



## RESEARCH UPDATES JANUARY 2013

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### FOR THE LATEST IN WORLDWIDE INTEGRATIVE CANCER CARE

**IN THIS ISSUE:** Jacot and colleagues reported that breast cancer patients treated with chemotherapy were found to be deficient in vitamin D, with corresponding changes in the regulatory mechanisms of bone homeostasis. Flynn and Reinert found that a diet enriched with olive oil (rather than a low-fat diet) was better for weight loss in breast cancer survivors. Hwang and colleagues concluded that patients with lung cancer can benefit from exercise training. Fujiki and colleagues found that green tea may reduce the risk of colorectal cancer and its recurrence. Adler and Hansen found that cancer patients can be taught safe acupuncture to reduce the severity of chemotherapy-induced nausea. Wong et al. reported that an acupuncture-like treatment may be helpful for radiation-induced xerostomia (dry mouth) in patients with head and neck cancer. Zaenker et al. found that mistletoe improved the quality of life and metastases-free survival of colorectal cancer patients. In our study of the month, Proctor et al. confirmed the findings of existing literature - that the Glasgow Prognostic Score has value in routine assessment of cancer patients, regardless of tumour site.

## BREAST CANCER

Jacot, W, S. Pouderoux, S. Thezenas, et al.

### Increased Prevalence of Vitamin D Insufficiency in Patients with Breast Cancer After Neoadjuvant Chemotherapy.

*Breast Cancer Res Treat.* 2012 July 2012; 134(2): 709-717.

**BACKGROUND:** Patients with locally advanced breast cancer treated with neoadjuvant chemotherapy are at risk of cancer treatment-induced bone loss and consequently of increased skeletal morbidity. In addition, this situation could be worsened by the fact that only a minority of patients with breast cancer have sufficient vitamin D. A comprehensive evaluation of bone homeostasis is critical in this context. **METHODS:** We retrospectively evaluated the serum levels of calcium, vitamin D, TRAIL, RANK ligand (RANKL), Osteoprotegerin (OPG), Bone TRAP, CrossLaps and DKK1 in 77 patients (median age: 50 years; range 25-74), with locally advanced breast cancer treated in our institute with anthracyclines-taxane neoadjuvant chemotherapy (7 cycles of 21 days/each) between March 2007 and August 2008. Serum samples were collected before the first (baseline) and the last treatment cycle. Variations and correlations between biomarker levels were evaluated. **RESULTS:** At baseline, 79.5 % of patients had vitamin D insufficiency (<30 ng/ml), increasing to 97.4 % at the end of the neoadjuvant chemotherapy (p < 0.0001). Calcium and RANKL serum concentrations were also significantly decreased, while OPG was significantly increased, resulting in lower RANKL/OPG ratio. Calcium and vitamin D, RANKL and vitamin D and RANKL and OPG levels were significantly correlated (Spearman's coefficient r = 0.2721, p = 0.0006; r = 0.1916, p = 0.002; and r = -0.179, p = 0.03, respectively). **CONCLUSIONS:** Nearly all included patients suffered from vitamin D insufficiency by the end of the neoadjuvant chemotherapy with changes in the calcium/RANKL/OPG axis that are evocative of deregulation of a functional regulatory mechanism. Further studies are needed to determine how drugs modulate this regulatory mechanism to preserve bone homeostasis in patients with breast cancer.

**INSPIREHEALTH'S INTERPRETATION:** Vitamin D supplementation might help prevent changes in the regulatory mechanism of bone homeostasis caused by chemotherapy.

Flynn, MM and S. E. Reinert.

### Comparing an Olive Oil-Enriched Diet to a Standard Lower-Fat Diet for Weight Loss in Breast Cancer Survivors: A Pilot Study.

*Journal of Women's Health.* 2010 Jun; 19(6): 1155-1161.

**BACKGROUND:** Traditional diets that include moderate to high intakes of extra virgin olive oil have been related to a

decrease in breast cancer risk. We hypothesized that an olive oil-enriched diet would lead to greater weight loss and acceptance, compared with a standard diet, in women previously diagnosed with invasive breast cancer. **METHODS:** Participants consumed a National Cancer Institute (NCI) diet (total fat > 15% and < 30%) and a plant-based olive oil diet (PBOO; > or = 3 tablespoons of olive oil/day) for 8 weeks, each with random assignment to the order. We established a weight loss goal of at least 5% of baseline weight. After completion of the two diet trials, each participant self-selected one of the diets for an additional 6 months of follow-up for weight management. Body measures were done before and after each diet and after follow-up; fasting blood samples were collected after each diet and after follow-up. **RESULTS:** Forty-four overweight women started and 28 completed the 44-week protocol. Twelve (80%) of the 15 women who started with the PBOO diet achieved a weight loss of > or = 5% compared to 4 (31%) of the 13 who started with the NCI diet ( $p < 0.01$ ). Nineteen of the 22 women eligible for follow-up chose the PBOO diet, and all completed the study. Of the 3 women who chose the NCI diet for follow-up, 1 completed the study. The PBOO diet resulted in lower triglycerides (NCI 105 +/- 46 mg/dL, PBOO 96 +/- 37 mg/dL,  $p = 0.06$ ) and higher high-density lipoprotein cholesterol (HDL-C) (NCI 64 +/- 13 mg/dL, PBOO 68 +/- 12 mg/dL,  $p = 0.001$ ). **CONCLUSIONS:** An olive oil-enriched diet brought about greater weight loss than a lower-fat diet in an 8-week comparison. Moreover, these women chose, overwhelmingly, the olive oil-enriched diet for 6 months of follow-up. An olive oil-enriched diet may be more efficacious for weight loss in breast cancer survivors than a standard lower-fat diet.

**INSPIREHEALTH'S INTERPRETATION:** An olive oil-enriched diet may be more helpful for weight loss than a low-fat diet for breast cancer survivors.

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**E-VERSION EXTRA** Fedirko, V, G. Torres-Mejia, C. Ortega-Olvera, et al.

### Serum 25-Hydroxyvitamin D and Risk of Breast Cancer: Results of a Large Population-Based Case-Control Study in Mexican Women.

*Cancer Causes Control.* 2012 Jul; 237: 1149-1162.

**PURPOSE:** Epidemiologic studies have suggested that higher levels of circulating vitamin D may reduce breast cancer risk, but no studies have investigated this association among women in developing countries, and very few studies have further investigated this association according to menopausal status. **METHODS:** A population-based case-control study in Mexico with 1,000 incident breast cancer cases aged 35-69 years, enrolled shortly after diagnosis (0-6 days) and frequency-matched to 1,074 controls on age, region, and health care system, was used to assess the association between serum 25-hydroxyvitamin D [25(OH)D] levels with overall, pre- and postmenopausal breast cancer risk. 25(OH)D concentration was measured on a random sub-sample of women (573 cases and 639 matched controls) using a liquid chromatography/tandem mass spectrometry method. Odds ratios (ORs) and 95 % confidence intervals (CIs) were estimated from multivariable conditional logistic regression models. **RESULTS:** Serum 25(OH)D concentration (per 10 ng/mL increase) showed a strong inverse association with risk of breast cancer among all ( $p(\text{trend}) = 0.001$ ), pre- ( $p(\text{trend}) = 0.006$ ) and postmenopausal women ( $p(\text{trend}) = 0.0001$ ). Compared with a predefined lower concentration of 25(OH)D (<20 ng/mL), higher levels (>30 ng/mL) were associated with lower overall (OR = 0.53, 95 % CI: 0.28-1.00;  $p(\text{trend}) = 0.002$ ), pre- (OR = 0.60, 95 % CI: 0.16-2.17;  $p(\text{trend}) = 0.07$ ) and postmenopausal (OR = 0.37, 95 % CI: 0.16-0.82;  $p(\text{trend}) = 0.004$ ) breast cancer risk. **CONCLUSIONS:** The results of this large population-based case-control study indicate an inverse association between circulating vitamin D levels and breast cancer risk among pre- and postmenopausal Mexican women.

**INSPIREHEALTH'S INTERPRETATION:** Vitamin D may help prevent breast cancer.

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## EXERCISE

Hwang, C-, C. -J Yu, J. -Y Shih, et al.

### Effects of Exercise Training on Exercise Capacity in Patients with Non-Small Cell Lung Cancer Receiving Targeted Therapy.

*Supportive Care in Cancer.* 2012 December 2012; 2012: 3169-3177.

**PURPOSE:** Peak oxygen consumption (VO(2peak)) is an important predictive factor for long-term prognosis in patients with non-small cell lung cancer (NSCLC). The purpose of this study was to investigate whether 8 weeks of exercise training improves exercise capacity, as assessed by VO(2peak), and other related factors in patients with NSCLC receiving targeted therapy. **METHODS:** A total of 24 participants with adenocarcinoma were randomly assigned to either the control group ( $n = 11$ ) or the exercise group ( $n = 13$ ). Subjects in the exercise group participated in individualized, high-intensity aerobic interval training of exercise. The outcome measures assessed at baseline and after 8 weeks were as follows: VO(2peak) and the percentage of predicted VO(2peak) (%predVO(2peak)), muscle strength and endurance of the right quadriceps, muscle oxygenation during exercise, insulin resistance as calculated by the homeostasis model, high-sensitivity C-reactive protein, and quality of life (QoL) questionnaire inventory. **RESULTS:** No exercise-related adverse events were reported. After exercise training, VO(2peak) and %predVO(2peak) increased by 1.6 mL kg(-1) min(-1) and 5.3% ( $p < 0.005$ ), respectively; these changes were associated with improvements in circulatory, respiratory, and muscular functions at peak exercise (all  $p = 0.001$ ). The exercise group also had less dyspnea ( $p = 0.01$ ) and favorably lower fatigue ( $p = 0.05$ ) than baseline. **CONCLUSIONS:** Patients with NSCLC receiving targeted therapy have quite a low exercise

capacity, even with a relatively high QoL. Exercise training appears to improve exercise capacity and alleviate some cancer-related symptoms.

**INSPIREHEALTH'S INTERPRETATION:** Exercise training can safely improve exercise capacity and alleviate fatigue and shortness of breath in non-small cell lung cancer patients.

### Interest in Cancer Survivorship is Growing Around the World

Growing interest in cancer survivorship has been noted in (1) the United Kingdom; (2) in the medical community; (3) the US business community; and (4) in Canada, where several initiatives have been started.

1) In the United Kingdom, the national healthcare system created the *National Cancer Survivorship Initiative* (NCSI) to ensure that "those living with and beyond cancer receive the care and support they need to lead a healthy and active life as much as possible, for as long as possible."<sup>1</sup> NCSI addresses 'unmet needs' of cancer survivors including medical, psychological, social, spiritual, and informational needs.

2) In October, the *Journal of Clinical Oncology* dedicated an entire special edition to cancer survivorship, including an article entitled, "Lifestyle Factors in Cancer Survivorship."

3) The business community is starting to understand the importance of expanding options and choices for cancer patients. On August 27, 2012, *The Wall Street Journal* published an article entitled 'To Treat the Cancer, Treat the Distress.' One statement read, "There is a new national push to screen and treat cancer patients for distress - emotional and psychological trauma that interferes with the ability to cope with cancer treatment, but is often overlooked by doctors." The article goes on to state "Pressure to improve supportive care for cancer patients has been mounting since 2007, when the Institute of Medicine, which advises the federal government on health-care issues, warned in a report that cancer care often fails to address patients' psychological and social problems."

4) In October, InspireHealth submitted an Expression of Interest for Prostate Cancer Canada's "A Survivorship Action Partnership". Their mandate is to bring together experts to develop and implement solutions in key survivorship areas to help improve the lives of prostate cancer survivors, their partners, caregivers and family members.

InspireHealth is eager to broaden awareness of the concepts of integrative cancer care and survivorship. Recently, members of InspireHealth met with board members of the Prostate Cancer Foundation, British Columbia, to update them on our programs. InspireHealth CEO, Dr. Hal Gunn, will make a presentation at their Support Group Workshop in May of 2013. As well, on October 24th, members of the InspireHealth team met with the head of programming for *November International*.

**From Survivorship to Thrivership** - In addition to the accepted term survivorship, InspireHealth added the more optimistic term *thrivership* to their vocabulary, recognizing that patients with a cancer diagnosis want to not only survive, but thrive.

InspireHealth's programs inform, support and encourage healthy lifestyle changes that aim to enhance quality of life, reduce the risk of cancer recurrence and improve survival. InspireHealth believes that the greatest opportunity for patients to achieve positive results is integrating lifestyle support at the time of diagnosis rather than after conventional treatment has ended. InspireHealth's integrative approach honours the value of standard cancer treatment while recognizing the importance of individual choices that support health at the level of mind, body and spirit.

<sup>1</sup> From <http://www.ncsi.org.uk/>

## GREEN TEA

Fujiki, H, K. Imai, K. Nakachi, et al.

### Challenging the Effectiveness of Green Tea in Primary and Tertiary Cancer Prevention.

*Journal of Cancer Research & Clinical Oncology*. 2012 Aug; 1388: 1259-1270.

**PURPOSE:** Drinking green tea daily is part of Japanese culture, and various studies have revealed that green tea is a cancer preventive. We here review our progress in cancer prevention with green tea on 12 main topics, from basic to clinical level. **TOPICS AND METHODS:** Biochemical and biological studies of green tea catechins, a prospective cohort study, preclinical safety trials with tablets of green tea extract, double-blind randomized clinical phase II prevention trial for recurrence of colorectal adenomas, and synergistically enhanced inhibition by the combination of green tea catechins and anticancer drugs. All results were significant, including human studies with informed consent. **RESULTS:** Drinking 10 Japanese-size cups of green tea per day delayed the cancer onset of humans 7 years for females. For tertiary cancer prevention, consuming 10 cups of green tea per day fortified by green tea tablets, 50 %, significantly prevented the recurrence of colorectal adenomas. A minimum effective amount of green tea catechins for cancer prevention was found in humans. In addition, the combination of green tea catechins and anticancer drugs engendered a new cancer therapeutic strategy. **CONCLUSION:** The consumption of 10 Japanese-size cups of green tea per day is a significant factor in primary cancer prevention for the general population, and the preventive effect on recurrence of colorectal adenomas in patients is vital evidence in tertiary cancer prevention.

**INSPIREHEALTH'S INTERPRETATION:** Drinking 10 Japanese-size cups of green tea may help reduce the risk of colorectal cancer.

**E-VERSION EXTRA** Wang, J, W. Zhang, L. Sun, et al.

### **Green Tea Drinking and Risk of Pancreatic Cancer: A Large-Scale, Population-Based Case-Control Study in Urban Shanghai.**

*Cancer Epidemiology.* 2012 December 2012; 366: e354-e358.

**BACKGROUND:** Little is known about the etiology of pancreatic cancer. Epidemiological studies on tea consumption and pancreatic cancer risk have been inconclusive. The purpose of the present study was to investigate the association between green tea drinking and the risk of pancreatic cancer in urban Shanghai, China. **METHODS:** In this population-based case-control study conducted in urban Shanghai, 908 cases of pancreatic cancer and 1067 healthy controls were recruited. Information on tea drinking, including type of tea, amount of tea consumption, temperature of tea, and the duration of regular tea drinking, were collected via interview questionnaire. **RESULTS:** We examined the association of multiple tea drinking habits with the risk of pancreatic cancer. In women, regular green tea drinking was associated with 32% reduction of pancreatic cancer risk (OR 0.68, 95% CI 0.48-0.96), compared to those who did not drink tea regularly. Increased consumption and longer duration of tea drinking were both associated with reduced pancreatic cancer risk in women. Among regular tea drinkers, lower temperature of tea was associated with reduced risk of pancreatic cancer in both men and women, independent of amount or duration of tea drinking. **CONCLUSIONS:** Habits of green tea drinking, including regular drinking, amount of consumption, persistence of the habit, and tea temperature, may lower pancreatic cancer risk.

**INSPIREHEALTH'S INTERPRETATION:** Green tea may help reduce the risk of pancreatic cancer.

## **ACUPUNCTURE**

Adler, Z and P. Hansen.

### **Self Administered Acupuncture for Treatment of Chemotherapy Associated Nausea: A Pilot Study.**

*BMC Complementary and Alternative Medicine.* 2012 Research Congress on Integrative Medicine and Health; Conferencernatona.

**PURPOSE:** Acupuncture has gained popularity since the National Institutes of Health 1997 Consensus Statement concluded that acupuncture is an effective anti-emetic for adult postoperative and chemotherapy-induced nausea and vomiting. The most commonly used acupuncture point to control nausea and vomiting is the Pericardium 6 (P6), or Neiguan point. Some evidence suggests that the anti-emetic effects of P6 stimulation by acupuncture on chemotherapy-induced nausea and vomiting may last about eight hours. Most patients do not have access to a trained acupuncturist at such intervals. The purpose of this pilot study was to learn whether: 1) patients can be taught safe self-administration of acupuncture at P6 during cycles of their chemotherapy regimen and 2) self administered acupuncture reduces the severity of chemotherapy associated nausea and reduces use of anti-nausea medications. **METHODS:** Twenty patients with chemotherapy associated nausea were recruited from Huntsman Cancer Hospital. Patients were randomized to groups A or B for a crossover trial. Patients were taught how to self-administer acupuncture at the P6 site. Acupuncture was self-administered a minimum of one and a maximum of three times per day during the first week of chemotherapy cycle #1 for group A and chemotherapy cycle #2 for group B. Acupuncture was used in conjunction with ongoing standard care. Both groups maintained daily logs documenting nausea on a scale of 1-10, emesis, medications used and time of acupuncture administration. **RESULTS:** 16 out of 20 patients successfully completed their daily logs. There was a small but statistically significant reduction in nausea severity during the acupuncture treatment cycle compared to control cycle. There was not a statistically significant reduction in episodes of emesis. There were no adverse events. **CONCLUSION:** Cancer patients can be safely taught self administration of acupuncture at P6 in order to reduce the severity of chemotherapy associated nausea.

**INSPIREHEALTH'S INTERPRETATION:** Safe, self-administered acupuncture taught to cancer patients can help reduce the severity of chemotherapy-induced nausea.

Wong, RK, J. L. James, S. Sagar, et al.

### **Phase 2 Results from Radiation Therapy Oncology Group Study 0537: A Phase 2/3 Study Comparing Acupuncture-Like Transcutaneous Electrical Nerve Stimulation Versus Pilocarpine in Treating Early Radiation-Induced Xerostomia.**

*Cancer.* 2012 Sep 1; 11817: 4244-4252.

**BACKGROUND:** In this phase 2 component of a multi-institutional, phase 2/3, randomized trial, the authors assessed the feasibility and preliminary efficacy of acupuncture-like transcutaneous electrical nerve stimulation (ALTENS) in reducing radiation-induced xerostomia. **METHODS:** Patients with cancer of the head and neck who were 3 to 24 months from completing radiotherapy with or without chemotherapy (RT ± C) and who were experiencing xerostomia symptoms with basal whole saliva production  $\geq 0.1$  mL per minute and were without recurrence were eligible. Patients received twice weekly ALTENS sessions (24 sessions over 12 weeks) using a proprietary electrical stimulation unit. The primary study

objective was to assess the feasibility of ALTENS treatment. Patients were considered compliant if 19 of 24 ALTENS sessions were delivered, and the targeted compliance rate was 85%. Secondary objectives measured treatment-related toxicities and the effect of ALTENS on overall radiation-induced xerostomia burden using the University of Michigan Xerostomia-Related Quality of Life Scale (XeQOLS). **RESULTS:** Of 48 accrued patients, 47 were evaluable. The median age was 60 years, 84% of patients were men, 70% completed RT  $\pm$  C for >12 months, and 21% had previously received pilocarpine. Thirty-four patients completed all 24 ALTENS sessions, 9 patients completed 20 to 23 sessions, and 1 patient completed 19 sessions, representing a 94% total compliance rate. Six-month XeQOLS scores were available for 35 patients and indicated that 30 patients (86%) achieved a positive treatment response with a mean  $\pm$  standard deviation reduction of 35.9%  $\pm$  36.1%. Five patients developed grade 1 or 2 gastrointestinal toxicity, and 1 had a grade 1 pain event. **CONCLUSIONS:** The current results indicated that ALTENS treatment for radiation-induced xerostomia can be delivered uniformly in a cooperative, multicenter setting and produces possible beneficial treatment response. Given these results, the phase 3 component of this study was initiated.

**INSPIREHEALTH'S INTERPRETATION:** Acupuncture-like transcutaneous electrical nerve stimulation (ALTENS) may help prevent radiation-induced dry mouth in head and neck cancer patients.

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## MISTLETOE

Zaenker, KS, H. Matthes, P. R. Bock et al.

### A Specific Mistletoe Preparation (Iscador-Qu) in Colorectal Cancer (CRC) Patients: More than just Supportive Care?

*Journal of Cancer Science and Therapy.* 2012 2012; 49: 264-270.

**RATIONALE:** In 2009 we reported the results of a pharmaco-epidemiological, retrospective observational cohort study in colorectal carcinoma (CRC) patients UICC stage I-III, receiving chemo- and/or radiotherapy together with European *Viscum album L.* ("Viscum") extract (Iscador) as supportive care (n = 429) versus the conventional treatment (n = 375) after R0 resection (*J. Soc. Int. Oncol.* 7: 173-145). The endpoints have been therapy induced adverse effects, disease symptoms and disease-free survival (DSF). **OBJECTIVE:** Here, we present the secondary and confirmatory analysis of this original data set with respect to the host tree specificity of *Viscum*. **RESULTS:** Patients receiving the extract from *Viscum* harvested from oak (*Quercus*) trees, Iscador Qu (Isc- Qu), in a supportive care mode simultaneously with chemo- and/or radiotherapy (n = 106) showed a significant improvement in therapy induced adverse effects, and, most remarkable, a significant delay of metastasis formation and longer DFS compared to conventionally treated patients (n = 212) (control). To make the analysis more robust, patients treated by the chemo- and/or radiotherapy protocols were also analyzed and stratified for the UICC I-III stages. Accordingly to the overall Kaplan-Meier analysis result, patients receiving Isc-Qu as supportive care presented significantly longer median time to distant metastases formation (metastasis-free survival, MFS) within the course of the observational cohort study (133+ months (Isc-Qu) versus 94 months (control), p (Log Rank) = 0.002. In the Cox regression analysis, the confounder-adjusted hazard ratio, HR, (95% confidence interval) came up to HR (metastasis) = 0.31 (0.13-0.711), p = 0.006. This result indicates an estimated 69% metastasis-hazard reduction in the Isc-Qu group relative to the controls. In summary, patients concomitantly treated by Iscador showed fewer persisting disease- and therapy-induced symptoms and the DSF hazard ratio suggested a survival benefit. **CLINICAL IMPLICATION:** This secondary and confirmatory analysis of the original data set suggests that a mistletoe (*Viscum*) preparation, harvested from oak (*Quercus*) trees (Isc-Qu), appears to be a naturally tailored molecular composition to target CRC patients by reducing therapy-related adverse effects, improving the cancer-related symptoms and showing a potential to increasing the metastases-free survival. **LIMITATIONS:** The effect on prolonged survival should be interpreted with some caution because the applied study design shares some potential risk for bias common to all non-randomized observational studies. Also, potential biases were tried to minimize by systematic multivariable adjusting of end point criteria for baseline imbalance, treatment regimen, and other potential confounders.

**INSPIREHEALTH'S INTERPRETATION:** Mistletoe may improve the quality of life and metastases-free survival outcome of colorectal cancer patients.

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**E-VERSION EXTRA** Kim, K-, J. -H Yook, J. Eisenbraun, et al.

### Quality of Life, Immunomodulation and Safety of Adjuvant Mistletoe Treatment in Patients with Gastric Carcinoma - a Randomized, Controlled Pilot Study.

*BMC Complementary and Alternative Medicine.* 2012 03 Oct 2012; 12:172.

**BACKGROUND:** Mistletoe (*Viscum album L.*) extracts are widely used in complementary cancer therapy. Aim of this study was to evaluate safety and efficacy of a standardized mistletoe extract (abnobaVISCUM® *Quercus*, aVQ) in patients with gastric cancer. **PATIENTS AND METHODS:** 32 operated gastric cancer patients (stage Ib or II) who were waiting for oral chemotherapy with the 5-FU prodrug doxifluridine were randomized 1:1 to receive additional therapy with aVQ or no additional therapy. aVQ was injected subcutaneously three times per week from postoperative day 7 to week 24 in increasing doses. EORTC QLQ-C30 and -STO22 Quality of Life questionnaire, differential blood count, liver function tests, various cytokine levels (tumor necrosis factor (TNF)-alpha, interleukin (IL)-2), CD 16+/CD56+ and CD 19+ lymphocytes

were analyzed at baseline and 8, 16 and 24 weeks later. **RESULTS:** Global health status ( $p < 0.01$ ), leukocyte- and eosinophil counts ( $p \leq 0.01$ ) increased significantly in the treatment group compared to the control group. Diarrhea was less frequently reported (7% vs. 50%,  $p=0.014$ ) in the intervention group. There was no significant treatment effect on levels of TNF-alpha, IL-2, CD16+/CD56+ and CD 19+ lymphocytes and liver function tests measured by ANOVA. **CONCLUSION:** Additional treatment with aVQ is safe and was associated with improved QoL of gastric cancer patients. ClinicalTrials.gov Registration number NCT01401075.

**INSPIREHEALTH'S INTERPRETATION:** Mistletoe can improve the quality of life of gastric cancer patients.

## STUDY OF THE MONTH

Proctor, MJ, D. S. Morrison, D. Talwar, et al.

### Vitamin D Status at Breast Cancer Diagnosis: Correlation with Tumor Characteristics, Disease Outcome, and Genetic Determinants of Vitamin D Insufficiency.

*Carcinogenesis*. 2012 July 2012; 337: 1319-1326.

**INTRODUCTION:** Components of the systemic inflammatory response, combined to form inflammation-based prognostic scores (modified Glasgow Prognostic Score (mGPS), Neutrophil Lymphocyte Ratio (NLR), Platelet Lymphocyte Ratio (PLR), Prognostic Index (PI), Prognostic Nutritional Index (PNI)) have been associated with cancer specific survival. The aim of the present study was to compare the prognostic value of these scores. **METHODS:** Patients ( $n=27,031$ ) who had an incidental blood sample taken between 2000 and 2007 for C-reactive protein, albumin, white cell, neutrophil, lymphocyte and platelet counts, as well as a diagnosis of cancer (Scottish Cancer Registry) were identified. Of this group 8759 patients who had been sampled within two years following their cancer diagnosis were studied. **RESULTS:** On follow up, there were 5163 deaths of which 4417 (86%) were cancer deaths. The median time from blood sampling to diagnosis was 1.7 months. An elevated mGPS, NLR, PLR, PI and PNI were predictive of a reduced cancer specific survival independent of age, sex and deprivation and tumour site (all  $p < 0.001$ ). The area under the receiver operator curves was greatest for mGPS and PI. Specifically, in colorectal cancer, an elevated mGPS and PI were predictive of a reduced cancer specific survival independent of age, sex, deprivation and tumour stage (both  $p < 0.001$ ). **CONCLUSION:** The results of the present study show that systemic inflammation-based scores, in particular the mGPS and PI, have prognostic value in cancer independent of tumour site. Based on the present results and the existing validation literature, the mGPS should be included in the routine assessment of all patients with cancer.

**INSPIREHEALTH'S INTERPRETATION:** Systemic inflammation has an impact on cancer survival and the inflammation-based modified Glasgow Prognostic Score has value in routine assessment of patients, independent of the tumour site.

In the introduction to the **June Research Updates**, the statement, "Pettersson et al. found that dairy intake (with the exception of whole milk) after a prostate cancer diagnosis was associated with an increased risk of death," should read, "Pettersson et al. found that dairy intake (with the exception of whole milk) after a prostate cancer diagnosis was not associated with an increased risk of death."

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**InspireHealth** provides patients with the knowledge, tools, and services to support their overall health during and after cancer treatment. Our medical doctors value conventional cancer treatments such as chemotherapy, radiation, and surgery. At the same time, they recognize the importance of supporting health, immune function, body, mind, and spirit.

InspireHealth's programs are supported by current research and can be safely integrated with patient's conventional treatments.

InspireHealth's *Research Updates* are compiled by Jan Rennie and Dr. Cletus D'Souza, PhD—with guidance from the editorial board—using InspireHealth's Research Information System, a unique integrative cancer care knowledge management database. The editorial team selects authoritative articles based on their evidence and their relevance to this area of medicine. The editorial board includes: Dr. Hal Gunn, CEO and Co-founder, Dr. Janice Wright, Dr. Teresa Clarke, Dr. Ron Puhky, and Dr. Walter Lemmo, ND. For more information, email [library@inspirehealth.ca](mailto:library@inspirehealth.ca)

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