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IN THIS ISSUE: We've all heard the axiom "You are what you eat" and this is true more than ever when considering cancer prevention and treatment. In this month's issue, there are a variety of studies that indicated a change in diet can reduce the risk of several different types of cancer. For instance, Buchner et al. found that a diet high in fruits and vegetables might reduce the risk of lung cancer in smokers. Butler and colleagues found that a diet rich in fruits, vegetables, and soy products can reduce the risk of breast cancer. Hosono et al. found that a diet high in calcium and vitamin D can reduce the risk of cervical cancer.

In our study of the month, Kvaavik and colleagues found that small changes to one's diet and lifestyle (such as quitting smoking, limiting alcohol consumption, increasing fruit and vegetable consumption and engaging in physical activity) can have a significant impact on overall health.

Also in this issue, there are a few studies that showed that breastfeeding might help prevent breast (Awatef et al.) and ovarian (Titus-Ernstoff et al.) cancer, and Titus-Ernstoff and colleagues suggested that breastfeeding might even reset the pregnancy-related states that mediate cancer risk.

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BREAST CANCER

Awatef, M, G. Olfa, H. Imed, et al.

Breastfeeding Reduces Breast Cancer Risk: A Case-Control Study in Tunisia.

BACKGROUND: In this report, we examined the relationship between mother's breastfeeding history and her risk of breast cancer, in a case-control study in Tunisia between 2006 and 2009. About 400 breast cancer cases and 400 controls were included. **METHODS**: Cases and controls were interviewed using a standardized structured questionnaire to obtain information on breastfeeding and other risk factors.

RESULTS: Mean duration of breastfeeding per child was significantly associated with a reduced risk of breast cancer for women who breastfed for >24 months per child. The OR was 0.46 (95% CI, 0.28-0.76) when compared those who breastfed for 109 months (OR = 0.42, 95% CI, 0.20-0.84). Stratification by menopausal status showed a reduced risk of breast cancer associated with a longer duration of breastfeeding for both pre- and postmenopausal women. The risk reduction was more consistent for lifetime duration of breastfeeding, the test for trend being significant for both pre- (p = 0.03) and postmenopausal (p = 0.01) women.

CONCLUSION: These results support an inverse association between breastfeeding and breast cancer risk.

NUTRITION

Butler, LM, A. H. Wu, R. Wang, W. P. Koh, J. M. Yuan and M. C. Yu.

A Vegetable-Fruit-Soy Dietary Pattern Protects Against Breast Cancer among Postmenopausal Singapore Chinese Women.

BACKGROUND: Prospective epidemiologic studies in Asian populations consistently show that soy is protective against breast cancer. **OBJECTIVE:** The objective was to prospectively evaluate whether the protective effect of soy is due to soy isoflavones alone or to their combination with other beneficial dietary factors in an Asian population. **DESIGN:** Using principal components analysis, we previously identified a "meat-dim sum" pattern characterized by meat, starch, and dim sum items and a "vegetable-fruit-soy" pattern characterized by cruciferous vegetables, fruit, and tofu items in a population-based cohort of Singapore Chinese initiated between 1993 and 1998. Component scores representing intakes of each pattern were used in multivariable Cox regression models to analyze the relation between diet at baseline and breast cancer incidence.

RESULTS: As of 31 December 2005, 629 incident breast cancer cases had been diagnosed among the 34,028 women. With greater intake of the vegetable-fruit-soy dietary pattern, we observed a dose-dependent trend (P or =5 y of follow-up (HR: 0.57; 95% CI: 0.36, 0.88; P for trend <0.01). No trend was observed for a greater intake of the meat-dim sum dietary pattern and increased breast cancer risk.

CONCLUSION: Our findings support the hypothesis that a diet characterized by vegetables, fruit, and soy has an early-acting protective effect on breast carcinogenesis.

COLORECTAL CANCER

Freedman, DM, P. Rajaraman, B. Fuhrman, R. Hoffbeck and B. H. Alexander.

Sunlight, Hormone Replacement Status and Colorectal Cancer Risk in Postmenopausal Women.

BACKGROUND: A reanalysis of the Women's Health Initiative (WHI) randomized clinical trial found a significant interaction between supplementation with vitamin D/calcium and estrogen therapy and the risk of colorectal cancer risk, with reduced risks from supplementation limited to the placebo arms of the estrogen trials. **METHODS:** To explore whether the vitamin D effects are modified by estrogen therapy, we report a largely cross-sectional, analysis of the association between sun exposure, which is an important vitamin D source, and colorectal cancer risk among postmenopausal women in the U.S. Radiologic Technologists study.

RESULTS: Among 21,695 participants, there were a total of 108 cases. Sun exposure was based on time outdoors and on ambient ultraviolet radiation (UV) exposure based on residence linked to erythemal exposures derived from the Total Ozone Mapping Spectrometer database. Although there was no relationship between outdoor time or ambient UV measure and colorectal cancer risk in current hormone replacement therapy (HRT) users, in never/past HRT users, there was an inverse association with higher ambient UV exposure, RR for highest vs. lowest fertile - 0.40; 95% CI 017, 0.93; rho for trend 0.04. Non-significant tower risks were also associated with higher levels of outdoor time (>3.5 hr/week) In never/past HRT users. The interaction between both indicators of sun exposure and HRT and CRC risk was not significant.

CONCLUSION: These data, although exploratory, are consistent with evidence from the WHI suggesting a decrease in colorectal cancer risk may be associated with vitamin D exposure among postmenopausal women who are not taking HRT, but not among current HRT users.

TRADITIONAL CHINESE MEDICINE

Gan, T, Z. Wu, L. Tian and Y. Wang.

Chinese Herbal Medicines for Induction of Remission in Advanced Or Late Gastric Cancer.

Cochrane Database of Systematic Reviews. 2010 1: 005096.

BACKGROUND: Gastric cancer is difficult to cure once it progresses into an advanced or late stage. Although some chemotherapies or bio-therapies have made progress in the remission of this disease, mortality remains high. A variety of Chinese medicinal herbs have been used to treat gastric cancer. **OBJECTIVES:** To assess the effectiveness of Chinese medicinal herbs in the short term remission of advanced or late gastric cancer. **SEARCH STRATEGY:** We searched the Cochrane Library, MEDLINE, EMBASE, AHMED (Allied and Complementary Medicine Database) and CBM (Chinese Biomedical Database) from the first year of the databases to May, 2008. We handsearched a number of journals. **SELECTION CRITERIA:** All randomised clinical trials of Chinese herbs for advanced or late gastric cancer were included. **DATA COLLECTION AND ANALYSIS:** Two authors independently extracted the data, which were analysed by RevMan 5.0 software. For dichotomous data, we estimated the relative risk. For continuous data, we calculated the weighted mean difference.

MAIN RESULTS: Fifty-five qualified trials with 5261 advanced or late gastric cancer patients were identified, most of which were of low quality and used TCMHs plus chemotherapy compared with the same chemotherapy alone (41 trials). Except for four trials of Huachansu, we could not pool the results because no more than two used the same intervention or outcomes. TCMHs combined with or without chemotherapy in the 51 trials showed statistically significant difference for the improvement of mortality in six trials, quality of life in 13 trials, rate of remission in ten trials, discontinuation from treatment in three trials, leukopenia in one trial, vomiting/nausea in one trial. The pooled results from the four trials of Huachansu showed statistically significant difference for the improvement of leukopenia, but no significant difference for the improvement of adverse events in the digestive system or rate of short-term remission.

AUTHORS' CONCLUSION: This review did not provide assured evidence concerning the effectiveness of TCMHs in improving the quality of life or rate of remission, alleviating the toxic and side effects caused by the chemotherapy, or reducing short-term mortality. Limited and weak evidence showed that Huachansu, when used together with chemotherapy, improved leukopenia caused by chemotherapy, but did not improve rate of short-term remission. Large, well designed clinical trials are required urgently before any confident conclusions can be drawn about the value of TCMHs for advanced or late gastric cancer.

GYNECOLOGICAL CANCERS

Titus-Ernstoff, L, J. R. Rees, K. L. Terry and D. W. Cramer.

Breast-Feeding the Last Born Child and Risk of Ovarian Cancer.

Cancer Causes and Control. 2010 February; 212: 201-207.

BACKGROUND: Conflicting reports regarding the relationship between breast-feeding and ovarian cancer risk suggest a possible influence of patterns of breast-feeding. **METHODS:** We used logistic regression to examine breast-feeding in a large population of parous women who participated in a case control study of ovarian cancer in New Hampshire and MA, USA.

RESULTS: Risk of ovarian cancer was reduced in parous women who ever breast-fed (OR: 0.75; 95% CI: 0.62, 0.92), but evidence was limited for an influence of duration of breast-feeding and the number of children breast-fed. Compared to never breast-feeding, inverse associations were seen for breast-feeding all children (OR: 0.72; 95% CI: 0.58, 0.91) and for breast-feeding some children when the last born child was breast-fed (OR: 0.58; 95% CI: 0.37, 0.91). There was little evidence of reduced risk for those who breast-fed some children when the last born child was not breast-fed (OR: 0.91; 95% CI: 0.66, 1.26). Similar findings were noted in women with exactly two children and in those with two or more children.

CONCLUSION: The protective influence of breast-feeding on ovarian cancer risk may be limited to women who breast-feed their last born child. These findings, which require confirmation by future studies, imply that breast-feeding resets pregnancy-related states that mediate ovarian cancer risk.

Hosono, S, K. Matsuo, H. Kajiyama, et al.

Association between Dietary Calcium and Vitamin D Intake and Cervical Carcinogenesis among Japanese Women.

Eur J Clin Nutr. 2010 April; 644: 400-409.

BACKGROUND/OBJECTIVES: To examine the association between dietary calcium and vitamin D intake and cervical neoplasia risk, we conducted a case-control study. **SUBJECTS/METHODS:** We selected 405 incident cervical neoplasias (333 invasive carcinomas and 72 cervical intraepithelial neoplasias grade III (CIN3)) and 2025 age-matched non-cancer controls. Dietary information was collected using a semiquantitative food-frequency questionnaire (FFQ). The effect on cervical neoplasia risk was evaluated using conditional logistic regression models.

RESULTS: The inverse association between invasive carcinoma and milk, yogurt and fish was observed. On the other hand, the marginally significant inverse association between CIN3 and tofu and green leafy vegetables was observed. Compared with the lowest quartile (Q1) of calcium intake, adjusted odds ratios (ORs) for each of the three upper quartiles (Q2, Q3 and Q4) on invasive carcinoma risk were 0.86 (95% confidence interval (CI) 0.63-1.17), 0.50 (95% CI 0.34-0.73) and 0.68 (95% CI 0.48-0.97), respectively (P for trend0.004). However, no association between calcium and cancer risk was evident among CIN3 cases (P for trend0.528). Vitamin D intake showed a similar inverse association (Q2: OR 1.03, 95% CI 0.74-1.44; Q3: OR 0.80, 95% CI 0.56-1.15; and Q4: OR 0.64, 95% CI 0.43-0.94; P for trend0.013). Similar to calcium, no association between vitamin D intake among CIN3 was evident (P for trend0.109). An inverse association with calcium was evident in women whose vitamin D intake was low. However, this combined effect was not significant (invasive carcinoma: interaction P0.819; and CIN3: interaction P0.101).

CONCLUSION: We found an inverse association between dietary calcium and vitamin D intake and cervical neoplasia risk among a group of Japanese women.

LUNG CANCER

Buchner, FL, H. B. Bueno-de-Mesquita, J. Linseisen, et al.

Fruits and Vegetables Consumption and the Risk of Histological Subtypes of Lung Cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC).

Cancer Causes and Control. 2010 March; 213: 357-371.

OBJECTIVE: To examine the association between fruit and vegetable consumption and risk of different histological subtypes of lung cancer among participants of the European Prospective Investigation into Cancer and Nutrition study. **METHODS:** Multivariable Cox proportional hazard models were used to analyze the data. A calibration study in a subsample was used to reduce dietary measurement errors.

RESULTS: During a mean follow-up of 8.7 years, 1,830 incident cases of lung cancer (574 adenocarcinoma, 286 small cell, 137 large cell, 363 squamous cell, 470 other histologies) were identified. In line with our previous conclusions, we found that after calibration a 100 g/day increase in fruit and vegetables consumption was associated with a reduced lung cancer risk (HR 0.94; 95% CI 0.89-0.99). This was also seen among current smokers (HR 0.93; 95% CI 0.90-0.97). Risks of squamous cell carcinomas in current smokers

were reduced for an increase of 100 g/day of fruit and vegetables combined (HR 0.85; 95% CI 0.76-0.94), while no clear effects were seen for the other histological subtypes.

CONCLUSION: We observed inverse associations between the consumption of vegetables and fruits and risk of lung cancer without a clear effect on specific histological subtypes of lung cancer. In current smokers, consumption of vegetables and fruits may reduce lung cancer risk, in particular the risk of squamous cell carcinomas.

STUDY OF THE MONTH

Kvaavik E, Batty GD, Ursin G, Huxley R, Gale CR.

Influence of individual and combined health behaviors on total and cause-specific mortality in men and women: the United Kingdom health and lifestyle survey.
Arch Intern Med. 2010 Apr 26; 170(8):711-8.

BACKGROUND: Physical activity, diet, smoking, and alcohol consumption have been shown to be related to mortality. We examined prospectively the individual and combined influence of these risk factors on total and cause-specific mortality. **METHODS:** The prospective cohort study included 4886 individuals at least 18 years old from a United Kingdom-wide population in 1984 to 1985. A health behavior score was calculated, allocating 1 point for each poor behavior: smoking; fruits and vegetables consumed less than 3 times daily; less than 2 hours physical activity per week; and weekly consumption of more than 14 units of alcohol (in women) and more than 21 units (in men) (range of points, 0-4). We examined the relationship between health behaviors and mortality using Cox models and compared it with the mortality risk associated with aging.

RESULTS: During a mean follow-up period of 20 years, 1080 participants died, 431 from cardiovascular diseases, 318 from cancer, and 331 from other causes. Adjusted hazard ratios and 95% confidence intervals (CIs) for total mortality associated with 1, 2, 3, and 4 poor health behaviors compared with those with none were 1.85 (95% CI, 1.28-2.68), 2.23 (95% CI, 1.55-3.20), 2.76 (95% CI, 1.91-3.99), and 3.49 (95% CI, 2.31-5.26), respectively (P value for trend, <.001). The effect of combined health behaviors was strongest for other deaths and weakest for cancer mortality. Those with 4 compared with those with no poor health behaviors had an all-cause mortality risk equivalent to being 12 years older.

CONCLUSION: The combined effect of poor health behaviors on mortality was substantial, indicating that modest, but sustained, improvements to diet and lifestyle could have significant public health benefits.

BREAST CANCER

Flatt, SW, C. A. Thomson, E. B. Gold, et al.

Low to Moderate Alcohol Intake is Not Associated with Increased Mortality After Breast Cancer.
Cancer Epidemiology Biomarkers and Prevention. 2010 March; 193: 681-688.

BACKGROUND: Both alcohol consumption and obesity have been linked with breast cancer morbidity and mortality. An inverse association between alcohol intake and obesity suggests possible confounding between these variables (and perhaps other factors) with breast cancer outcomes. **METHODS**: Alcohol intake (beer, wine, spirits, and total) was examined in 3,088 women previously diagnosed and treated for breast cancer within an intervention trial that targeted vegetables, fiber, and fat but not alcohol or weight loss. Factors associated with baseline alcohol intake were included in Cox proportional hazards models for recurrence and mortality.

RESULTS: Alcohol intake was significantly associated with higher education and physical activity levels. Neither light alcohol intake nor obesity was significantly associated with breast cancer recurrence, but moderate alcohol intake >300 g/mo was protective against all-cause mortality (hazard ratio, 0.69; 95% confidence intervals, 0.49-0.97) in a proportional hazards model adjusted for obesity. Obese women were 61% more likely to be nondrinkers than drinkers, and 76% more likely to be light drinkers than moderate/heavy drinkers. In nonobese women, alcohol intake >10 g/mo was associated with lower risk of all-cause mortality (hazard ratio, 0.68; 95% confidence intervals, 0.51-0.91).

CONCLUSION: Light alcohol intake, regardless of body weight, did not increase the risk of breast cancer recurrence or all-cause mortality in this cohort of middle-aged women previously diagnosed with breast cancer. Alcohol intake was associated with other favorable prognostic indicators, which may explain its apparent protective effect in nonobese women.

Larsson, SC, L. Bergkvist and A. Wolk.

Dietary Carotenoids and Risk of Hormone Receptor-Defined Breast Cancer in a Prospective Cohort of Swedish Women.

Eur J Cancer. 2010 April; 466: 1079-1085.

BACKGROUND: Carotenoids have antioxidant and antiproliferative properties and may reduce the risk of breast cancer. **METHODS:** We examined the association between dietary carotenoids and risk of invasive breast cancer in the Swedish Mammography Cohort, a population-based cohort of 36,664 women who completed a questionnaire in 1997. During a mean follow-up of 9.4 years, 1008 women were diagnosed with incident breast cancer.

RESULTS: Dietary carotenoids were not significantly associated with the risk of breast cancer overall or with any subtype defined by oestrogen receptor (ER) and progesterone receptor (PR) status. However, dietary alpha-carotene and beta-carotene were inversely associated with the risk of ER-PR-breast cancer among ever smokers. Among ever smokers, the multivariable relative risks of ER-PR-breast cancer comparing the highest with the lowest quintile of intake were 0.32 (95% confidence interval (CI): 0.11-0.94; Ptrend = 0.01) for alpha-carotene and 0.35 (95% CI: 0.12-0.99; Ptrend = 0.03) for beta-carotene. The risk of breast cancer also decreased with increasing intakes of alpha-carotene (Ptrend = 0.02) and beta-carotene (Ptrend = 0.01) among women who did not use dietary supplements.

CONCLUSION: These findings suggest that dietary alpha-carotene and beta-carotene are inversely associated with the risk of breast cancer among smokers and among women who do not use dietary supplements.

Knight, JA, J. Wong, K. M. Blackmore, J. M. Raboud and R. Vieth.

Vitamin D Association with Estradiol and Progesterone in Young Women.

Cancer Causes and Control. 2010 March; 213: 479-483.

OBJECTIVE: Vitamin D may reduce breast cancer risk through an effect on steroid hormones in cycling women. We conducted a study to determine whether there is an association between circulating 25-hydroxyvitamin D (25(OH)D) and estradiol and progesterone in young women. **METHODS:** Volunteer women aged 18-22 and not using hormonal contraceptives were recruited during summer and winter. They provided demographic and lifestyle information and a blood sample. Women recruited in winter gave a second sample after taking vitamin D supplement for 4 weeks. There were 101 women sampled during the luteal phase (1-14 days prior to the start of the next menstrual period). Generalized estimating equation linear regression models were used to examine the relationship between 25(OH)D and estradiol and progesterone.

RESULTS: Per increase of 10 nmol/1 of 25(OH)D, progesterone multiplicatively decreased by a factor of 10% (95% CI 5-14%, p < 0.001) and estradiol decreased by a factor of 3% (95% CI 0-6%, p = 0.04) after adjustment for age, body mass index, ethnicity, season, alcohol use, smoking, and physical activity.

CONCLUSION: Higher levels of vitamin D may reduce progesterone and estradiol, providing a potential mechanism for reduction in breast cancer risk from increased vitamin D exposure in young women.

Chandwani, KD, B. Thornton, G. H. Perkins, et al.

Yoga Improves Quality of Life and Benefit Finding in Women Undergoing Radiotherapy for Breast Cancer.

Journal of the Society for Integrative Oncology. 2010 Spring; 82: 43-55.

BACKGROUND: This study examined the effects of yoga on quality of life (QOL) and psychosocial outcomes in women with breast cancer undergoing radiotherapy. **METHODS:** Sixty-one women were randomly assigned to either a yoga or a wait-list group. Yoga classes were taught biweekly during the 6 weeks of radiotherapy. Participants completed measures of QOL, fatigue, benefit finding (finding meaning in the cancer experience), intrusive thoughts, sleep disturbances, depressive symptoms, and anxiety before radiotherapy and then again 1 week, 1 month, and 3 months after the end of radiotherapy.

RESULTS: General linear model analyses revealed that compared to the control group, the yoga group reported significantly better general health perception (p = .005) and physical functioning scores (p = .04) 1 week postradiotherapy; higher levels of intrusive thoughts 1 month postradiotherapy (p = .01); and greater benefit finding 3 months postradiotherapy (p = .01). There were no other group differences in other QOL subscales for fatigue, depression, or sleep scores. Exploratory analyses indicated that intrusive thoughts 1 month after radiotherapy were significantly positively correlated with benefit finding 3 months after radiotherapy (r = .36, p = .011).

CONCLUSION: Our results indicated that the yoga program was associated with statistically and clinically significant improvements in aspects of QOL.

NUTRITION

Boffetta, P, E. Couto, J. Wichmann, et al.

Fruit and Vegetable Intake and overall Cancer Risk in the European Prospective Investigation into Cancer and Nutrition (EPIC).

J Natl Cancer Inst. 2010 21 Apr; 1028: 529-537.

BACKGROUND: It is widely believed that cancer can be prevented by high intake of fruits and vegetables. However, inconsistent results from many studies have not been able to conclusively establish an inverse association between fruit and vegetable intake and overall cancer risk. **METHODS:** We conducted a prospective analysis of the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort to assess relationships between intake of total fruits, total vegetables, and total fruits and vegetables combined and cancer risk during 1992-2000. Detailed information on the dietary habit and lifestyle variables of the cohort was obtained. Cancer incidence and mortality data were ascertained, and hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated using multivariable Cox regression models. Analyses were also conducted for cancers associated with tobacco and alcohol after stratification for tobacco smoking and alcohol drinking.

RESULTS: Of the initial 142 605 men and 335 873 women included in the study, 9604 men and 21 000 women were identified with cancer after a median follow-up of 8.7 years. The crude cancer incidence rates were 7.9 per 1000 person-years in men and 7.1 per 1000 person-years in women. Associations between reduced cancer risk and increased intake of total fruits and vegetables combined and total vegetables for the entire cohort were similar (200 g/d increased intake of fruits and vegetables combined, HR = 0.97, 95% CI = 0.96 to 0.99; 100 g/d increased intake of total vegetables, HR = 0.98, 95% CI = 0.97 to 0.99); intake of

fruits showed a weaker inverse association (100 g/d increased intake of total fruits, HR = 0.99, 95% CI = 0.98 to 1.00). The reduced risk of cancer associated with high vegetable intake was restricted to women (HR = 0.98, 95% CI = 0.97 to 0.99). Stratification by alcohol intake suggested a stronger reduction in risk in heavy drinkers and was confined to cancers caused by smoking and alcohol.

CONCLUSION: A very small inverse association between intake of total fruits and vegetables and cancer risk was observed in this study. Given the small magnitude of the observed associations, caution should be applied in their interpretation.

COLORECTAL CANCER

Cross, AJ, L. M. Ferrucci, A. Risch, et al.

A Large Prospective Study of Meat Consumption and Colorectal Cancer Risk: An Investigation of Potential Mechanisms Underlying this Association.

Cancer Res. 2010 Mar 15; 706: 2406-2414.

BACKGROUND: Although the relation between red and processed meat intake and colorectal cancer has been reported in several epidemiologic studies, very few investigated the potential mechanisms. **METHODS:** This study examined multiple potential mechanisms in a large U.S. prospective cohort with a detailed questionnaire on meat type and meat cooking methods linked to databases for estimating intake of mutagens formed in meats cooked at high temperatures (heterocyclic amines, polycyclic aromatic hydrocarbons), heme iron, nitrate, and nitrite.

RESULTS: During 7 years of follow-up, 2,719 colorectal cancer cases were ascertained from a cohort of 300,948 men and women. The hazard ratios (HR) and 95% confidence intervals (95% CI) comparing the fifth to the first quintile for both red (HR, 1.24; 95% CI, 1.09-1.42; P(trend) < 0.001) and processed meat (HR, 1.16; 95% CI, 1.01-1.32; P(trend) = 0.017) intakes indicated an elevated risk for colorectal cancer. The potential mechanisms for this relation include heme iron (HR, 1.13; 95% CI, 0.99-1.29; P(trend) = 0.022), nitrate from processed meats (HR, 1.16; 95% CI, 1.02-1.32; P(trend) = 0.001), and heterocyclic amine intake [HR, 1.19; 95% CI, 1.05-1.34; P(trend) < 0.001 for 2-amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx) and HR, 1.17; 95% CI, 1.05-1.29; P(trend) <0.001 for 2-amino-3,4,8-trimethylimidazo[4,5-f]quinoxaline (DiMeIQx)]. In general, the elevated risks were higher for rectal cancer than for colon cancer, with the exception of MeIQx and DiMeIQx, which were only associated with colon cancer.

CONCLUSION: In conclusion, we found a positive association for red and processed meat intake and colorectal cancer; heme iron, nitrate/nitrite, and heterocyclic amines from meat may explain these associations.

GYNECOLOGICAL CANCERS

Lahmann, PH, A. E. Cust, C. M. Friedenreich, et al.

Anthropometric Measures and Epithelial Ovarian Cancer Risk in the European Prospective Investigation into Cancer and Nutrition.

International journal of cancer/Journal international du cancer. 2010 15 May; 12610: 2404-2415.

BACKGROUND: We examined the associations of measured anthropometric factors, including general and central adiposity and height, with ovarian cancer risk. **METHODS:** We also investigated these associations by menopausal status and for specific histological subtypes.

RESULTS: Among 226,798 women in the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort, there were 611 incident cases of primary, malignant, epithelial ovarian cancer diagnosed

during a mean 8.9 years of follow-up. Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs), adjusted for potential confounders. Compared to women with body mass index (BMI) or = 30 kg/m2) was associated with excess ovarian cancer risk for all women combined (HR = 1.33, 95% CI = 1.05-1.68; p(trend) = 0.02) and postmenopausal women (HR = 1.59, 95% CI = 1.20-2.10; p(trend) = 0.001), but the association was weaker for premenopausal women (HR = 1.16, 95% CI = 0.65-2.06; p(trend) = 0.65). Neither height or weight gain, nor BMI-adjusted measures of fat distribution assessed by waist circumference, waist-hip ratio (WHR) or hip circumference were associated with overall risk. WHR was related to increased risk of mucinous tumors (BMI-adjusted HR per 0.05 unit increment = 1.17, 95% CI = 1.00-1.38). For all women combined, no other significant associations with risk were observed for specific histological subtypes.

CONCLUSION: This large, prospective study provides evidence that obesity is an important modifiable risk factor for epithelial ovarian cancer, particularly among postmenopausal women.

Xu, M, P. X. Deng, C. Qi, et al.

Adjuvant Phytotherapy in the Treatment of Cervical Cancer: A Systematic Review and Meta-Analysis

Journal of Alternative & Complementary Medicine. 2009 Dec; 1512: 1347-1353.

OBJECTIVE: Clinical trials have investigated phytotherapy (PT) in the treatment of cervical cancer. This study aimed to assess the quality and data of current available trials, to compare the efficacy and safety of conventional therapies (CT) including surgical therapy, radiotherapy, and chemotherapy with that of CT plus PT (CT-PT), and to identify herbs used commonly in clinical trials. **METHODS:** Forty-three (43) electronic databases were searched. The quality of eligible trials was assessed by Jadad's scale, and Revman 5.0 software was used for data syntheses and analyses.

RESULT: (1) Of the 48 potential trials retrieved, 18 trials involving 1657 patients met the inclusion criteria, and two trials were graded as high-quality trials; (2) CT-PT achieved a higher 1-year survival rate (SR, p = 0.0002) and tumor remission rate (TRR, p < 0.0001) than CT alone; (3) PT showed therapeutic effects comparable to those of Western medications in diminishing vesical complications (VC, p < 0.0001) and rectal complications (RC, p = 0.08) caused by CT; (4) top 15 herbs used frequently to improve SR or TRR and to treat VC or RC in the retrieved trials were identified.

CONCLUSION: Adjuvant PT may improve the efficacy and safety of CT in clinical treatments of cervical cancer, although this result needs to be further verified by more high-quality trials.

LUNG CANCER

Tian, JH, L. S. Liu, Z. M. Shi, Z. Y. Zhou and L. Wang.

A Randomized Controlled Pilot Trial of "Feiji Recipe" on Quality of Life of Non-Small Cell Lung Cancer Patients.

Am J Chin Med. 2010 381: 15-25.

BACKGROUND: In order to pilot a study observing the feasibility of applying the Core Quality of Life Questionnaire (QLQ-C30) version 2.0 to assess the quality of life (QOL) of patients with NSCLC treated with Feiji Recipe, a randomized, parallel controlled clinical trial was conducted in the university-affiliated hospital. **METHODS**: Seventy inpatients who met the inclusion criteria were randomized into the study, and 60 cases were available as subjects for QOL data analysis. The subjects were randomly assigned to one of three groups: the Feiji Recipe group (A); the Feiji Recipe combined with chemotherapy group (B); and the chemotherapy group (C) in which the patients were treated with vinorelbine plus cisplatin (NP) or gemcitabine plus cisplatin (GP). QOL was assessed with the Chinese version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30.

RESULTS: Sixty cases that finished the questionnaires were analyzed, and we found that patients who received chemotherapy had low QOL, in terms of their global health, role, emotional, social, economic status and symptom burden including fatigue, nausea and vomiting, dyspnea, loss of appetite and abnormal bowel movements. Simultaneous treatment with Feiji Recipe and chemotherapy was able to prevent the worsening of function in terms of role, social, fatigue and global health.

CONCLUSION: The Core Quality of Life Questionnaire (QLQ-C30) version 2.0 can be used to evaluate the QOL of patients with NSCLC treated by Chinese herbal medicine. Feiji Recipe might partially improve the QOL of NSCLC patients when administered alone or in combination with chemotherapy. No unexpected side effects were observed. However, further double-blinded placebo controlled studies are strongly recommended.

Lam, TK, M. Rotunno, J. H. Lubin, et al.

Dietary Quercetin, Quercetin-Gene Interaction, Metabolic Gene Expression in Lung Tissue and Lung Cancer Risk.

Carcinogenesis. 2010 Apr; 314: 634-642.

BACKGROUND: Epidemiological and mechanistic evidence on the association of quercetin-rich food intake with lung cancer risk and carcinogenesis are inconclusive. **METHODS:** We investigated the role of dietary quercetin and the interaction between quercetin and P450 and glutathione S-transferase (GST) polymorphisms on lung cancer risk in 1822 incident lung cancer cases and 1991 frequency-matched controls from the Environment And Genetics in Lung cancer Etiology study. In non-tumor lung tissue from 38 adenocarcinoma patients, we assessed the correlation between quercetin intake and messenger RNA expression of the same P450 and GST metabolic genes.

RESULTS: Multivariate odds ratios (ORs) and 95% confidence intervals (CIs) for sex-specific quintiles of intake were calculated using unconditional logistic regression adjusting for putative risk factors. Frequent intake of quercetin-rich foods was inversely associated with lung cancer risk (OR = 0.49; 95% CI: 0.37-0.67; P-trend 20 cigarettes per day (OR = 0.35; 95% CI: 0.19-0.66; P-trend = 0.003). Based on a two-sample t-test, we compared gene expression and high versus low consumption of quercetin-rich foods and observed an overall upregulation of GSTM1, GSTM2, GSTT2, and GSTP1 as well as a downregulation of specific P450 genes (P-values < 0.05, adjusted for age and smoking status).

CONCLUSION: In conclusion, we observed an inverse association of quercetin-rich food with lung cancer risk and identified a possible mechanism of quercetin-related changes in the expression of genes involved in the metabolism of tobacco carcinogens in humans. Our findings suggest an interplay between quercetin intake, tobacco smoking, and lung cancer risk. Further research on this relationship is warranted.