

New Risks Identified for Postoperative Pneumonia

BY BRUCE JANCIN

SAN DIEGO — Postoperative pneumonia is an uncommon complication with daunting morbidity and mortality—and a fair number of previously unrecognized modifiable preoperative risk factors, according to a large national study.

The analysis involved prospectively collected data on more than 200,000 inpatient and outpatient operations in 2007 at 183 representative U.S. hospitals that participated in the American College of Surgeons' National Surgical Quality Improvement Program (NSQIP).

The incidence of postoperative pneumonia was 2.0%, with a 30-day mortality of 17.0%, as compared with 1.5% in individuals who did not develop the pulmonary infection, Dr. Himani Gupta reported at the annual meeting of the American College of Chest Physicians.



Complications associated with postoperative pneumonia included failure to wean from mechanical ventilation in 51% of cases, reintubation in 33%, septic shock in 33%, renal failure in 8%, deep venous thrombosis in 7%, blood transfusion in 5%, and cardiac arrest in 5%. The rates of each of these complications in patients without postoperative pneumonia were 1% or less, added Dr. Gupta of Creighton University, Omaha.

The NSQIP collects data on well over 100 variables per case, making it possible to use detailed multivariate logistic regression analyses to identify independent preoperative predictors of postoperative pneumonia.

Some of these risk factors were not modifiable, including inpatient status, which was associated with a 5.9-fold risk, male gender (1.5), emergency surgery (1.4), hypertension requiring medication (1.2), and a bleeding disorder (1.2).

However, other significant risk factors identified in the study could be amenable to preoperative risk optimization. For example, preoperative sepsis was associated with a 1.3-fold risk of postoperative pneumonia, worsening functional status conferred a 1.6-fold risk, and weight loss greater than 10% was associated with a 1.3-fold risk, she said.

In terms of risk factors related to neurologic status, quadriplegia was associated with a 1.8-fold risk of postoperative pneumonia. However, neither a history of a cerebrovascular accident nor an altered sensorium was linked to increased risk.

Unexpectedly, a history of heart fail-

ure or ventilator dependence within 48 hours prior to surgery was associated with significant 20%-30% decreased risks of postoperative pneumonia, Dr. Gupta observed.

Risk factors for postoperative pneumonia identified in prior small single-center studies, and confirmed in this vastly larger experience, included smoking, dyspnea, chronic obstructive pulmonary disease, and increased alcohol intake, each associated with a 1.2- to 1.5-fold increased risk.

There is a common assumption that obesity increases the risk of postoperative pulmonary complications. Not so in the NSQIP database.

The incidence of postoperative pneumonia was 2.4% in patients with a body mass index less than 25 kg/m², 1.6% among those with a BMI of 25-40, and 1.25% for those with a BMI of 40-60. The adjusted risk was 1.2 times as great in patients with a BMI of 25-40 or 40-60.

DR. GUPTA

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Dr. Gupta indicated that she and her coworkers are now in the midst of additional analyses looking more specifically at patients with a BMI of 18 or less, along with a new comparator group composed of patients with a BMI of 25-30.

Age was an independent risk factor for postoperative pneumonia. The incidence was 0.5% in patients under age 40 years, 1.3% in those aged 40-60 years, 2.7% in patients aged 60-80 years, and 4.5% in those older than 80 years.

The multivariate adjusted risk was 1.3-fold greater in patients aged 40-60 years than in those younger than 40, 1.3-fold greater in those aged 60-80 years than in patients aged 40-60, and 1.3-fold more in those over age 80 than in 60- to 80-year-olds.

The incidence of postoperative pneumonia varied markedly according to the organ addressed in the surgery. Low-risk operations—each with less than a 1% incidence of postoperative pneumonia—included anorectal, appendix, adrenal, bariatric, breast, ob.gyn., hernia, spleen, ENT/neck, spine, vein, and urologic surgery.

The high-risk procedures included nonesophageal thoracic surgery, which had a 3.8-fold risk of postoperative pneumonia, compared with the low-risk operations, and aortic (2.6), intestinal (2.5), brain (2.9), foregut and hepatopancreatobiliary (4.1), and other abdominal operations (2.1). ■

Disclosures: Dr. Gupta reported having no financial conflicts that were relevant to her study.



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