

Risk Factors Identified for Postop 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 participating 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%), compared with 1.5% in individuals who did not develop the pulmonary infection, Dr. Himani Gupta reported during the annual meeting of the American College of Chest Physicians.

Risk factors included smoking, dyspnea, COPD, and increased alcohol intake.

DR. GUPTA

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 vein thrombosis in 7%, blood transfusion in 5%, and cardiac arrest in 5%.

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 failure 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

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Atrial Arrhythmia Strikes 13% After Lung Cancer Surgery

BY MITCHEL L. ZOLER

FORT LAUDERDALE, FLA. — Patients undergoing lung resection for non-small cell lung cancer had a 13% risk for developing a new atrial arrhythmia in a review of nearly 14,000 patients in a nationwide database involving 111 centers.

This rate confirms prior reports that atrial arrhythmias appeared in 10%-20% of patients following major noncardiac thoracic surgery. But the new finding is the first to be based on data from so many centers, and the first to focus on outcomes after a single type of thoracic surgery—lung resection for cancer—Dr. Mark W. Onaitis said at the annual meeting of the Society of Thoracic Surgeons.

The analysis identified four factors that significantly correlated with an increased risk for developing atrial arrhythmia after lung cancer surgery: more extensive resection (pneumonectomy or bilobectomy compared with lobectomy), increased age, male gender, and more advanced disease (clinical stage II or higher).

The new model could be used “to improve prognostic stratification, and for prospective prophylactic trials,” said Dr. Onaitis, a thoracic surgeon at Duke University in Durham, N.C.

Patients who developed a new-onset arrhythmia had significantly increased mortality; a higher incidence of several major morbidities, including pneumonia and stroke; and a significantly longer hospital stay. (See box.) During the 30 days following surgery, mortality was 6% in patients who developed an atrial arrhythmia, compared with 2% in those who did not—a significant difference.

The Society of Thoracic Surgeons General Thoracic Surgery Database for 2002-2008 included more than 14,000 patients who had lung resection for non-small cell lung cancer at 111 participating U.S. centers. Excluding patients with atrial arrhythmia prior to surgery left 13,904 patients, of whom 1,755 (13%) developed atrial arrhythmia during the 30 days following surgery.

Multivariate analysis revealed that pneumonectomy doubled the risk for development of atrial arrhythmia compared with lobectomy, while bilobectomy boosted the risk by 67% compared with single lobectomy. Each 10 years of increased age was linked to an 81% increased risk for arrhythmia, and men had a 60% increased risk compared with women.

Patients with nodal disease, clinical stage II or greater, had a 28% increased risk for arrhythmia. The analysis also identified one protective feature: African Americans were 38% less likely to develop arrhythmia than were whites. These pa-

rameters together accounted for two-thirds of the variance in the rate of new-onset atrial arrhythmias.

Disclosures: Dr. Onaitis said that he and his associates had no relevant disclosures.

Consequences of Postoperative Atrial Arrhythmia

Outcome	Incidence in 1,755 patients with postoperative atrial arrhythmia	Incidence in 12,151 patients without atrial arrhythmia
Mortality rate during hospitalization	5%	1%
Mortality rate during 30 days following surgery	6%	2%
30-day incidence of atelectasis	8%	4%
30-day incidence of pneumonia	11%	3%
30-day incidence of cerebrovascular accident	1%	0.3%
30-day rate of blood transfusion	14%	6%
Mean hospital length of stay	8 days	5 days

Note: All between-group comparisons are statistically significant. Data are based on patients undergoing lung resection for non-small cell lung cancer during 2002-2008 at any of 111 participating U.S. hospitals in the Society of Thoracic Surgeons database. Source: Dr. Onaitis

Dissecting the Problem of Atrial Fibrillation After Lung Resection

MY TAKE

A second only to duration of air leak as the major driver for length of stay after pulmonary resection. Because the downstream consequences of atrial fibrillation, such as stroke and other thromboembolic events, are so significant, and because its treatment is costly and associated with its own morbidity, perioperative atrial fibrillation may even exceed prolonged air leak as a health risk.

The relationship between postop-

erative atrial fibrillation and lung resection has long been explored in general thoracic surgery. For decades, colleagues have reportedly documented the incidence, especially following pneumonectomy, when it can occur in as many as a quarter or third of patients. The search for effective and simple prophylaxis has been difficult, even in the pneumonectomy patients known to be at highest risk. There is simply little convincing, multi-institutional-derived evidence that

pharmacologic prophylaxis can reduce the risk.

Dr. Onaitis and his colleagues are to be congratulated for leveraging the STS database to begin to dissect this problem. They confirmed the importance of the problem by finding a threefold increase in 30-day mortality in patients who develop perioperative atrial fibrillation. Their simplified risk model allows physicians to stratify risk and better counsel patients. Unfortunately, the prognostic factors

don't provide an opportunity to modify the risk. Perhaps the most beneficial outcome of this work will be to identify patients at highest risk who are the best candidates for pharmacologic prophylaxis in the hope of defining a signal of therapeutic efficacy.

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