RE*search* UPDATES

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IN*side*

IN THIS ISSUE:
In addition to several studies highlighting the importance of a vegetable-based diet (did you know that broccoli can improve your chances of survival from bladder cancer? Or that increasing your intake of vegetables can decrease your risk of developing pancreatic cancer?), Dean-Klower et al. found acupuncture to be beneficial for advanced cancer patients. Tian and colleagues found that comprehensive therapy with Traditional Chinese Medicine was beneficial for patients with primary hepatic carcinoma and Yun and associates found that Korean red ginseng can protect against cancer in men. In our study of the month, McNeely et al. found exercise can help increase the range of shoulder movement in women with breast cancer, and in a similar vein, Waltman et al. found that strength training may prevent loss of bone mineral density in postmenopausal breast cancer survivors who are at risk for bone loss.

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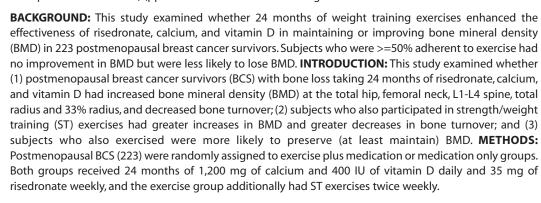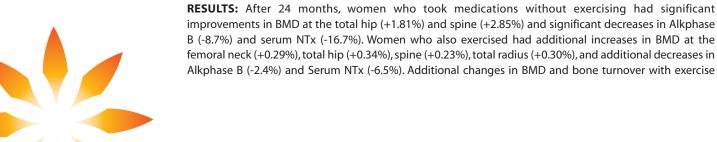
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BREAST CANCER

Waltman, NL, J. J. Twiss, C. D. Ott, et al.

The Effect of Weight Training on Bone Mineral Density and Bone Turnover in Postmenopausal Breast Cancer Survivors with Bone Loss: A 24-Month Randomized Controlled Trial.

Osteoporosis Int. 2010 218) (pp 1361-1369: ate of Pubaton: August 2010.

BACKGROUND: This study examined whether 24 months of weight training exercises enhanced the effectiveness of risedronate, calcium, and vitamin D in maintaining or improving bone mineral density (BMD) in 223 postmenopausal breast cancer survivors. Subjects who were >=50% adherent to exercise had no improvement in BMD but were less likely to lose BMD. **INTRODUCTION:** This study examined whether (1) postmenopausal breast cancer survivors (BCS) with bone loss taking 24 months of risedronate, calcium, and vitamin D had increased bone mineral density (BMD) at the total hip, femoral neck, L1-L4 spine, total radius and 33% radius, and decreased bone turnover; (2) subjects who also participated in strength/weight training (ST) exercises had greater increases in BMD and greater decreases in bone turnover; and (3) subjects who also exercised were more likely to preserve (at least maintain) BMD. **METHODS:** Postmenopausal BCS (223) were randomly assigned to exercise plus medication or medication only groups. Both groups received 24 months of 1,200 mg of calcium and 400 IU of vitamin D daily and 35 mg of risedronate weekly, and the exercise group additionally had ST exercises twice weekly.

RESULTS: After 24 months, women who took medications without exercising had significant improvements in BMD at the total hip (+1.81%) and spine (+2.85%) and significant decreases in Alkphase B (-8.7%) and serum NTx (-16.7%). Women who also exercised had additional increases in BMD at the femoral neck (+0.29%), total hip (+0.34%), spine (+0.23%), total radius (+0.30%), and additional decreases in Alkphase B (-2.4%) and Serum NTx (-6.5%). Additional changes in BMD and bone turnover with exercise

were not significant. Subjects who were >=50% adherent to exercise were less likely to lose BMD at the total hip (chi-square [1]=4.66, p=0.03) and femoral neck (chi-square [1]=4.63, p=0.03).

CONCLUSION: Strength/weight training exercises may prevent loss of BMD in postmenopausal BCS at risk for bone loss.

ACUPUNCTURE

Dean-Clower, E, A. M. Doherty-Gilman, A. Keshaviah, et al.

Acupuncture as Palliative Therapy for Physical Symptoms and Quality of Life for Advanced Cancer Patients.

Integrative Cancer Therapies. 2010 92) (pp 158-167: ate of Pubaton: June 2010.

BACKGROUND: Acupuncture is underutilized as an adjunct cancer therapy. The main study objectives were to determine the feasibility of administering acupuncture as palliative therapy to patients with advanced ovarian or breast cancer and to assess the effect on symptoms and quality of life (QOL). **METHODS:** This study was a pilot, single-armed prospective clinical trial for patients with advanced cancer to receive 12 acupuncture sessions over 8 weeks with follow-up at weeks 9 and 12. Ambulatory patients with advanced ovarian or breast cancer were enrolled to receive treatments at an outpatient academic oncology center. Symptom severity was measured before and after each acupuncture session. A composite QOL assessment tool, consisting of validated instruments, was completed at 5 time points.

RESULTS: Forty patients enrolled in the study. Twenty-eight patients (70%; 95% confidence interval [CI] = 53%-83%) completed 4 weeks of treatment, and 26 patients (65%; 95% CI = 48%-79%) completed 8 weeks. Eight patients (20%) withdrew before receiving acupuncture, and 6 patients (15%) discontinued treatment early because of disease progression or scheduling demands. Among all 32 assessed patients, there was self-reported improvement immediately post-treatment in anxiety, fatigue, pain, and depression and significant improvement over time for patients with anxiety (P =.001) and depression (P =.02). Among patients experiencing baseline symptoms, there was improvement in anxiety (P =.001), fatigue (P =.0002), pain (P =.0002), and depression (P =.003). QOL measures of pain severity and interference, physical and psychological distress, life satisfaction, and mood states showed improved scores during treatment, with sustained benefit at 12 weeks.

CONCLUSIONS: This pilot study demonstrates that an 8-week outpatient acupuncture course is feasible for advanced cancer patients and produces a measurable benefit that should be evaluated in controlled trials.

NON-HODGKIN LYMPHOMA

Han, X, T. Zheng, F. Foss, et al.

Vegetable and Fruit Intake and Non-Hodgkin Lymphoma Survival in Connecticut Women.

Leukemia and Lymphoma. 2010 516) (pp 1047-1054: ate of Pubaton: June 2010.

BACKGROUND: We investigated whether an increased intake of vegetables and fruits favors NHL survival. **METHODS:** A cohort of 568 female cases of incident NHL diagnosed during 19962000 in Connecticut was followed up for a median of 7.7 years. Adjusted hazard ratios (HRs) were estimated by Cox proportional hazard models.

RESULTS: Our results show that a pre-diagnostic high intake of vegetables appeared to favor overall survival (HR0.74, 95 CI 0.570.98) among patients with NHL who survived longer than 6 months. In particular, pre-diagnostic high intakes of green leafy vegetables and citrus fruits were associated with 29 (95 CI 0.510.98) and 27 (95 CI 0.540.99) reduced risk of death, respectively.

CONCLUSION: When different types of vegetables and fruits were investigated separately, their impacts were found to vary in NHL subtypes. Our study suggests that increasing vegetable and citrus fruit consumption could be a useful strategy to improve survival in NHL patients.

PANCREATIC CANCER

Ghadirian, P and A. Nkondjock.

Consumption of Food Groups and the Risk of Pancreatic Cancer: A Case-Control Study.

Journal of Gastrointestinal Cancer. 2010 412) (pp 121-129: ate of Pubaton: June 2010.

PURPOSE: The purpose of this study is to investigate whether the consumption of specific food groups predicts the risk of pancreatic cancer, a case-control study of nutrition and pancreatic cancer among French-Canadians was carried out in Montreal, Quebec, Canada. **METHODS:** A total of 179 pancreatic cancer cases (97 males and 82 females) and 239 population-based control subjects were interviewed. Dietary intake was evaluated via a validated food frequency questionnaire that gathers information on over 200 different food items and beverages. Odd ratios (ORs) and 95% confidence intervals (CIs) were computed by unconditional logistic regression.

RESULTS: After adjustment for age, smoking, diabetes status, proxy interview, gender and total energy intake, a reduced risk of pancreatic cancer was related to vegetables and vegetable products [OR=0.47; 95%CI: (0.21-1.06) p-trend=0.024], while an increased risk was associated with the consumption of lamb, veal and game [OR=2.24; 95%CI: (1.11-4.52) p-trend=0.026], when the upper and lower quartiles of intake were compared. Changes in dietary intake over the last decade revealed an elevated risk with augmented consumption of soups, sauces and gravies [OR=2.32; 95%CI: (1.20-4.49) p-trend=0.03], beef products [OR=2.07; 95%CI: (0.95- 4.51) p-trend=0.05] as well as fish and shellfish [OR= 1.48; 95%CI: (0.78-2.80) p-trend=0.05].

CONCLUSIONS: These findings suggest that a diet rich in vegetables and vegetable products may decrease the risk of pancreatic cancer.

BLADDER CANCER

Tang, L, G. R. Zirpoli, K. Guru, et al.

Intake of Cruciferous Vegetables Modifies Bladder Cancer Survival.

Cancer Epidemiology Biomarkers and Prevention. 2010 197) (pp 1806-1811: ate of Pubaton: Juy 2010.

BACKGROUND: Intake of cruciferous vegetables, a rich source of dietary isothiocyanates, has been inversely associated with risk of bladder cancer. Due to the potent antiproliferative effects of dietary isothiocyanates on bladder cancer in in vitro and in vivo models, cruciferous vegetable intake may also play a role in survival among patients with bladder cancer. **METHODS:** Using information obtained from the Roswell Park Cancer Institute Tumor Registry, patient medical records, and routinely collected questionnaire data, we examined potential associations between intake of cruciferous vegetables and survival among bladder cancer patients. As cooking can substantially reduce or destroy isothiocyanates, consumption of raw versus cooked cruciferous vegetables was examined separately. Hazard ratios (HR) and 95% confidence intervals (CI) were estimated using Cox proportional hazard models.

RESULTS: A total of 239 bladder cancer patients were included in the study. After an average of 8 years of follow-up, 179 deaths occurred, with 101 deaths attributable to bladder cancer. After adjustment for other prognostic factors, a strong and significant inverse association was observed between bladder cancer mortality and broccoli intake, in particular raw broccoli intake (>=1 versus <1 serving per month; HR for overall death, 0.57; 95% CI, 0.39-0.83; HR for disease-specific death, 0.43; 95% CI, 0.25-0.74). There were no significant associations for total vegetables, total fruits, or other individual cruciferous vegetables.

CONCLUSIONS: Considering the strong preclinical evidence, intake of broccoli may improve bladder cancer survival. IMPACT: Further prospective investigation is warranted to confirm the potential role of cruciferous vegetables in bladder cancer prognosis.

TRADITIONAL CHINESE MEDICINE

Tian, H-, H. -L Li, B. Wang, et al.

Treatment of middle/late Stage Primary Hepatic Carcinoma by Chinese Medicine Comprehensive Therapy: A Prospective Randomized Controlled Study.

Chinese Journal of Integrative Medicine. 2010 162) (pp 102-108: ate of Pubaton: 2010.

OBJECTIVE: To observe the efficacy of Chinese medicine comprehensive therapeutic project in treating the middle/late stage primary hepatic carcinoma (PHC). **METHODS:** With prospective randomized controlled design, 97 patients with PHC were assigned to the test group (49 cases) treated with Chinese medicine comprehensive therapy using Oleum fructus bruceas intervention combining oral intake of Ganji Decoction and external application of Ailitong, and the control group (48 cases) treated with chemotherapeutic agents combining iodized oil chemo-embolization and analgesics. The immediate and long-term efficacy, adverse reaction, pain-relieving initial time (PRIT) and pain-relieving sustained time (PRST) of the treatment, as well as the change in patients' quality of life (QOL) were observed.

RESULTS: The difference between the two groups in illness control rate was statistically insignificant (P>0.05), but the adverse reaction occurence rate in the test group was lesser than that in the control group (P0.05), but the PRST was significantly superior in the test group than that in the control group (10.37 +/- 2.18 h vs 7.78 +/- 1.95 h, P<0.01). After treatment, the increased Karnofsky scores in the test group indicated that the patients' somatic activity, symptoms and QOL were improved significantly, which were significantly superior to those in the control group (P<0.05). The survival rate in the two groups was similar at the 3rd month after treatment, but the test group did show superiority in terms of half- and 1-year survival rate (65.9% vs 42.5% and 38.6% vs 18.1%, respectively, P<0.05). The median survival time in the test group was 8.9 months and that in the control group was 5.3 months.

CONCLUSION: Chinese medicine comprehensive therapy is an effective treatment for the middle/late stage patients of PHC, and it could extend the PRST, improve the patients' QOL and long-term survival with less adverse reaction.

GINSENG

Yun, T-, S. Zheng, S. -Y Choi, et al.

Non-Organ-Specific Preventive Effect of Long-Term Administration of Korean Red Ginseng Extract on Incidence of Human Cancers.

Journal of Medicinal Food. 2010 01 Jun; 133: 489-494.

BACKGROUND: Previously, two case-control studies and a cohort study strongly suggested that Panax ginseng C.A. Meyer exerted non-organ-specific preventive effects against cancer. The purpose of the present study was to evaluate the effects of red ginseng extract on the incidence of human primary cancer. **METHODS:** We conducted a randomized, double-blinded, placebo-controlled trial on 643 chronic atrophic gastritis patients in four hospitals in Zhejiang Province, China. Red ginseng extract powder (1 g) was administered orally to each patient per week for 3 years and followed up for 8 years. The development of various cancers in the red ginseng subjects was compared to that of a placebo group. The red ginseng extract powder was specified in terms of its components.

RESULTS: Twenty-four cancers of various organs were diagnosed from these subjects during the 11 years: eight lung cancers, six stomach cancers, two liver cancers, two colorectal cancers, and one cancer each of the nasopharynx, esophagus, pancreas, urinary bladder, prostate, and gallbladder. The red ginseng group, which included both genders, demonstrated a relative cancer risk of 0.54 (95% confidence interval, 0.23-1.28; P = .13) compared to the placebo group, which was not statistically significant. Among the 24 cancer patients, 21 were male. The male red ginseng group showed a relative cancer risk of 0.35 (95% confidence interval, 0.13-0.96; P = .03) compared to the male placebo group, which was highly significant statistically.

CONCLUSION: In the present clinical trial on chronic atrophic gastritis patients, administration of red ginseng extract powder for 3 years exerted significant preventive effects on the incidence of non-organ-specific human cancers in males.

ORAL CANCER

Toledo, AL, R. J. Koifman, S. Koifman and D. M. Marchioni.

Dietary Patterns and Risk of Oral and Pharyngeal Cancer: A Case-Control Study in Rio De Janeiro, Brazil.

Cadernos de Saude Publica. 2010 Jan; 261: 135-142.

BACKGROUND: The study investigated the association between dietary patterns and oral cancer as part of a Latin American multicenter hospital-based case-control study, and included 210 incident cases of oral cancer and 251 controls. **METHODS:** Dietary data were collected using a Food Frequency Questionnaire (FFQ). Factor analysis was used to define dietary patterns, which were categorized into terciles. Odds ratios (OR) with 95% confidence intervals (95%CI) were calculated using unconditional multiple logistic regression.

RESULTS: The patterns 'prudent', characterized mainly by vegetables and fruits, and 'traditional', by rice, and pulses showed an inverse association with oral cancer for the higher tercile, respectively, OR = 0.44; 95%CI: 0.25-0.75, p value for trend (p tend) = 0.03; OR = 0.53; 95%CI: 0.30-0.93, p tend = 0.06. The 'snacks pattern' was not associated with oral cancer.

CONCLUSION: Besides the protective effect of a diet rich in vegetables and fruit, our data suggest that the traditional Brazilian diet, consisting mostly of rice and beans, may improve protection against oral cancer.

COLORECTAL CANCER

Zell, JA, A. Ziogas, L. Bernstein, et al.

Meat Consumption, Nonsteroidal Anti-Inflammatory Drug use, and Mortality among Colorectal Cancer Patients in the California Teachers Study.

Cancer Prevention Research. 2010 37) (pp 865-875: ate of Pubaton: Juy 2010.

BACKGROUND: A low-meat diet and regular use of nonsteroidal anti-inflammatory drugs (NSAID) have been associated with decreased mortality among colorectal cancer (CRC) patients. **METHODS:** Here, we investigated the association between prediagnosis usual meat consumption and CRC-specific mortality, and whether meat consumption modifies the previously noted association between NSAID use and CRC-specific mortality among women in the California Teachers Study cohort. Women joining the California Teachers Study in 1995-1996 without prior CRC diagnosis, diagnosed with incident CRC during follow-up through December 2007, were eligible for inclusion. Meat intake (frequency and serving size) and NSAID use (aspirin or ibuprofen use) were ascertained via self-administered questionnaires before diagnosis. Vital status and cause of death were determined by linkage with mortality files. Multivariable Cox proportional hazards regression models were used to estimate hazard ratios for death and 95% confidence intervals.

RESULTS: Prediagnosis meat consumption was not associated with CRC-specific mortality among 704 CRC patients (and 201 CRC-specific deaths), comparing patients in the lowest consumption tertile (0-5.4 medium-sized servings/wk) to those in the higher consumption tertiles. Regular NSAID use (1-3 times/wk, 4-6 times/wk, daily) versus none was associated with decreased CRC-specific mortality among patients in the lowest meat consumption tertile (hazard ratio, 0.22; 95% CI, 0.06-0.82), but not among patients in the higher meat intake tertiles.

CONCLUSION: The previously observed mortality risk reduction among female CRC patients associated with regular NSAID use was restricted to patients who reported low meat intake before diagnosis. These findings have implications for CRC survivorship and tertiary CRC prevention.

STUDY OF THE MONTH

McNeely, ML, K. Campbell, M. Ospina, et al.

Exercise Interventions for Upper-Limb Dysfunction due to Breast Cancer Treatment

Cochrane Database of Systematic Reviews. 2010 6005211.

BACKGROUND: Upper-limb dysfunction is a commonly reported side effect of treatment for breast cancer and may include decreased shoulder range of motion (the range through which a joint can be moved) (ROM) and strength, pain and lymphedema. **OBJECTIVES:** To review randomized controlled trials (RCTs) evaluating the effectiveness of exercise interventions in preventing, minimizing, or improving upper-limb dysfunction due to breast cancer treatment. **SEARCH STRATEGY:** We searched the Specialized Register of the Cochrane Breast Cancer Group, MEDLINE, EMBASE, CINAHL, and LILACS (to August 2008); contacted experts, hand-searched reference lists, conference proceedings, clinical practice guidelines and other unpublished literature sources. **SELECTION CRITERIA:** RCTs evaluating the effectiveness and safety of exercise for upper-limb dysfunction. **DATA COLLECTION AND ANALYSIS:** Two authors independently performed the data abstraction. Investigators were contacted for missing data.

MAIN RESULTS: We included 24 studies involving 2132 participants. Ten of the 24 were considered of adequate methodological quality. Ten studies examined the effect of early versus delayed implementation of post-operative exercise. Implementing early exercise was more effective than delayed exercise in the short term recovery of shoulder flexion ROM (Weighted Mean Difference (WMD): 10.6 degrees; 95% Confidence Interval (CI): 4.51 to 16.6); however, early exercise also resulted in a statistically significant increase in wound drainage volume (Standardized Mean Difference (SMD) 0.31; 95% CI: 0.13 to 0.49) and duration (WMD: 1.15 days; 95% CI: 0.65 to 1.65). Fourteen studies examined the effect of structured exercise compared to usual care/comparison. Of these, six were post-operative, three during adjuvant treatment and five following cancer treatment. Structured exercise programs in the post-operative period significantly improved shoulder flexion ROM in the short-term (WMD: 12.92 degrees; 95% CI: 0.69 to 25.16). Physical therapy treatment yielded additional benefit for shoulder function post-intervention (SMD: 0.77; 95% CI: 0.33 to 1.21) and at six-month follow-up (SMD: 0.75; 95% CI: 0.32 to 1.19). There was no evidence of increased risk of lymphedema from exercise at any time point.

AUTHORS' CONCLUSIONS: Exercise can result in a significant and clinically meaningful improvement in shoulder ROM in women with breast cancer. In the post-operative period, consideration should be given to early implementation of exercises, although this approach may need to be carefully weighed against the potential for increases in wound drainage volume and duration. High quality research studies that closely monitor exercise prescription factors (e.g. intensity), and address persistent upper-limb dysfunction are needed.

ELECTRONIC RESEARCH UPDATES - BONUS ABSTRACTS

BREAST CANCER

Bjorge, T, A. Lukanova, H. Jonsson, et al.

Metabolic Syndrome and Breast Cancer in the Me-can (Metabolic Syndrome and Cancer) Project.

Cancer Epidemiology Biomarkers and Prevention. 2010 197) (pp 1737-1745: ate of Pubaton: Juy 2010.

BACKGROUND: Few studies have assessed the metabolic syndrome (MetS) as an entity in relation to breast cancer risk, and results have been inconsistent. We aimed to examine the association between MetS factors (individually and combined) and risk of breast cancer incidence and mortality. **METHODS:** Two hundred ninety thousand women from Austria, Norway, and Sweden were enrolled during 1974-2005, with measurements of height, weight, blood pressure, and levels of glucose, cholesterol, and triglycerides. Relative risks (RR) of breast cancer were estimated using Cox proportional hazards regression for each MetS factor in quintiles and for standardized levels (z-scores) and for a composite z-score for the MetS.

RESULTS: There were 4,862 incident cases of breast cancer and 633 deaths from breast cancer identified. In women below age 50, there was a decreased risk of incident cancer for the MetS (per 1-unit increment of z-score; RR, 0.83; 95% confidence interval, 0.76-0.90) as well as for the individual factors (except for glucose). The lowest risks were seen among the heaviest women. In women above age 60, there was an increased risk of breast cancer mortality for the MetS (RR, 1.23; 95% confidence interval, 1.04-1.45) and for blood pressure and glucose. The strongest association with mortality was seen for increased glucose concentrations.

CONCLUSIONS: The MetS was associated with a decreased risk of incident breast cancer in women below age 50 with high body mass index, and with an increased risk of breast cancer mortality in women above 60. Impact: Lifestyle interventions as recommended for cardiovascular disease prevention may be of value to prevent breast cancer mortality in postmenopausal women.

Green, AK, S. E. Hankinson, E. R. Bertone-Johnson and R. M. Tamimi.

Mammographic Density, Plasma Vitamin D Levels and Risk of Breast Cancer in Postmenopausal Women.

International Journal of Cancer. 2010 Aug 1; 1273: 667-674.

BACKGROUND: Mammographic density is a strong risk factor for breast cancer, but the underlying biology for this association is unknown. Studies suggest that vitamin D may reduce breast cancer risk and dietary vitamin D intake has been associated with reduced breast density. **METHODS:** We conducted a case-control study nested within the Nurses' Health Study cohort consisting of 463 and 497 postmenopausal cases and controls, respectively. We examined the association between mammographic density and plasma levels of 25-hydroxyvitamin D [25(OH)D] and 1,25-dihydroxyvitamin D [1,25(OH)(2)D]. We assessed whether plasma vitamin D metabolites modify the association between breast density and breast cancer. Percent mammographic density was measured from digitized film mammograms. Generalized linear models were used to determine mean percent breast density per quartile of vitamin D metabolite. Logistic regression models were used to calculate relative risks and confidence intervals. All models were adjusted for matching variables and potential confounders.

RESULTS: We found no cross-sectional association between circulating levels of 25(OH)D or 1,25(OH)(2)D with mammographic density. Women in the highest tertile of mammographic density and lowest tertile of plasma 25(OH)D had 4 times greater risk of breast cancer than women with the lowest mammographic density and highest plasma 25(OH)D levels (RR = 3.8; 95% CI: 2.0-7.3). The overall interaction between mammographic density and plasma 25(OH)D was nonsignificant (p-het = 0.20).

CONCLUSION: These results indicate that the association between mammographic density and breast cancer is independent of plasma vitamin D metabolites in postmenopausal women. Further research examining vitamin D, mammographic density and breast cancer risk is warranted.

Suzuki, R, M. Iwasaki, M. Inoue, et al.

Alcohol Consumption-Associated Breast Cancer Incidence and Potential Effect Modifiers: The Japan Public Health Center-Based Prospective Study.

International Journal of Cancer. 2010 Aug 1; 1273: 685-695.

BACKGROUND: Epidemiological studies have evaluated whether the impact of alcohol intake on breast cancer risk is modified by use of exogenous estrogens, folate intake, body weight and smoking status, but results have been inconsistent. Further, effect modification by intake of isoflavones and alcohol-induced facial flushing, which are prevalent in Asian populations, have not been investigated. **METHODS:** We investigated the association between alcohol intake and breast cancer risk and whether the association is modified by these factors among 50,757 premenopausal and postmenopausal women (aged 40-69 years) in the population-based Japan Public Health Center-based Prospective Study. Alcohol consumption and other related factors were assessed using self-reported questionnaires.

RESULTS: Through to the end of 2006, 572 patients were identified. Relative risks (RRs) and 95% confidence intervals (CIs) were estimated by hazard ratios derived from Cox proportional hazards regression models. Compared with never-drinkers, regular alcohol drinkers (>150 g of ethanol/week) had a higher risk of the development of breast cancer; the multivariable-adjusted RRs were 1.75 (95% CI = 1.16-2.65; p(trend) = 0.035) for overall, 1.78 (95% CI = 1.09-2.90) for premenopausal and 1.21 (95% CI = 0.53-2.75) for postmenopausal women. There was no statistical evidence for effect modification by menopausal status, use of exogenous estrogens, intakes of isoflavone and folate, body weight, alcohol-induced facial flushing or smoking (All p(interactions) > or = 0.15).

CONCLUSION: Excessive alcohol intake was associated with an increase in the risk of breast cancer in this population. There was no statistical evidence for effect modification.

Yang, YJ, S. H. Hwang, H. J. Kim, S. -J Nam, G. Kong and M. K. Kim.

Dietary Intake of Nitrate Relative to Antioxidant Vitamin in Relation to Breast Cancer Risk: A Case-Control Study.

Nutr Cancer. 2010 July; 625: 555-566.

BACKGROUND: Nitrate is a precursor in the endogenous formation of N-nitroso compounds, which are potent animal carcinogens, whereas antioxidant vitamins have been suggested to protect against carcinogenesis. Interestingly, nitrate and antioxidant vitamins stem from the same dietary sources. **METHODS:** We investigated whether the intake of nitrate relative to antioxidant vitamins is associated with the risk of breast cancer. A total of 362 breast cancer cases were matched to the 362 controls by age and menopausal status. Dietary intake was assessed using a quantitative food frequency questionnaire with 121 food items by trained interviewers. The nitrate to antioxidant vitamin consumption ratio was then calculated. Conditional logistic regression analysis was used to obtain odds ratios (ORs) and corresponding 95% confidence intervals (CI).

RESULTS: Mean intakes of nitrate for cases and controls were 421 mg/day and 424 mg/day, respectively. Intakes of nitrate, nitrate/ beta-carotene, nitrate/vitamin C, and nitrate/vitamin E were not associated with breast cancer risk. However, higher breast cancer risk was observed with higher intake of nitrate/folate (OR = 2.03, 95% CI = 1.16-3.54, P for trend = 0.052).

CONCLUSION: Our results suggest that lowering the ratio of nitrate to folate intake may be effective in reducing breast cancer risk.

NON-HODGKIN LYMPHOMA

Geyer, SM, L. M. Morton, T. M. Habermann, et al.

Smoking, Alcohol use, Obesity, and overall Survival from Non-Hodgkin Lymphoma: A Population-Based Study.

Cancer. 2010 15 Jun; 11612: 2993-3000.

BACKGROUND: Smoking, alcohol use, and obesity appear to increase the risk of developing non-Hodgkin lymphoma (NHL), but to the authors' knowledge, few studies to date have assessed their impact on NHL prognosis. **METHODS:** The association between prediagnosis cigarette smoking, alcohol use, and body mass index (BMI) and overall survival was evaluated in 1286 patients enrolled through population-based registries in the United States from 1998 through 2000. Hazard ratios (HRs) and 95% confidence intervals (95% CIs) were estimated using Cox regression, adjusting for clinical and demographic factors.

RESULTS: Through 2007, 442 patients had died (34%), and the median follow-up for surviving patients was 7.7 years. Compared with never smokers, former (HR, 1.59; 95% CI, 1.12-2.26) and current (HR, 1.50; 95% CI, 0.97-2.29) smokers had poorer survival, and poorer survival was found to be positively associated with smoking duration, number of cigarettes smoked per day, pack-years of smoking, and shorter time since quitting (all P 43.1 g/week (median intake among drinkers) had poorer survival (HR, 1.55; 95% CI, 1.06-2.27),

whereas those drinkers consuming less than this amount demonstrated no survival disadvantage (HR, 1.13; 95% CI, 0.75-1.71). Greater BMI was associated with poorer survival (P = 0.046), but the survival disadvantage was only noted among obese individuals (HR, 1.32 for BMI [greater-than or equal to]30 vs BMI 20-24.9; 95% CI, 1.02-1.70). These results held for lymphoma-specific survival and were broadly similar for diffuse large B-cell lymphoma and follicular lymphoma.

CONCLUSIONS: NHL patients who smoked, consumed alcohol, or were obese before diagnosis were found to have a poorer overall and lymphoma-specific survival.

PANCREATIC CANCER

Stolzenberg-Solomon, RZ, E. J. Jacobs, A. A. Arslan, et al.

Circulating 25-Hydroxyvitamin D and Risk of Pancreatic Cancer: Cohort Consortium Vitamin D Pooling Project of Rarer Cancers.

Am J Epidemiol. 2010 Jul 1; 1721: 81-93.

BACKGROUND: Results from epidemiologic studies examining pancreatic cancer risk and vitamin D intake or 25-hydroxyvitamin D (25(OH)D) concentrations (the best indicator of vitamin D derived from diet and sun) have been inconsistent. **METHODS:** Therefore, the authors conducted a pooled nested case-control study of participants from 8 cohorts within the Cohort Consortium Vitamin D Pooling Project of Rarer Cancers (VDPP) (1974-2006) to evaluate whether prediagnostic circulating 25(OH)D concentrations were associated with the development of pancreatic cancer.

RESULTS: In total, 952 incident pancreatic adenocarcinoma cases occurred among participants (median follow-up, 6.5 years). Controls (n = 1,333) were matched to each case by cohort, age, sex, race/ethnicity, date of blood draw, and follow-up time. Conditional logistic regression analysis was used to calculate smoking-, body mass index-, and diabetes-adjusted odds ratios and 95% confidence intervals for pancreatic cancer. Clinically relevant 25(OH)D cutpoints were compared with a referent category of 50- or =100 nmol/L) was associated with a statistically significant 2-fold increase in pancreatic cancer risk overall (odds ratio = 2.12, 95% confidence interval: 1.23, 3.64).

CONCLUSION: Given this result, recommendations to increase vitamin D concentrations in healthy persons for the prevention of cancer should be carefully considered.