

AUGUST 2011

RESEARCH UPDATES

FOR THE LATEST IN WORLDWIDE INTEGRATIVE CANCER CARE

INside

IN THIS ISSUE: Wilson and colleagues observed an association between coffee consumption and prostate cancer. Kim and associates reported about a lifestyle intervention that helped breast cancer survivors and Kwan et al. assessed the quality of life of women diagnosed with breast cancer within the first few weeks of diagnosis. Nogues and associates suggested that breast cancer patients on aromatase inhibitors should have their vitamin D levels assessed, and supplemented if necessary. Din and colleagues found that low dose aspirin can protect against colorectal cancer, and Rheem and colleagues found that vitamin D can also lower the risk of colorectal cancer. Huang et al. found that relaxing music helped to decrease cancer pain. Murphy and colleagues found that fish oil supplements increased chemotherapy efficacy in patients with nonsmall cell lung cancer. In our study of the month, Mao et al. found that cancer survivors were more likely to use complementary and alternative medicine (CAM), and are increasingly integrating CAM with their conventional treatments.

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PROSTATE CANCER

Wilson, KM, J. L. Kasperzyk, J. R. Rider, et al.

Coffee Consumption and Prostate Cancer Risk and Progression in the Health Professionals Follow-Up Study.

J Natl Cancer Inst. 2011 2011; 10311: 876-884.

BACKGROUND: Coffee contains many biologically active compounds, including caffeine and phenolic acids that have potent antioxidant activity and can affect glucose metabolism and sex hormone levels. Because of these biological activities, coffee may be associated with a reduced risk of prostate cancer. **METHODS:** We conducted a prospective analysis of 47 911 men in the Health Professionals Follow-up Study who reported intake of regular and decaffeinated coffee in 1986 and every 4 years thereafter. From 1986 to 2006, 5035 patients with prostate cancer were identified, including 642 patients with lethal prostate cancers, defined as fatal or metastatic. We used Cox proportional hazards models to assess the association between coffee and prostate cancer, adjusting for potential confounding by smoking, obesity, and other variables. All P values were from two-sided tests.

RESULTS: The average intake of coffee in 1986 was 1.9 cups per day. Men who consumed six or more cups per day had a lower adjusted relative risk for overall prostate cancer compared with nondrinkers (RR = 0.82, 95% confidence interval [CI] = 0.68 to 0.98, Ptrend =. 10). The association was stronger for lethal prostate cancer (consumers of more than six cups of coffee per day: RR = 0.40, 95% CI = 0.22 to 0.75, Ptrend =. 03). Coffee consumption was not associated with the risk of nonadvanced or low-grade cancers and was only weakly inversely associated with high-grade cancer. The inverse association with lethal cancer was similar for regular and decaffeinated coffee (each one cup per day increment: RR = 0.94, 95% CI = 0.88 to 1.01, P =. 08 for regular coffee and RR = 0.91, 95% CI = 0.83 to 1.00, P =. 05 for decaffeinated coffee). The age-adjusted incidence rates for men who had the highest (>=6 cups per day) and lowest (no coffee) coffee consumption

were 425 and 519 total prostate cancers, respectively, per 100 000 person-years and 34 and 79 lethal prostate cancers, respectively, per 100 000 person-years.

CONCLUSIONS: We observed a strong inverse association between coffee consumption and risk of lethal prostate cancer. The association appears to be related to non-caffeine components of coffee.

BREAST CANCER

Kim, SH, M. S. Shin, H. S. Lee, et al.

Randomized Pilot Test of a Simultaneous Stage-Matched Exercise and Diet Intervention for Breast Cancer Survivors.

Oncol Nurs Forum. 2011 Mar; 382: E97-106.

PURPOSE/OBJECTIVES: To investigate the feasibility and preliminary effects of a simultaneous stage-matched exercise and diet (SSED) intervention in breast cancer survivors. **DESIGN:** Randomized, controlled trial. **SETTING:** Oncology outpatient treatment clinics at the National Cancer Center in South Korea. **SAMPLE:** 45 women with breast cancer who completed their cancer therapy. **METHODS:** Participants were assigned to the SSED intervention group (n = 23) or a control group (n = 22). Participants in the SSED group received a 12-week individualized intervention promoting prescribed exercise and a balanced diet through stage-matched telephone counseling and a workbook. **MAIN RESEARCH VARIABLES:** Program feasibility, behavioral outcomes (stage of motivational readiness for exercise and diet, physical activity, and diet quality), and quality-of-life (QOL) outcomes (functioning and global QOL, fatigue, anxiety, and depression).

FINDINGS: Participant evaluations of the SSED intervention indicated that it was feasible and acceptable. All women felt that the overall intervention contents were appropriate, and 95% believed that the intervention helped to promote healthy behaviors. Objective data also supported the SSED intervention's feasibility (i.e., 91% completed the trial and 100% of intervention calls were received). When compared to control, the SSED intervention group showed significantly greater improvement in motivational readiness for exercise and diet, emotional functioning, fatigue, and depression.

CONCLUSIONS: Preliminary results suggest that the SSED intervention delivered via telephone counseling and workbook is feasible and beneficial for positive behavioral and QOL outcomes. **IMPLICATIONS FOR NURSING**: Nurse-led lifestyle interventions may improve QOL for cancer survivors.

Kwan, ML, I. J. Ergas, C. P. Somkin, et al.

Quality of Life among Women Recently Diagnosed with Invasive Breast Cancer: The Pathways Study.

Breast Cancer Research & Treatment. 2010 Sep; 1232: 507-524.

BACKGROUND: Few studies have assessed quality of life (QOL) of women diagnosed with breast cancer within the first few weeks of their initial diagnosis. **METHODS:** We describe QOL among 950 women recently diagnosed with invasive breast cancer. Starting in January 2006, we invited women aged > or =21 years who were diagnosed with first primary invasive breast cancer within Kaiser Permanente Northern California (KPNC) to enroll in the Pathways Study, a prospective study of breast cancer survivorship. QOL was measured using the Functional Assessment of Cancer Therapy-Breast Cancer (FACT-B), along with sociodemographic and social support information. Clinical characteristics were obtained from the KPNC cancer registry and electronic medical record.

RESULTS: We used multivariable linear regression models to identify factors associated with QOL scores calculated from the FACT-B. The mean age +/- SD of the sample was 59.6 years (+/-11.9 years), and the mean time +/-SD from diagnosis until interview was 8.0 weeks (+/-3.2 weeks). Younger age at diagnosis was associated with lower scores in all QOL domains ($P < 0.01$), and later stage at diagnosis was associated with lower scores in all domains ($P < 0.05$) except for social well-being. Higher levels of social support were associated with higher QOL except for physical well-being ($P < 0.05$). These associations were stronger within 2 months of breast cancer diagnosis.

CONCLUSION: Quality of life as influenced by a diagnosis of breast cancer is an important factor in cancer survivorship. Age, stage at diagnosis, and social support are key factors in this important variable.

Nogues, X, S. Servitja, M. J. Pena, et al.

Vitamin D Deficiency and Bone Mineral Density in Postmenopausal Women Receiving Aromatase Inhibitors for Early Breast Cancer.

Maturitas. 2010 Jul; 663: 291-297.

OBJECTIVE: Aromatase inhibitors (AI) treatment leads to an increased risk of bone loss and fractures. In a group of women with early breast cancer (EBC) and baseline Vitamin D deficiency (<30 ng/ml) who are treated with AI, we aim to describe: serum levels of Vitamin D, bone mineral density (BMD), calcium intake, and the increase of serum 25(OH)D accomplished in 3 months of treatment with Vitamin D supplements. **STUDY DESIGN:** Prospective, non-randomized clinical trial. **METHODS:** In 232 consecutively included women with EBC in treatment with AI, we assessed baseline calcium intake, serum levels of 25(OH)D, BMD and, spine X-ray. All received Calcium and Vitamin D supplements, and those with vitamin deficiency received 16,000 IU Vitamin D every 2 weeks. Serum levels of 25(OH)D were newly assessed after treatment. All the baseline evaluation was performed before starting AI treatment.

RESULTS: Mean age at baseline (+/-SD) was 63.2+/-8.8 years. In 150 (64.9%) cases, the women had been treated previously with tamoxifen; 101 (43.7%) started exemestane, 119 (51.5%) letrozole, and 11 (4.8%) anastrozole. The AI were initiated within 6 weeks after surgery or after the last cycle of chemotherapy. At baseline, 88.1% had 25(OH)D levels <30 ng/ml, 21.2% had severe deficiency (<10 ng/ml), and 25% of the participants had osteoporosis. Mean daily calcium intake was low (841+/-338). We found a significant association between 25(OH)D levels and BMD at baseline, which remained significant in femoral neck BMD after multivariate adjustment. Plasma 25(OH)D levels improved significantly at 3 months follow-up in those treated with high dose Vitamin D supplements: mean increase 32.55 ng/ml (95%CI 28.06-37.03).

CONCLUSIONS: Our study suggests a high prevalence of commonly unrecognized Vitamin D deficiency in women with EBC treated with AI, a known osteopenic agent. Our results support the need for a routine assessment of 25(OH)D levels and, when necessary, supplementation in these patients.

COLORECTAL CANCER

Din, FV, E. Theodoratou, S. M. Farrington, et al.

Effect of Aspirin and NSAIDs on Risk and Survival from Colorectal Cancer.

Gut. 2010 Dec; 5912: 1670-1679.

BACKGROUND: Previous studies have shown that aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) lower colorectal cancer (CRC) risk. However, the lowest effective NSAID dose, treatment duration, and effects on survival are not defined. In a large population-based case-control study, we have explored the relationship between NSAID dose and duration, CRC risk and overall CRC-specific survival. **METHODS:** The relationship between NSAID use and CRC risk was examined in 2279 cases and 2907 controls. Subjects completed food-frequency and lifestyle questionnaires. NSAID categories were low-dose aspirin (75 mg), non-aspirin NSAIDs (NA-NSAIDs) and any NSAID. Users were defined as taking >4 tablets/week for >1 month. ORs were calculated by logistic regression models and adjusted for potential confounding factors. Effect of NSAID use on all-cause and CRC-specific mortality was estimated using Logrank tests and Cox's hazard models.

RESULTS: In all, 354 cases (15.5%) were taking low-dose aspirin compared to 526 controls (18.1%). Low-dose aspirin use was associated with decreased CRC risk (OR 0.78 95% CI 0.65 to 0.92, p=0.004), evident after 1 year and increasing with duration of use (p(trend)=0.004). NA-NSAID and any NSAID use were also inversely associated with CRC. There was no demonstrable effect of NSAIDS on all-cause (HR 1.11, p=0.22, 0.94-1.33) or CRC-specific survival (HR 1.01, p=0.93, 0.83-1.23).

CONCLUSION: This is the first study to demonstrate a protective effect against CRC associated with the lowest dose of aspirin (75 mg per day) after only 5 years use in the general population. NSAID use prior to CRC diagnosis does not influence survival from the disease.

Rheem, DS, D. J. Baylink, S. Olafsson, et al.

Prevention of Colorectal Cancer with Vitamin D.

Scand J Gastroenterol. 2010 Aug; 457-8: 775-784.

The fact that colorectal cancer (CRC) is the second leading cause of cancer mortality in the United States emphasizes the need for more effective preventive and therapeutic modalities.

There is growing evidence that vitamin D may reduce the incidence of CRC. Results of epidemiologic, in vitro, in vivo animal and clinical studies suggest that a low serum vitamin D level may be a serious risk factor for CRC and a high serum vitamin D level may reduce the risk of CRC. On a molecular level, vitamin D suppresses CRC development and growth by affecting cell proliferation, differentiation, apoptosis, and angiogenesis. Vitamin D insufficiency and CRC are common in the elderly population. Vitamin D insufficiency is simple to screen for and treatable with vitamin D supplement-ation. Serum 25-hydroxyvitamin D (calcidiol) is the best measure of vitamin D status and should be checked routinely for individuals with risk factors for CRC.

Maintaining serum concentrations of calcidiol above 32 ng/ml (80 nmol/l) in individuals whose serum calcidiol level is low may help prevent CRC as well as osteoporosis, fractures, infections, and cardiovascular disease. Daily calcidiol intake of 1000 International Units can increase serum vitamin D to sufficient levels in most elderly persons and, based on available data, may substantially lower the incidence of CRC with minimal risks.

MUSIC

Huang, ST, M. Good and J. A. Zauszniewski.

The Effectiveness of Music in Relieving Pain in Cancer Patients: A Randomized Controlled Trial.

Int J Nurs Stud. 2010 Nov; 4711: 1354-1362.

OBJECTIVES: To examine effects of sedative music on cancer pain. **DESIGN:** A randomized controlled trial. **SETTINGS:** Two large medical centers in Kaoshiung City, in southern Taiwan. **PARTICIPANTS:** 126 hospitalized persons with cancer pain. **METHODS:** Participants were randomly assigned to an experimental (n=62) or a control group (n=64), with computerized minimization, stratifying on gender, pain, and hospital unit. Music choices included folk songs, Buddhist hymns (Taiwanese music), plus harp, and piano (American). The experimental group listened to music for 30 min; the control group rested in bed. Sensation and distress of pain were rated on 100mm VAS before and after the 30-min test.

RESULTS: Using MANCOVA, there was significantly less posttest pain in the music versus the control group, p<.001. Effect sizes were large, Cohen's d=.64, sensation, d=.70, distress, indicating that music was very helpful for pain. Thirty minutes of music provided 50% relief in 42% of the music group compared to 8% of the controls. The number needed to treat (NNT) to find one with 50% sensation relief was three patients. More patients chose Taiwanese music (71%) than American music (29%), but both were liked and effective.

CONCLUSIONS: Offering a choice of familiar, culturally appropriate music was a key element of the intervention. Findings extend the Good and Moore theory (1996) to cancer pain. Soft music was safe, effective, and liked by participants. It provided greater relief of cancer pain than analgesics alone. Thus nurses should offer calming, familiar music to supplement analgesic medication for persons with cancer pain.

LUNG CANCER

Murphy, RA, M. Mourtzakis, Q. S. Chu, et al.

Supplementation with Fish Oil Increases First-Line Chemotherapy Efficacy in Patients with Advanced Nonsmall Cell Lung Cancer.

Cancer. 2011 Feb 15;

BACKGROUND: Palliative chemotherapy is aimed at increasing survival and palliating symptoms. However, the response rate to first-line chemotherapy in patients with nonsmall cell lung cancer (NSCLC) is less than 30%. Experimental studies have shown that supplementation with fish oil (FO) can increase chemotherapy

efficacy without negatively affecting nontarget tissue. This study evaluated whether the combination of FO and chemotherapy (carboplatin with vinorelbine or gemcitabine) provided a benefit over standard of care (SOC) on response rate and clinical benefit from chemotherapy in patients with advanced NSCLC. **METHODS:** Forty-six patients completed the study, n = 31 in the SOC group and n = 15 in the FO group (2.5 g EPA + DHA/day). Response to chemotherapy was determined by clinical examination and imaging. Response rate was defined as the sum of complete response plus partial response, and clinical benefit was defined as the sum of complete response, partial response, and stable disease divided by the number of patients. Toxicities were graded by a nurse before each chemotherapy cycle. Survival was calculated 1 year after study enrollment.

RESULTS: Patients in the FO group had an increased response rate and greater clinical benefit compared with the SOC group (60.0% vs 25.8%, P = .008; 80.0% vs 41.9%, P = .02, respectively). The incidence of dose-limiting toxicity did not differ between groups (P = .46). One-year survival tended to be greater in the FO group (60.0% vs 38.7%; P = .15).

CONCLUSIONS: Compared with SOC, supplementation with FO results in increased chemotherapy efficacy without affecting the toxicity profile and may contribute to increased survival.

STUDY OF THE MONTH

Mao, JJ, C. S. Palmer, K. E. Healy, et al.

Complementary and Alternative Medicine use among Cancer Survivors: A Population-Based Study.

Journal of Cancer Survivorship. 2011 Mar; 51: 8-17.

INTRODUCTION: The use of complementary and alternative medicine (CAM) among cancer survivors is high, yet less is known about reasons behind such use or the communication of CAM with conventional medical providers. **METHODS:** Cross-sectional, multivariate logistic regression models were developed to evaluate the similarities and differences between cancer survivors and non-cancer controls in the 2007 National Health Interview Survey with 23,393 participants, including 1,471 cancer survivors.

RESULTS: Among cancer survivors, 66.5% reported ever using CAM and 43.3% having used CAM in the past year. When compared with the general population, cancer survivors used CAM more often for general disease prevention, immune enhancement, and for pain (Adjusted Odds Ratio [AOR] 1.27, 95% Confidence Interval [CI] 1.10-1.48; AOR 1.32, 95% CI 1.05-1.62; AOR 1.42, 95% CI 1.05-1.92, respectively). Cancer survivors were more likely to use CAM because of recom-mendations from their provider (AOR 1.54, 95% CI 1.26-1.88) and were more likely to disclose their CAM use to their provider (AOR 1.45, 95% CI 1.22-1.72).

DISCUSSIONS/ CONCLUSIONS: When compared to the general population, cancer survivors were more likely to use CAM and communicate this use with providers, indicating a growing integration of CAM in conventional medical care. **IMPLICATIONS FOR CANCER SURVIVORS:** Cancer survivors are more likely than the general population to communicate CAM use with providers, suggesting greater integration of CAM use in conventional care. However, the majority of CAM use is still not being communicated to providers, indicating an important area for improvement in patient-centered care.

ELECTRONIC RESEARCH UPDATES - BONUS ABSTRACTS

PROSTATE CANCER

Mondul, AM, J. L. Watters, S. Mannisto, et al.

Serum Retinol and Risk of Prostate Cancer.

Am J Epidemiol. 2011 Apr 1; 1737: 813-821.

BACKGROUND: Greater exposure to retinol (vitamin A) may prevent prostate cancer, although under some conditions it could promote cell growth and de-differentiation. **METHODS:** The authors prospectively examined prostate cancer risk and serum retinol levels, measured by using high-performance liquid chromatography, at baseline (n = 29,104) and after 3 years (n = 22,843) in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study cohort. Cox proportional hazards models were used to estimate the

relative risk of total (n = 2,041) and aggressive (n = 461) prostate cancer by quintiles of baseline and 3-year serum retinol concentrations and by change in serum retinol levels from baseline to 3 years.

RESULTS: Men with higher retinol concentrations at baseline were more likely to develop prostate cancer (quintile 5 vs. quintile 1 hazard ratio = 1.19, 95% confidence interval: 1.03, 1.36; P(trend) = 0.009). The results were similar for aggressive disease. Joint categorization based on baseline and 3-year retinol levels showed that men who were in the highest quintile at both time points had the greatest increased risk (baseline/3-year quintile 5/quintile 5 vs. quintile 1/quintile 1 hazard ratio = 1.31, 95% confidence interval: 1.08, 1.59).

CONCLUSION: In this largest study to date of vitamin A status and subsequent risk of prostate cancer, higher serum retinol was associated with elevated risk, with sustained high exposure conferring the greatest risk. Future studies may clarify the underlying biologic mechanisms of the retinol-prostate cancer association.

BREAST CANCER

Cochrane, BB, F. M. Lewis and K. A. Griffith.

Exploring a Diffusion of Benefit: Does a Woman with Breast Cancer Derive Benefit from an Intervention Delivered to Her Partner?

Oncol Nurs Forum. 2011 Mar; 382: 207-214.

PURPOSE/OBJECTIVES: To provide preliminary data on a diffusion of psychosocial benefit to women diagnosed with breast cancer when only their partners receive a psychoeducational intervention focused on the breast cancer experience. **DESIGN:** Single-group, pretest/post-test pilot study; participants served as their own controls. **SETTING:** Communities in the Pacific Northwest region of the United States. **SAMPLE:** 9 women with a first diagnosis of breast cancer within the previous six months whose partners received the Helping Her Heal intervention. **METHODS:** Data were collected from women pre- and postintervention via standardized questionnaires with established reliability and validity. Confidential exit interviews were conducted after postintervention data were returned. **MAIN RESEARCH VARIABLES:** State anxiety (State-Trait Anxiety Inventory Form Y [STAI-Y]), depression (Center for Epidemiologic Studies-Depression scale [CES-D]), and marital quality (Dyadic Adjustment Scale [DAS]; Mutuality and Interpersonal Sensitivity scale).

FINDINGS: Wilcoxon signed-rank tests showed significant improvements on the CES-D (p = 0.01), STAI-Y (p = 0.01), and DAS affectional expression subscale (p = 0.03) in women from pre- to postintervention. Review of exit interview transcripts indicated that women generally were positive about the impact of the program and viewed their partners' gains in communication skills as the greatest benefit of participating.

CONCLUSIONS: This study offers preliminary support for a diffusion of psychosocial benefit to women with breast cancer when a psychoeducational intervention is delivered to their partners.

IMPLICATIONS FOR NURSING: Diffusion of benefit should be examined in a large, randomized, clinical trial to provide evidence for focusing some clinical efforts on partners alone, rather than adding to diagnosed women's burden of multiple clinical encounters.

Dong, JY and L. Q. Qin.

Soy Isoflavones Consumption and Risk of Breast Cancer Incidence Or Recurrence: A Meta-Analysis of Prospective Studies.

Breast Cancer Research & Treatment. 2011 Jan; 1252: 315-323.

BACKGROUND: Numbers of epidemiologic studies assessing soy consumption and risk of breast cancer have yielded inconsistent results. We aimed to examine the association between soy isoflavones consumption and risk of breast cancer incidence or recurrence, by conducting a meta-analysis of prospective studies. **METHODS:** We searched for all relevant studies with a prospective design indexed in PUBMED through September 1st, 2010. Summary relative risks (RR) were calculated using fixed- or random-effects models. Pre-specified stratified analyses and dose-response analysis were also performed.

RESULTS: We identified 4 studies of breast cancer recurrence and 14 studies of breast cancer incidence. Soy isoflavones consumption was inversely associated with risk of breast cancer incidence (RR = 0.89, 95% CI: 0.79-0.99). However, the protective effect of soy was only observed among studies conducted in Asian populations (RR = 0.76, 95% CI: 0.65-0.86) but not in Western populations (RR = 0.97, 95% CI: 0.87-1.06). Soy isoflavones intake was also inversely associated with risk of breast cancer recurrence (RR = 0.84, 95% CI: 0.70-0.99). Stratified analyses suggested that menopausal status may be an important effect modifier in these associations. We failed to identify a dose-response relationship between total isoflavones intake and risk of breast cancer incidence.

CONCLUSION: Our study suggests soy isoflavones intake is associated with a significant reduced risk of breast cancer incidence in Asian populations, but not in Western populations. Further studies are warranted to confirm the finding of an inverse association of soy consumption with risk of breast cancer recurrence.

Winters-Stone, KM, J. Dobek, L. Nail, et al.

Strength Training Stops Bone Loss and Builds Muscle in Postmenopausal Breast Cancer Survivors: A Randomized, Controlled Trial.

Breast Cancer Res Treat. 2011 June 2011; 1272: 447-456.

BACKGROUND: Targeted exercise training could reduce risk factors for fracture and obesity-related diseases that increase from breast cancer treatment, but has not been sufficiently tested. We hypothesized that progressive, moderate-intensity resistance + impact training would increase or maintain hip and spine bone mass, lean mass and fat mass and reduce bone turnover compared to controls who participated in a low-intensity, non-weight bearing stretching program. **METHODS**: We conducted a randomized, controlled trial in 106 women with early stage breast cancer who were >1 year post-radiation and/or chemotherapy, 50 years of age at diagnosis and postmenopausal, free from osteoporosis and medications for bone loss, resistance and impact exercise naive, and cleared to exercise by a physician. Women were randomly assigned to participate in 1 year of thrice-weekly progressive, moderate-intensity resistance + impact (jump) exercise or in a similar frequency and length control program of progressive, low-intensity stretching.

RESULTS: Primary endpoints were bone mineral density (BMD; g/cm2) of the hip and spine and whole body bone-free lean and fat mass (kg) determined by DXA and biomarkers of bone turnover-serum osteocalcin (ng/ml) and urinary deoxypyrodiniline cross-links (nmol/mmolCr). Women in the resistance + impact training program preserved BMD at the lumbar spine (0.47 vs. -2.13%; P = 0.001) compared to controls. The resistance + impact group had a smaller increase in osteocalcin (7.0 vs. 27%, P = 0.03) and a larger decrease in deoxypyrodinoline (-49.9 vs. -32.6%, P = 0.06) than controls. Increases in lean mass from resistance + impact training were greatest among women currently taking aromatase inhibitors compared to controls not on this therapy (P = 0.01).

CONCLUSIONS: Our combined program of resistance + impact exercise reduced risk factors for fracture among postmenopausal breast cancer survivors (BCS) and may be particularly relevant for BCS on aromatase inhibitors (AIs) because of the additional benefit of exercise on muscle mass that could reduce falls.

COLORECTAL CANCER

Le Marchand, L, H. Wang, J. Selhub, et al.

Association of Plasma Vitamin B6 with Risk of Colorectal Adenoma in a Multiethnic Case-Control Study.

Cancer Causes and Control. 2011 June 2011; 226: 929-936.

BACKGROUND: Circulating level of vitamin B6 has been inversely associated with colorectal cancer (CRC) risk but, unlike for folate, few studies have examined the relationship of vitamin B6 to colorectal adenoma, the precursor lesion to most CRCs. **METHODS:** We measured plasma levels of folate, vitamin B6, and vitamin B12 in 241 patients with pathologically confirmed first occurrence of colorectal adenoma and 280 controls among Caucasians, Japanese Americans, and Native Hawaiians undergoing flexible sigmoidoscopy screening in Hawaii.

RESULTS: High plasma level of vitamin B6 was independently inversely associated with risk of colorectal adenoma [multivariate odds ratios (95% confidence intervals): 1.0, 0.71 (0.45-1.13) and 0.44 (0.26-0.74) from

the lowest to the highest tertile, respectively, $p_{trend} = 0.002$]. Plasma folate was not associated with adenoma after adjustment for plasma vitamin B6 ($p_{trend} > 0.3$). No association was observed with plasma vitamin B12. No significant interaction was detected between the three B vitamins and alcohol intake, multivitamin use or MTHFR C677T.

CONCLUSIONS: The results provide evidence for an inverse association of plasma vitamin B6 levels with risk of colorectal adenoma. This study expands previous findings and suggests that vitamin B6 may be protective against the early stages of colorectal carcinogenesis.

Liu, L, W. Zhuang, R. -Q Wang, et al.

Is Dietary Fat Associated with the Risk of Colorectal Cancer? A Meta-Analysis of 13 Prospective Cohort Studies.

Eur J Nutr. 2011 April 2011; 503: 173-184.

BACKGROUND: The results of animal studies suggest there is a significant role for dietary fat in the development of colorectal cancer (CRC). However, inconsistent results have been reported by epidemiological studies. **AIM OF STUDY:** To evaluate the association between total dietary fat and risk of colorectal cancer development using a meta-analysis based on prospective cohort studies. **METHODS:** Published literature was retrieved from Medline, Embase and CNKI (China Knowledge Resource Integrated Database) databases updated to 1st May, 2009. Overall, thirteen prospective cohort studies with 3,635 cases and 459,910 participants were included.

RESULTS: The combined relative risk (RR) [95% confidence interval (95%CI)] for the risk of CRC was 0.99 (0.89, 1.09) when the highest level of total dietary fat was versus (vs.) the lowest level. Stratified analyses according to gender, ethnicity, country and age showed that the highest level of total dietary fat did not increase the risk of CRC [RR (95% CI): 0.89 (0.77, 1.03) for males; 1.09 (0.94, 1.26) for females; 1.08 (0.94, 1.25) for Caucasians; 0.90 (0.77, 1.04) for Asians; 1.13 (0.94, 1.36) for Americans; 0.92 (0.81, 1.04) for individuals older than 40]. Besides those, the highest level of total fat diet also did not increase the risk of neither colon cancer [RR (95% CI): 0.96 (0.82, 1.13)] nor rectal cancer [RR (95% CI):1.07 (0.63, 1.82)]. Furthermore, neither animal fat nor plant fat were associated with the risk of CRC [RR (95% CI): 1.05 (0.91-1.22) for animal fat and 0.96 (0.82-1.11) for plant fat].

CONCLUSIONS: This meta-analysis suggests that dietary fat may not be associated with the increased risk of CRC. More well-designed studies with larger population performed among Asians are needed to further evaluate the associations. In addition, probable bias caused by measurement error should be noticed in this meta-analysis, and measurement error needs to be adjusted in the future studies.

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