L4

THE INTERACTION OF RADIATION, THE ATM GENE AND BREAST CANCER. *J Bernstein, L Bernstein, B Langholz, D Thomas, M Stovall, M Capanu, W D Thompson, J Olson, K Malone, C Lynch, H Anton-Culver, R Shore, J Boice, C Begg, A Wolitzer, R Gatti, B Rosenstein, A-L Borrenson-Dale, P Concannon, R Haile (Memorial Sloan-Kettering Cancer Center, New York, NY 10021)

Ionizing radiation is a breast carcinogen. Women with one mutated ATM gene copy experience excess risk of breast cancer, and possibly radiation-induced cancer. The WECARE Study is a population-based case-control study nested within 5 cancer registries in the US and Denmark. Cases (N = 708) are women with bilateral breast cancer and controls (N = 1399) are women with unilateral breast cancer individually matched to cases on birth year, diagnosis year, race and geographic region, and counter-matched on radiation therapy (RT). For all participants, risk factors were assessed by questionnaire, medical records were reviewed, and ATM gene carrier status determined. For women who received RT, radiation exposure was estimated using dosimetry reconstruction. Multi-variable adjusted rate ratios (RR) were calculated using conditional logistic regression adjusted for the counter-matched design. Risk of developing a second primary breast cancer following RT was somewhat elevated among women treated before age 45 who developed a second primary at least 5 years later (RR = 1.4; 95% confidence interval (CI) = 0.9–2.1); risk increased with increasing radiation dose. However, among women who carried a deleterious ATM mutation and received RT, risk of developing a second primary was 4-fold (RR = 4.1; CI = 1.4–12.1) compared to those without RT. Our results suggest that women who carry a mutation in the ATM gene may be more susceptible to radiation-induced breast cancer than non-carriers.

L5

LEAD EXPOSURE AND GLIOMA AMONG RURAL RESIDENTS: THE UPPER MIDWEST HEALTH STUDY. *T Carreon, A M Ruder, M A Waters, M A Butler, M Yeager, R Welch, S Chanock, P A Schulte (National Institute for Occupational Safety and Health, Cincinnati, OH and National Cancer Institute, Gaithersburg, MD)

We evaluated lead exposure, blood lead levels (BLL), and the δ-amino-levulinic acid dehydratase (ALAD) G177C polymorphism as risk factors for primary intracranial gliomas in a population-based case-control study in rural residents of four states with high glioma incidence. Glioma cases were identified from hospitals, private physicians and registries. Controls were stratified samples of licensed drivers and Medicare enrollees. Blood was from 454 controls with no self-reported cancer and from 318 cases, all Caucasian non-Latinos (>97% of blood donors). Blood lead was measured by atomic absorption spectrometry. Genotypes were characterized by the TaqMan methodology. Questionnaires elicited retrospective occupational and environmental lead exposures. Non-farm jobs involving the use of solder containing lead or the use of lead in wiping, joining, or sweating lead pipe increased the risk of glioma (odds ratio [OR] = 1.4, 95% confidence interval [CI], 1.1–1.9). Conversely, no association with glioma was observed for farm activities with potential lead exposure such as painting, using wood strippers, using gasoline for cleaning equipment, or using pesticides containing lead arsenate. These results lend some support for the hypothesis that lead is a brain carcinogen. BLL were not associated with increased risk of glioma (OR = 0.9, CI. 0.8–1.0), but BLL reflect recent exposures, and are not good indicators of lead exposure in studies of diseases with long latency such as cancer. Having one or two copies of the rarer ALAD allele C177 was not associated with glioma (OR = 0.9, CI. 0.6–1.4), consistent with other studies.

L6

PREVALENCE AND RISK FACTORS FOR ANEMIA IN US ELDERLY POPULATION: ANALYSIS OF NHANES 1999–2002. *Y Pan and R Jackson (University of Maryland, College Park, MD 20742)

To examine the prevalence and risk factors for anemia in current US elderly population. The combined four year data from National Health and Nutrition Examination Survey (NHANES) 1999–2002 were used to estimate the prevalence of anemia among 3,569 older Americans aged ≥60 years. Logistic regression analysis was used to determine the risk factors for anemia. Anemia was defined as a hemoglobin level of <13g/dL in men and <12g/dL in women according to the World Health Organization (WHO) criteria. Prevalence of anemia was presented in five age categories: 60–64y, 65–69y, 70–74y, 75–79y, 80–85y stratified by gender and ethnicity, respectively. Prevalence of anemia rises with advancing age. Anemia rate started increasing by age 65, with steeper rise after age 80. Men generally had a higher anemia rate than women of comparable age. Regardless of gender, non-Hispanic blacks have consistently higher prevalence of anemia than non-Hispanic white and Mexican American subjects of comparable age. After adjusting for age, gender, ethnicity and poverty status, anemia was significantly associated with diabetes [Odds Ratio (OR) 2.632; 95% CI 1.231–5.626], having a weak/failing kidney (OR 6.158; 95% CI 1.050–36.129), being overweight and obese (OR 0.289; 95% CI 0.096–0.864 & OR 0.189; 95% CI 0.077–0.464, respectively), mean cell volume (OR 0.841; 95% CI 0.759–0.933) and serum albumin (OR 0.059; 95% CI 0.017–0.208). Early detection and prevention of anemia in elderly should prompt more clinical and public attention, especially in minorities such as blacks. More studies are needed to further explore the advisability of screening older individuals for anemia and effective interventions are needed to control anemia in elderly.

L7

EFFECTIVENESS OF TUBERCULOSIS TREATMENT AND RISK OF DRUG-INDUCED HEPATOTOXICITY IN A POPULATION COHORT IN TAIWAN. *M H Yang, L Y Huang, J Suo, F C Sung (Institutes of Environmental Health, China Medical University, Taichung 404, Taiwan)

The treatment effectiveness of medication for tuberculosis has been inconsistent among populations. This study examined the trend of tuberculosis (TB) prevalence and the rate of drugs-induced hepatotoxicity (DIH) associated with TB medications in Taiwan. A population cohort of 200,000 persons has been established since 1996 based on random selection from the population insured in the National Health Insurance program. The physicians' reimbursement claim data were used to estimate the annual trend of TB prevalence. We identified the risk of DIH development by comparing comorbidity among patients receiving TB medications. We found that the prevalence of TB decreased from 430/100,000 in 1996 to 89/100,000 in 2003. The annual average prevalence rates were higher in men than women to have the disease (172 vs. 126 per 100,000). The risk of developing TB treatment associated DIH was somewhat higher in male patients than in female patients (23.9% vs. 20.5% p = 0.21). Among medications frequently prescribed, patients who had taken pyrazinamide or rifapin appeared to have the highest rate of developing DIH (both 32.0%), followed by those had taken isoniazid (29.6%) and zthambutol (28.4%). Our study suggests that the medication for TB patients is effective in reducing the prevalence of the disease for the study population. However, adequate monitorial strategy should be established to prevent DIH development.

* = Presenter; S = The work was completed while the presenter was a student

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