

Clinical Pathology Selected Abstracts, 8/13

Clinical pathology abstracts editor: Deborah Sesok-Pizzini, MD, MBA, associate professor, Department of Pathology and Laboratory Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, and medical director, Blood Bank and Transfusion Medicine, Children's Hospital of Philadelphia.

Recreational physical activity and leisure time relative to colorectal cancer survival

Some observational studies have reported that physical activity may be associated with reduced breast and colon cancer-specific mortality. However, the association between recreational physical activity and mortality among colorectal cancer survivors is unclear. Therefore, the authors conducted a study in which they examined the association of prediagnosis and postdiagnosis physical activity and leisure time spent sitting with mortality among patients with colorectal cancer. From a cohort of adults without colorectal cancer at baseline in 1992 and 1993, the authors identified 2,293 participants with a diagnosis of invasive, nonmetastatic colorectal cancer up to mid-2007. At baseline, before their cancer diagnosis, and again after their cancer diagnosis, participants completed a questionnaire that included information about recreational physical activity and leisure time spent sitting. Results showed that during a maximum followup of 16.1 years after colorectal cancer diagnosis, 846 patients died, and 379 of those deaths were from colorectal cancer. Patients that engaged in 8.75 or more metabolic equivalent (MET) hours per week of recreational physical activity (150 minutes per week of walking) had a lower all-cause mortality compared with patients that reported fewer than 3.5 MET hours per week (prediagnosis physical activity: relative risk [RR], 0.72; 95 percent confidence interval [CI], 0.58-0.89; postdiagnosis physical activity: RR, 0.58; 95 percent CI, 0.47-0.71). Interestingly, spending six or more hours per day of leisure time sitting compared with less than three hours per day was associated with higher all-cause mortality (prediagnosis sitting time: RR, 1.36; 95 percent CI, 1.10-1.68; postdiagnosis sitting time: RR 1.27; 95 percent CI, 0.99-1.64). The authors asserted that they were the first to show an association between longer leisure time spent sitting and higher risk of mortality among colorectal cancer survivors. They concluded that performing moderate-intensity physical activity per week was associated with a lower risk of all-cause and cardiovascular disease mortality. This study supports public health recommendations for recreational physical activity and less of a sedentary lifestyle among colorectal cancer survivors.

Campbell PT, Patel AV, Newton CC, et al. Associations of recreational physical activity and leisure time spent sitting with colorectal cancer survival. *J Clin Oncol*. 2013;31:876-885.

Correspondence: Peter T. Campbell at peter.campbell@cancer.org

Dietary and supplemental calcium intake and cardiovascular disease death

Among older adults, calcium intake through supplements is promoted for bone health, but concerns have emerged about the possible adverse effects of high calcium intake on cardiovascular health. Several randomized control trials found an increased risk of various cardiovascular disease events with calcium supplements. The authors conducted a study in which they examined the relationship between calcium intake and cardiovascular mortality in a large cohort of U.S. men and women. They analyzed 388,229 men and women aged 50 to 71 years from the National Institutes of Health-AARP Diet and Health Study. The authors assessed supplemental and dietary intake of calcium at baseline in 1995. After a mean of 12 years of followup, results showed 7,904 and 3,874 cardiovascular disease (CVD) deaths in men and women, respectively. In men, supplemental calcium intake was associated with an elevated risk of CVD death (relative risk, 1.20), more specifically, with death from heart disease. In women, supplemental calcium intake was not associated with death. Of interest, dietary calcium intake was unrelated to CVD death in men and women. The investigators concluded that a higher intake of supplemental calcium was associated with an excess risk of CVD death in men. They proposed that this may be the case because calcium

causes vascular calcification, which places men at risk for increased atherosclerotic plaque burden. This association between calcium supplements and CVD death was not observed in women, and additional studies are needed to determine if there is a gender difference in the cardiovascular effects of calcium supplements.

Xiao Q, Murphy RA, Houston DK. Dietary and supplemental calcium intake and cardiovascular disease mortality. *JAMA Intern Med.* 2013;173:639-646.

Correspondence: Qian Xiao at qian.xiao@nih.gov

Investigational vaccine for preventing S.aureus infections after cardiothoracic surgery

Infections with *Staphylococcus aureus* after median sternotomy are associated with substantial morbidity and mortality. A safe and effective vaccine against *S. aureus* strains was investigated in a clinical trial to reduce this significant complication of cardiothoracic surgery. The vaccine, V710, contains the highly conserved *S. aureus* 0657nl iron surface determinant B (IsdB). It showed protectivity in animal models and immunogenicity in healthy volunteers within 14 days of a single dose of an adjuvanted or nonadjuvanted formulation. The authors conducted a double-blind, randomized, event-driven trial to evaluate the efficacy and safety of preoperative vaccination in preventing serious postoperative *S. aureus* infection in patients undergoing cardiothoracic surgery. The trial was conducted between December 2007 and August 2011 and involved 8,031 patients ages 18 years or older. The patients were scheduled for full median sternotomy within 14 to 60 days of vaccination at 165 sites in 26 countries. They were randomized to receive a single 0.5-mL intramuscular injection of either V710 vaccine, 60 µg (n=4,015), or a placebo (n=4,016). The primary endpoint of the study was prevention of *S. aureus* bacteremia or deep sternal wound infections through postoperative day 90, or both. Secondary endpoints included all *S. aureus* surgical site and invasive infections through postoperative day 90. Based on the second interim analysis, the study was terminated because results showed that the V710 vaccine was not significantly more efficacious than the placebo in preventing either the primary or secondary endpoints. Interestingly, the results occurred despite a robust antibody response in patients. Furthermore, the mortality rate in patients with staphylococcal infections was significantly higher among those receiving the V710 vaccine than among placebo control patients. The authors concluded that patients undergoing cardiothoracic surgery with median sternotomy did not benefit from a vaccine against *S. aureus* compared with placebo controls. To that end, this study does not support the routine use of the V710 vaccine for patients undergoing median sternotomy.

Fowler VG, Allen KB, Moreira ED, et al. Effect of an investigational vaccine for preventing *Staphylococcus aureus* infections after cardiothoracic surgery: a randomized trial. *JAMA.* 2013;309:1368-1378.

Correspondence: Vance G. Fowler at fowle003@mc.duke.edu