# Presurgical CV Risk Reduction Should Be Goal

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NEW YORK — A patient's preoperative cardiovascular assessment should do more than determine whether a patient is cleared for surgery.

Ideally, it also should take measures to reduce a patient's surgical risk. A major focus is to resolve cardiovascular disease and cut the patient's risk for a perioperative or postoperative myocardial infarction, Dr. Howard Weinstein said at a symposium on cardiovascular disease in cancer patients sponsored by the University of Texas M.D. Anderson Cancer Center.

Most postoperative MIs occur within the first 48 hours after surgery; these events generally do not involve plaque rupture but occur when myocardial oxygen demand outstrips coronary supply, said Dr. Weinstein, a cardiologist at Memorial Sloan-Kettering Cancer Center in New York. Demand ischemia occurs when one or more coronary vessels have greater than 70% stenosis and the patient has prolonged, stress-induced ischemia.

Prolonged operations that involve large fluid shifts or blood loss carry a high cardiac risk, and such surgeries are common for cancer. Surgery with an intermediate risk for cardiac events includes intraperitoneal and intrathoracic surgery, orthopedic surgery, and prostate surgery, all of which are also common in cancer patients. Endoscopic, superficial, and breast surgery all produce low increased risks for cardiac events, he said.

Guidelines for gauging presurgical risk for cardiac events, published in 2007 by the American College of Cardiology and the American Heart Association, focus on comorbidities. Coexisting disorders that increase surgical risk include histories of ischemic heart disease, heart failure, cerebrovascular disease, diabetes, renal insufficiency, arrhythmia, and severe valvular disease.

The key cause of postoperative MIs seems to be postoperative stress, including emergence from anesthesia, leading to cardiac ischemia, infarction, and myocardial death. Only about 1 in 13,000 patients dies directly because of anesthesia, Dr. Weinstein said at the meeting, also sponsored by the American College of Cardiology and the Society for Geriatric Cardiology.

Poor functional status just before surgery is another key risk factor. In a study reported last year by Dr. Weinstein and his associates, 2 of 53 (4%) patients with an exercise capacity of more than seven METs (metabolic equivalents) had a postsurgical hospital stay of 10 or more days, while 26 of 138 (19%) patients with an exercise capacity of seven METs or less had a prolonged postsurgical hospitalization.

If nonsurgical treatment is not an option, another approach is to do the least-extensive procedure possible that will accomplish the goal. A third option is to defer surgery. Operations for prostate, renal, and benign tumors can generally be delayed for several months. Surgery for lung, colon, and head or neck tumors can be postponed for a few weeks. Aggressive cancers with rapid growth or the immediate threat of lost function, as well as leukemias and lymphomas, are the only tumors that require surgery within days.

Coronary revascularization before surgery requires careful assessment of the potential risks and benefits. Coronary artery bypass is generally not a good option because the recovery time is too long. Following coronary artery stenting, patients need treatment with aspirin indefinitely, and with clopidogrel for 1 month for bare-metal stents and ideally for at least a year with drug-eluting stents. Most surgeons stop clopidogrel treatment before an operation, but the trend now is to maintain patients on aspirin right up to the time of surgery and restart as soon as possible. The need for antiplatelet therapy following stent placement makes coronary revascularization by balloon angioplasty alone a reasonable alternative. Surgery is possible starting about 2 weeks after angioplasty, Dr. Weinstein said.

The value of presurgical revascularization was challenged by the Coronary Artery Revascularization Prophylaxis (CARP) study, which randomized 510 patients who were scheduled for elective vascular surgery and had coronary artery disease to revascularization or to presurgical medical management only (N. Engl. J. Med. 2004;351:2795-804). In the revascularization group, 41% underwent bypass surgery and 59% were stented. After the subsequent vascular surgery, the incidence of MIs was 12% in the revascularization group and 14% in the medical management group, a difference that was not statistically significant. After a mean follow-up of 2.7 years, the cumulative rate of death was essentially identical in the two groups, with rates of 22% and 23%.

The CARP study was not large enough to assess the benefit of presurgical revascularization in patients with high-risk coronary disease, Dr. Weinstein noted. ■

# Reducing Pressure Ulcer Risk

**Bed Repositioning** *from page 1*

and who were bed bound at a baseline visit during the first 5 days of hospitalization. Repositioning frequency was assessed using hospital records.

Of the 237 patients, 59% were repositioned every 2 hours or less (12 or more times per day), 8% were repositioned every 2-4 hours (6-11 times per day), and 34% were repositioned less than every 4 hours (0-5 times per day), reported Ms. Rich, a medical student at the University of Maryland, Baltimore, and her associates. (Most national guidelines recommend repositioning bed-bound patients at least every 2 hours, but the Wound, Ostomy, and Continence Nurses Society advises caregivers to turn patients "at least every 2-4 hours on a pressure-reducing mattress or at least every 2 hours on a non–pressure-reducing mattress.")

Compared with the 139 patients repositioned at least every 2 hours, the 98 repositioned less often did not differ significantly in percentage male (26% vs. 23%, respectively), percentage white race (99% vs. 100%), percentage aged 85 years or older (50% vs. 59%), mean Rand Sickness at Admission score (13.6 vs. 13.5), mean Charlson comorbidity index (1.5 for both), mean Mini-Mental State Examination score (15.8 vs. 16.1), or mean length of hospital stay in days (6.0 vs. 5.9). The proportion with a Braden score of 16 or less ( high risk for pressure ulcers) was 95% in both groups.

However, those who were repositioned at least every 2 hours were significantly more likely than those repositioned less often to have a pressure ulcer present (78% vs. 54%), and to have a longer mean interval between admission and assessment in days (1.8 vs. 1.5).

The use of PRSS was not associated with repositioning frequency. Among the 148 patients using a standard bed surface, 56% were repositioned every 2 hours or more often, 8% were repositioned every 2-4 hours, and 36% were repositioned less than every 4 hours. For the 89 patients using PRSS, those proportions were 63%, 7%, and 30%. Nor was the frequency of repositioning associated with the type of PRSS used (static-air or alternating-pressure mattress overlays, or static-air mattresses, alternating-pressure mattresses, or low–air-loss mattresses) or with the use of "active" or "reactive" PRSS. As defined by the National Pressure Ulcer Advisory Panel's Support Surfaces Standards Initiative, an active PRSS can change load distribution with or without an applied load, while a reactive PRSS can change load distribution only in response to an applied load.

"Frequent repositioning does not appear to be reduced for patients using PRSS. This finding is encouraging, since it matches guideline recommendations. However, more than one-third of bed-bound patients were not being repositioned at the recommended frequency. This suggests that guidelines are not being fully implemented," Ms. Rich and her associates said.

Ms. Rich stated that she had no financial disclosures. ■

# *PPIs Linked to Infection Risk After Abdominal Ca Surgery*

BY DAMIAN McNAMARA
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ORLANDO — Patients on proton pump inhibitor therapy before abdominal cancer surgery were four times more likely to have postoperative infections than were those not taking such medication, according to a prospective, observational study.

Patients taking preoperative proton pump inhibitors (PPIs) also had significantly elevated serum levels of tumor necrosis factor (TNF)–α before and immediately after hemihepatectomy, as well as the day after surgery. Pneumonia and wound infections made up the majority of postoperative infections in the PPI group.

"There is evidence that PPIs have an effect on the immune system, especially TNF-α," Dr. Felix Kork said in an interview. Other researchers have shown that TNF-α impairs the immune system (J. Gastrointest. Surg. 2007;11:1506-14), yet the exact mechanism of interaction between PPI use and this cytokine remains unknown. Inflammation could play a role, particularly with postoperative pneumonia, he added.

These findings from patients at Charité Medical University of Berlin need to be confirmed before physicians consider preoperative suspension of PPIs, said Dr. Kork, an anesthesiology and intensive-care medicine resident. "We should investigate this further—whether or not it helps to stop PPIs," he said in a poster presented at the annual meeting of the American Society of Anesthesiologists.

Previously, researchers demonstrated that PPIs alter the expression of cytokines in antrum cells (Inflamm. Res. 2006;55:476-80). Also, polymorphisms of TNF-α have been shown to reduce eradication of *Helicobacter pylori* (Scand. J. Immunol. 2008;67:57-62).

Among the 166 patients who completed the current study, Dr. Kork and his colleagues found that 13 of 44 (30%) in the preoperative PPI group developed a postoperative infection, versus only 10 of 122 (8%) of the non-PPI patients. This difference was significant (odds ratio, 4.13).

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**DR. KORK**

"Those patients preoperatively taking PPIs also have an elevated total length of stay," Dr. Kork said. This difference was statistically significant, compared with patients not taking PPIs before surgery, he said, although he did not present the number of days associated with length of stay.

Length of ICU stay did not differ significantly between groups, he added. ■