answered. Ito and colleagues are to be congratulated for beginning to provide answers and insight regarding the selective occurrence of COPD in the smoking population.

COL Daniel R. Ouellette, MC, USA, FCCP
Ft. Sam Houston, TX

Dr. Ouellette is the Pulmonary Consultant to the US Army Surgeon General and the Associate Program Director for the Pulmonary and Critical Care Medicine Fellowship Program at the San Antonio Uniformed Health Services Educational Consortium.

Dr. Ouellette is on active duty, US Army, is a member of the Speaker’s Bureau and Consultant, Ortho Biotech, and is on the Speaker’s Bureau, Pfizer.

The opinions or assertions contained herein are the private views of the author and are not to be construed as reflecting the views of the Departments of the Army or Defense.

Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (e-mail: permissions@chestnet.org).

Correspondence to: COL Daniel R. Ouellette, MD, FCCP, MC, USA, Pulmonary Disease Service, Brooke Army Medical Center, 3851 Roger Brooke Dr, Ft. Sam Houston, TX 78234; e-mail: DanielROuellette@aol.com

REFERENCES


14 Yamamoto N, Homma S. Vitamin D3 binding protein (group-specific component) is a precursor for the macrophage-activating signal factor from lyso phosphatidylcholine-treated lymphocytes. Proc Natl Acad Sci U S A 1991; 88:8539–8543


To B or Not To B?
It Still Is the Question

The relatively high sensitivity and specificity of open-lung biopsy (OLB) in chronic pulmonary diseases has made it a valuable diagnostic tool for those diseases.1 OLB is a surgical procedure requiring anesthesia and is associated with risks. Consequently, OLB is usually not considered a first-choice procedure in the diagnosis of most lung processes. OLB has been previously used in ARDS to identify the acute pathologic process (diffuse alveolar damage),2 and the ensuing fibroproliferative damage reported as ARDS progresses.3 In addition, OLB has been used when less invasive technology (eg, transbronchial biopsy) fails to provide a diagnosis for a rapidly deteriorating patient with ARDS. Most patients with ARDS are receiving mechanical ventilation and are critically ill at the time of OLB. This increases the risk of morbidity and mortality associated with the procedure and explains, in part, the infrequent reports of OLB during ARDS.

The earliest studies2,4 of OLB in patients with ARDS reported during the late 1970s and early 1980s were observations of small numbers of patients, and describe the acute pathologic and the late fibroproliferative changes. In spite of the institution of alternative therapies based on OLB findings (including high-dose corticosteroids), reported mortality remained high (57 to 78%).

Warner et al5 studied 80 patients who had OLB early in the course of acute respiratory failure. OLB

www.chestjournal.org

CHEST / 125 / 1 / JANUARY, 2004
was usually performed when the patient had progressive hypoxemia. Only 20 patients (25%) were receiving mechanical ventilation at the time of OLB. The complication rate was low (15%), and consisted of pneumothoraces that resolved with tube thoracostomy. There were no deaths. OLB led to therapy changes in 70% of the patients but mortality was still high (70%), and no obvious benefit was associated with OLB.

Meduri et al. used OLB later in the course of ARDS for patients presenting with fever and leukocytosis. OLB revealed diffuse alveolar damage in addition to an intra-alveolar fibrotic process in 12 patients. Meduri et al. treated these patients with high-dose IV corticosteroids and reported a low mortality (25%). There were no deaths in these 12 patients, and only 1 patient had a pneumothorax. Unfortunately, 44% of the patients acquired nosocomial pneumonia while receiving steroids.

Papazian et al. performed OLB on 36 of 197 patients with ARDS over a 4-year period. His study was specifically conducted to assess the development of fibrosis in patients, and infected patients were not included. OLB was performed 10 days after the onset of ARDS, and 34 of 36 patients had a diagnosis that led to a therapy change. Only six patients had OLB evidence of fibrosis. There was one pneumothorax, but no deaths. Despite therapeutic changes, mortality was high (50%).

Flabouris and Myburgh used a retrospective approach to identify OLB during mechanical ventilation. In a 10-year period, the incidence of OLB was < 1% of all ICU admissions. Twenty-four patients had OLB, but only 14 patients were receiving mechanical ventilation at the time. OLB provided a specific diagnosis in 46% of the patients and a nonspecific diagnosis in 46%. Therapy was changed in 18 patients, but mortality was still 66%.

The most recent report of OLB in patients with ARDS is presented in this issue of CHEST by Patel et al. (see page 197), and provides the largest review to date of OLB in ARDS. Patel et al retrospectively identified 57 patients over 12 years who underwent OLB during ARDS. OLB was performed approximately 7 days after hospital admission. Thirty percent of these patients were immunocompromised. A specific diagnosis was found in 60% of the patients, and therapy was changed in these patients. There was one death and a 12% pneumothorax rate. Unfortunately, mortality was high (47%) and not significantly different from ARDS mortality at their institution.

There are no published criteria or guidelines to aid the clinician in determining why or when to perform OLB in a patient with ARDS. Mechanical ventilation increases the risk of complications in OLB, and significant discussion usually occurs prior to OLB. Unfortunately, none of the articles, including this most recent publication, elucidate new logic for answering the “why and when” questions. These questions are in fact the most crucial with which clinicians struggle.

More importantly, no report has demonstrated a survival advantage for patients subjected to OLB, even when appropriate therapeutic changes are instituted. This may be explained by the small number of patients involved in aggregate in all the reports. A further explanation might be that OLB is not performed expeditiously enough in deteriorating patients, and consequently, there is a fatal delay in instituting a new therapy. Or perhaps, those patients who deteriorate and need OLB are in the final cascade of multiple organ failure that frequently leads to death in ARDS, and no therapy changes would alter the outcome. Unfortunately, these questions may only be answered with a prospective randomized trial with well-elucidated logic for OLB, and consistent application of OLB.

The bright notes in reviewing the study by Patel et al are that OLB is a relatively safe procedure even when performed in critically ill patients with ARDS receiving mechanical ventilation and frequently provides an unexpected diagnosis. This may encourage clinicians to use OLB biopsy more freely in patients with ARDS who fail to improve or continue to deteriorate. This might lead to a change of therapy as quickly as possible. However, the definition of the best role for OLB in patients with ARDS will depend on future studies that include prospective, randomized trials to present guidelines and protocols that are useful to clinicians and widely applicable.

Mary R. Suchyta, DO, FCCP
Salt Lake City, UT

Dr. Suchyta is a Clinical Pulmonary Research Physician at the LDS Hospital and University of Utah in Salt Lake City. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (e-mail: permissions@chestnet.org).

Correspondence to: Mary R. Suchyta, DO, FCCP, Pulmonary Division, LDS Hospital, Eighth Ave and C St, Salt Lake City, UT 84143; e-mail: kpmurs@cs.com

REFERENCES

Tracheostomy for Respiratory Failure

We Need More Answers

Tracheostomy formation is one of the most commonly performed surgical procedures in the critically ill patient who requires prolonged mechanical ventilation.1,2 Relative to translaryngeal intubation, tracheostomy potentially affords greater patient comfort, more effective pulmonary toilet, increased airway security, and less airway resistance.3–5 The latter may be especially important in patients experiencing unrecognized narrowing of their endotracheal tube lumens due to the adherence of airway secretions.6 Among patients with appropriate anatomy, tracheostomy can be safely performed at the bedside using a percutaneous technique.7,8 Despite the common use of tracheostomy for patients requiring prolonged mechanical ventilation, there are still several fundamental unanswered questions concerning this procedure. These questions include the following: (1) Which patients with acute respiratory failure should have a tracheostomy? (2) When during the course of mechanical ventilation should a tracheostomy be performed? (3) What are the benefits in terms of patient outcomes associated with tracheostomy?9,10

In this issue of CHEST (see page 220), Engoren and colleagues describe their experience with tracheostomy for patients requiring long-term respiratory support. Over 3 years, these investigators retrospectively identified 429 patients who underwent tracheostomy during the course of mechanical ventilation. This represented 8.3% of all patients requiring mechanical ventilation at their institution. The overall mortality rate of patients receiving a tracheostomy was 22.1%. Among patients with a tracheostomy, the nonsurvivors were statistically more likely to be older, have a nonsurgical admission, have the new onset of renal dysfunction, lack placement of a surgically inserted feeding tube, and have a lower nadir hemoglobin level compared to survivors. Interestingly, the statistically lower use of surgically inserted feeding tubes among nonsurviving patients suggests that these individuals differed in some way from the survivors. Nonsurviving patients likely had a greater severity of illness potentially preventing the surgical placement of feeding devices. Although severity-of-illness data in the form of an APACHE (acute physiology and chronic health evaluation) score is not provided, this possibility is supported by differences in the baseline laboratory data, age, and comorbidities shown in Table 1 between survivors and nonsurvivors. Another intriguing possibility is that surgically placed feeding tubes were avoided in the nonsurvivors because of health-care provider suspicions or biases favoring a lower likelihood of hospital survival in these patients. In a previous study,11 of patients requiring prolonged mechanical ventilation, individuals receiving a tracheostomy had a statistically lower mortality rate compared to patients not receiving a tracheostomy, despite having a similar severity of illness at the time of admission to the ICU. These studies support the hypothesis that medical care among similar types of patients in the intensive care setting may differ based on clinician assessments of prognosis.12

Engoren et al also demonstrated that among the 334 hospital survivors, 118 patients (35.3%) were discharged completely ventilator dependent, 25 patients (7.5%) were discharged partially ventilator dependent, and 191 patients (57.2%) were discharged completely liberated from mechanical ventilation. However, patients who were completely liberated from mechanical ventilation had significantly longer hospital stays and greater hospital costs compared to patients discharged receiving mechanical ventilation. Finally, these investigators showed that overall survival for patients receiving a tracheostomy was poor with 36% of patients dead at 1 year and 42% dead 2 years after discharge. Among patients completing the Short Form-36 questionnaire, good emotional health was reported, but patients remained with major physical limitations related to their underlying illnesses and comorbidities. Therefore, extensive medical resources are required to achieve this quality of life in a limited number of patients with acute respiratory failure receiving a tracheostomy.

Are the data from this new publication helpful in clarifying any of the fundamental questions regarding tracheostomy for patients with acute respiratory failure outlined above? Engoren et al suggest that specific subgroups of patients may benefit from tracheostomy. One obvious group includes those individuals who are likely to survive their hospitalization. Identifying these survivors early-on in their