-III breast cancer and AI associated arthralgia (AIAA) received yoga twice a week for eight weeks for 90 minutes and were instructed to continue in a home-based yoga program. We used social cognitive theory (SCT) to structure a yoga intervention as an ongoing physical activity to manage joint pain and function. Participants completed journal reflections on their experience and received weekly phone calls. Data was collected and analyzed using qualitative methods. Member checks were completed and emergent themes were explored and agreed upon by the research team to ensure reliability and validity of data.

RESULTS: Several emergent themes were discovered: Empowerment: Importance of Camaraderie, Community, and Sharing; Pain Relief; Increased Physical Fitness (Energy, Flexibility, and Function); Relieved Stress/Anxiety and Transferability of Yoga through Breathing. These themes were identified through instructor observation, participant observation, and weekly phone call documentation. Participants experienced an eight-week yoga intervention as an effective physical activity and support group that fostered various improvements in quality of life (QOL) and reduction in AIAA. Participants were highly



motivated to improve physical fitness levels and reduce pain. This study revealed benefits from alternative forms of exercise such as yoga to provide a structure, which is transferable in other situations. Information, structured physical guidance in yoga postures, support, and feedback are necessary to foster physical activity for BCS experiencing pain.

CONCLUSIONS: Results of this qualitative analysis indicate that interventions to support BCS with AIAA are warranted. Yoga appears to positively impact these side effects of hormonal therapies. Additional research would aid in the development of other interventions.

Littman, AJ, L. C. Bertram, R. Ceballos, et al.

Randomized Controlled Pilot Trial of Yoga in Overweight and Obese Breast Cancer Survivors: Effects on Quality of Life and Anthropometric Measures.

Supportive Care in Cancer. 2012 February 2012; 20(2): 267-277.

PURPOSE: To obtain estimates of time to recruit the study sample, retention, facility-based class attendance and home practice for a study of yoga in breast cancer survivors, and its efficacy on fatigue, quality of life (QOL), and weight change. **METHODS:** Sixty-three post-treatment stages 0-III borderline overweight and obese (body mass index ≥ 24 kg/m²) breast cancer survivors were randomly assigned to a 6-month, facility- and home-based viniyoga intervention (n = 32) or a waitlist control group (n = 31). The yoga goal was five practices per week. Primary outcome measures were changes in QOL, fatigue, and weight from baseline to 6 months. Secondary outcomes included changes in waist and hip circumference.

RESULTS: It took 12 months to complete recruitment. Participants attended a mean of 19.6 classes and practiced at home a mean of 55.8 times during the 6-month period. At follow-up, 90% of participants completed questionnaires and 87% completed anthropometric measurements. QOL and fatigue improved to a greater extent among women in the yoga group relative to women in the control group, although no differences were statistically significant. Waist circumference decreased 3.1 cm (95% CI, -5.7 and -0.4) more among women in the yoga compared with the control group, with no difference in weight change.

CONCLUSIONS: This study provides important information regarding recruitment, retention, and practice levels achieved during a 6-month, intensive yoga intervention in overweight and obese breast cancer survivors. Yoga may help decrease waist circumference and improve quality of life; future studies are needed to confirm these results.

Greenlee, H, M. L. Kwan, L. H. Kushi, et al.

Antioxidant Supplement use After Breast Cancer Diagnosis and Mortality in the Life After Cancer Epidemiology (LACE) Cohort.

Cancer. 2011 Sep 27.; [Epub ahead of print]

BACKGROUND: There is concern that antioxidant supplement use during chemotherapy and radiation therapy may decrease treatment effects, yet the effects of such supplements on recurrence and survival are largely unknown. **METHODS:** The authors prospectively examined the associations between antioxidant use after breast cancer (BC) diagnosis and BC outcomes in 2264 women in the Life After Cancer Epidemiology (LACE) cohort. The cohort included women who were diagnosed with early stage, primary BC from 1997 to 2000 who enrolled, on average, 2 years postdiagnosis. Baseline data were collected on antioxidant supplement use since diagnosis and other factors. BC recurrence and mortality were ascertained, and hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated using delayed entry Cox proportional hazards models. All tests of statistical significance were 2-sided.

RESULTS: Antioxidant supplement use after diagnosis was reported by 81% of women. Among antioxidant users, frequent use of vitamin C and vitamin E was associated with a decreased risk of BC recurrence (vitamin C: HR, 0.73; 95% CI, 0.55-0.97; vitamin E: HR, 0.71; 95% CI, 0.54-0.94); and vitamin E use was associated with a decreased risk of all-cause mortality (HR, 0.76; 95% CI, 0.58-1.00). Conversely, frequent use of combination carotenoids was associated with increased risk of death from BC (HR, 2.07; 95% CI, 1.21-3.56) and all-cause mortality (HR, 1.75; 95% CI, 1.13-2.71).

CONCLUSIONS: Frequent use of vitamin C and vitamin E in the period after BC diagnosis was associated with a decreased likelihood of recurrence, whereas frequent use of combination carotenoids was associated with increased mortality. The effects of antioxidant supplement use after diagnosis likely differ by type of antioxidant.

E-VERSION EXTRA





McCann, SE, K. C. Hootman, A. M. Weaver, et al.

Dietary Intakes of Total and Specific Lignans are Associated with Clinical Breast Tumor Characteristics.

J Nutr. 2012 1 January 2012; 1421: 91-98.

BACKGROUND: Dietary lignans may affect breast cancer by modifying tumor characteristics likely to affect prognosis. **METHODS:** We investigated usual dietary intakes of total and specific lignans with tumor characteristics in 683 women with breast cancer and 611 healthy women without breast cancer enrolled in the Data Bank and BioRepository at Roswell Park Cancer Institute (RPCI). Clinicopathologic data were abstracted from the RPCI breast cancer database. Dietary lignan intakes were calculated from FFQ. OR and 95% CI were estimated with logistic regression adjusting for potential confounders and stratified by menopausal status.

RESULTS: Women in the highest compared to the lowest tertile of total lignan intakes had a 40-50% lower odds of breast cancer regardless of menopausal status and substantially reduced odds of an invasive tumor, especially among premenopausal women [OR 0.48 (95% CI 0.26-0.86)]. Lignan intakes were inversely associated with odds of grade 3 tumors among premenopausal women. Lignan intakes were inversely associated with risk of estrogen receptor (ER) negative (ER-) breast cancer among premenopausal women [OR 0.16 (95% CI 0.03-0.44)] and particularly triple negative tumors [ER-, progesterone receptor negative, HER2 negative; OR 0.16 (95% CI 0.04-0.62)]. There were significant differences in the contribution to these effects by specific lignans, especially matairesinol and lariciresinol.

CONCLUSION: In summary, in this case-control study of dietary lignan intakes and breast cancer, we found that higher lignan intakes were associated with lower risks of breast cancer with more favorable prognostic characteristics. Future investigations are warranted to explore the strong associations observed with ER-cancer in premenopausal women.

COLORECTAL CANCER

Dehal, AN, C. C. Newton, E. J. Jacobs, et al.

Impact of Diabetes Mellitus and Insulin use on Survival After Colorectal Cancer Diagnosis: The Cancer Prevention Study-II Nutrition Cohort.

Journal of Clinical Oncology. 2012 01 Jan 2012; 301: 53-59.

PURPOSE: To examine the association between type 2 diabetes mellitus (T2DM) and survival among patients with colorectal cancer (CRC) and to evaluate whether this association varies by sex, insulin treatment, and durations of T2DM and insulin use. **PATIENTS AND METHODS:** This study was conducted among 2,278 men and women diagnosed with nonmetastatic colon or rectal cancer between 1992 and 2007 in the Cancer Prevention Study-II Nutrition Cohort, a prospective study of cancer incidence. In 1992 to 1993, participants completed a detailed, self-administrated questionnaire. Vital status and cause of death were ascertained through the end of 2008. Multivariable-adjusted relative risks (RRs) and 95% CIs were estimated using Cox proportional hazards regression.

RESULTS: Among the 2,278 men and women with nonmetastatic CRC, there were 842 deaths by the end of follow-up (including 377 deaths from CRC and 152 deaths from cardiovascular disease [CVD]). Among men and women combined, compared with patients without T2DM, patients with CRC and T2DM were at higher risk of all-cause mortality (RR, 1.53; 95% CI, 1.28 to 1.83), CRC-specific mortality (RR, 1.29; 95% CI, 0.98 to 1.70), and CVD-specific mortality (RR, 2.16; 95% CI, 1.44 to 3.24), with no apparent differences by sex or durations of T2DM or insulin use. Insulin use, compared with no T2DM, was associated with increased risk of death from all causes (RR, 1.68; 95% CI, 1.22 to 2.31) and CVD (RR, 3.87; 95% CI, 2.12 to 7.08) but not from CRC (RR, 0.58; 95% CI, 0.28 to 1.19).

CONCLUSION: Patients with CRC and T2DM have a higher risk of mortality than patients with CRC who do not have T2DM, especially a higher risk of death from CVD.

Cross, AJ, R. Sinha, R. J. Wood, et al.

Iron Homeostasis and Distal Colorectal Adenoma Risk in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial.

Cancer Prevention Research. 2011 Sep; 49: 1465-1475.

BACKGROUND: Red meat consumption has been positively associated with colorectal cancer; however,

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the biological mechanism underlying this relationship is not understood. Red meat is a major source of iron, which may play a role in colorectal carcinogenesis via increased crypt cell proliferation, cytotoxicity, and endogenous N-nitrosation. **METHODS:** In a nested case-control study within the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial, we prospectively evaluated multiple iron exposure parameters, including dietary intake and serum measures of iron, ferritin, transferrin, total iron binding capacity (TIBC), and unsaturated iron binding capacity (UIBC) in relation to incident colorectal adenoma in 356 cases and 396 matched polyp-free controls. We also investigated variation in eight key genes involved in iron homeostasis in relation to colorectal adenoma in an additional series totaling 1,126 cases and 1,173 matched controls.

RESULTS: We observed a positive association between red meat intake and colorectal adenoma [OR comparing extreme quartiles (OR(q4-q1)) = 1.59, 95% CI = 1.02-2.49, P(trend) = 0.03]. Serum TIBC and UIBC were inversely associated with colorectal adenoma (OR(q4-q1) = 0.57, 95% CI = 0.37-0.88, P(trend) = 0.03; and OR(q4-q1) = 0.62, 95% CI = 0.40-0.95, P(trend) = 0.04, respectively). Colorectal adenoma was not associated with serum ferritin, iron, or transferrin saturation or with polymorphisms in genes involved in iron homeostasis.

CONCLUSION: Serum TIBC and UIBC, parameters that have a reciprocal relationship with overall iron load, were inversely related to colorectal adenoma, suggesting that individuals with lower iron status have a reduced risk of developing colorectal adenoma.

PANCREATIC CANCER

Wolpin, BM, K. Ng, Y. Bao, et al.

Plasma 25-Hydroxyvitamin D and Risk of Pancreatic Cancer.

Cancer Epidemiology Biomarkers and Prevention. 2012 January 2012; 211: 82-91.

BACKGROUND: Laboratory studies suggest that vitamin D may inhibit pancreatic cancer cell growth. However, epidemiologic studies of vitamin D and pancreatic cancer risk have been conflicting. **Methods:** To determine whether prediagnostic levels of plasma 25-hydroxyvitamin D (25[OH]D; IDS Inc.; enzyme immunoassay) were associated with risk of pancreatic cancer, we conducted a pooled analysis of nested case-control studies with 451 cases and 1,167 controls from five cohorts through 2008. Median follow-up among controls was 14.1 years in Health Professionals Follow-Up Study (HPFS), 18.3 years in Nurses' Health Study (NHS), 25.3 years in Physicians' Health Study (PHS), 12.2 years in Women's Health Initiative-Observational Study (WHI), and 14.4 years in Women's Health Study (WHS). Logistic regression was used to compare the odds of pancreatic cancer by plasma level of 25(OH)D.

RESULTS: Mean plasma 25(OH)D was lower in cases versus controls (61.3 vs. 64.5 nmol/L, P = 0.005). In logistic regression models, plasma 25(OH)D was inversely associated with odds of pancreatic cancer. Participants in quintiles two through five had multivariable-adjusted ORs (95% confidence intervals) of 0.79 (0.56-1.10), 0.75 (0.53-1.06), 0.68 (0.48-0.97), and 0.67 (0.46-0.97; P_{trend} = 0.03), respectively, compared with the bottom quintile. Compared with those with insufficient levels [25(OH)D, <75 nmol/L]. No increased risk was noted in subjects with 25(OH)D ≥100 nmol/L, as suggested in a prior study. In subgroup analyses, ORs for the top versus bottom quartile of 25(OH)D were 0.72 (0.48-1.08) for women, 0.73 (0.40-1.31) for men, and 0.73 (0.51-1.03) for Whites.

CONCLUSIONS: Among participants in five large prospective cohorts, higher plasma levels of 25(OH)D were associated with a lower risk for pancreatic cancer. **IMPACT:** Low circulating 25(OH)D may predispose individuals to the development of pancreatic cancer.

HEAD AND NECK CANCER

Kawakita, D, K. Matsuo, F. Sato, et al.

Association between Dietary Folate Intake and Clinical Outcome in Head and Neck Squamous Cell Carcinoma.

Annals of Oncology. 2012 231) (pp 186-192: Arte Number: mr057. ate of Pubaton: 2012.

BACKGROUND: The association between dietary folate intake, two polymorphisms in methylenetetrahydrofolate reductase (MTHFR) and thymidylate synthase (TYMS), and survival in head and neck squamous cell carcinoma (HNSCC) patients is not clarified. **PATIENTS AND METHODS:** We conducted a retrospective cohort study of 437 HNSCC patients treated at Aichi Cancer Center. We evaluated the survival



impact of pretreatment dietary folate intake, which was estimated using a food-frequency questionnaire, and two polymorphisms, MTHFR C677T and a 6-bp insertion/deletion in the 3'-untranslated region of TYMS, using multivariate proportional hazard models.

RESULTS: Patients with high folate intake (≥ 320 lg/day; $n = 144$) had significantly higher survival than patients with low or medium folate intake (< 320 mug/day; $n = 278$; 79.1% versus 68.2%, respectively, $P = 0.020$). This association was consistent with multivariate analyses adjusted for established prognostic factors (hazard ratio 0.56; 95% confidence interval 0.37-0.84). MTHFR and TYMS polymorphisms did not show significant association with survival, although the TYMS 6-bp insertion allele showed potential association with a reduced risk of death. Notably, no significant interaction was observed between folate intake and the two examined polymorphisms.

CONCLUSIONS: High pretreatment dietary folate intake was identified as an independent prognostic factor associated with improved clinical outcomes in HNSCC patients. Further study is warranted.

MELATONIN

Wang, YM, B. Z. Jin, F. Ai, et al.

The Efficacy and Safety of Melatonin in Concurrent Chemotherapy Or Radiotherapy for Solid Tumors: A Meta-Analysis of Randomized Controlled Trials.

Cancer Chemother Pharmacol. 2012 Jan 24; [Epub ahead of print]

BACKGROUND: Recently, melatonin has been associated with cancer both in vitro and in vivo. However, the value of melatonin in the treatment of cancer remains disputable. Hence, we performed a systematic review of randomized controlled trials (RCTs) of melatonin in solid tumor cancer patients and observed its effect on tumor remission, 1-year survival, and side effects due to radiochemotherapy. **METHODS:** An electronic search was conducted using the databases Pubmed, Medline, EMBASE, Cochrane library, and CNKI, from inception to November 2011. Trials using melatonin as adjunct treatment concurrent with chemotherapy or radiotherapy for cancer were included. Pooled relative risk (RR) for the tumor remission, 1-year survival, and radio-chemotherapy-related side effects were calculated using the software Revman 5.0.

RESULTS: The search strategy identified 8 eligible RCTs ($n = 761$), all of which studied solid tumor cancers. The dosage of melatonin used in the 8 included RCTs was 20 mg orally, once a day. Melatonin significantly improved the complete and partial remission (16.5 vs. 32.6%; $RR = 1.95$, 95% CI, 1.49-2.54; $P < 0.00001$) as well as 1-year survival rate (28.4 vs. 52.2%; $RR = 1.90$; 95% CI, 1.28-2.83; $P = 0.001$), and dramatically decreased radiochemo-therapy-related side effects including thrombocytopenia (19.7 vs. 2.2%; $RR = 0.13$; 95% CI, 0.06-0.28; $P < 0.00001$), neurotoxicity (15.2 vs. 2.5%; $RR = 0.19$; 95% CI, 0.09-0.40; $P < 0.0001$), and fatigue (49.1 vs. 17.2%; $RR = 0.37$; 95% CI, 0.28-0.48; $P < 0.00001$). Effects were consistent across different types of cancer. No severe adverse events were reported.

CONCLUSIONS: Melatonin as an adjuvant therapy for cancer led to substantial improvements in tumor remission, 1-year survival, and alleviation of radio-chemotherapy-related side effects.

GINSENG

Yoo, H-, J. Yoon, G. H. Lee, et al.

Best Case Series Program Supportive Cases of Cordyceps Militaris- and Panax Notoginseng-Based Anticancer Herbal Formula.

Integrative Cancer Therapies. 2011 December 2011; 104: NP1-NP3.

OBJECTIVE: The major aim of this study was to present 2 cancer cases treated with anticancer herbal formula Panax notoginseng and Cordyceps militaris. **METHODS:** Two patients, with pancreatic adenocarcinoma and mucosa-associated lymphatic tissue type lymphoma, respectively, were treated with P notoginseng and C militaris herbal formula without conventional treatments. Their tumor masses were compared using computed tomography during early and later periods of herbal formula treatment.

RESULTS: On computed tomography, reduction in tumor mass in both patients after 17 and 13 months of herbal treatments was noted, and the patients maintained stable disease and good quality of life until the last contact in November 2008.

CONCLUSION: C militaris and P notoginseng are potential anticancer herbal prescriptions for adenocarcinoma and mucosa-associated lymphatic tissue type lymphoma.



STUDY OF THE MONTH

McCulloch, M, M. Broffman, M. Van Der Laan, et al.

Colon Cancer Survival with Herbal Medicine and Vitamins Combined with Standard Therapy in a Whole-Systems Approach: Ten-Year Follow-Up Data Analyzed with Marginal Structural Models and Propensity Score Methods.

Integrative Cancer Therapies. 2011 September 2011; 103: 240-259.

BACKGROUND: Although localized colon cancer is often successfully treated with surgery, advanced disease requires aggressive systemic therapy that has lower effectiveness. Approximately 30% to 75% of patients with colon cancer use complementary and alternative medicine (CAM), but there is limited formal evidence of survival efficacy. **METHODS:** In a consecutive case series with 10-year follow-up of all colon cancer patients (n = 193) presenting at a San Francisco Bay-Area center for Chinese medicine (Pine Street Clinic, San Anselmo, CA), the authors compared survival in patients choosing short-term treatment lasting the duration of chemotherapy/radiotherapy with those continuing long-term. To put these data into the context of treatment responses seen in conventional medical practice, they also compared survival with Pan-Asian medicine + vitamins (PAM+V) with that of concurrent external controls from Kaiser Permanente Northern California and California Cancer Registries. Kaplan-Meier, traditional Cox regression, and more modern methods were used for causal inference—namely, propensity score and marginal structural models (MSMs), which have not been used before in studies of cancer survival and Chinese herbal medicine.

RESULTS: PAM+V combined with conventional therapy, compared with conventional therapy alone, reduced the risk of death in stage I by 95%, stage II by 64%, stage III by 29%, and stage IV by 75%. There was no significant difference between short-term and long-term PAM+V.

CONCLUSION: Combining PAM+V with conventional therapy improved survival, compared with conventional therapy alone, suggesting that prospective trials combining PAM+V with conventional therapy are justified.

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