Alter Pneumonia Prescribing to Fight Resistance

Patients not likely to have resistance should receive focused therapy with macrolides or ketolides.

BY DIANA MAHONEY
New England Bureau

MONTREAL — In vitro pneumococcal resistance continues to have a substantial role in guiding antibiotic choices and disease management plans for patients with community-acquired pneumonia, according to Michael S. Niederman, M.D.

Many surveillance studies have revealed an increasing global prevalence of in vitro drug resistance among pneumococcal isolates obtained from patients with community-acquired pneumonia. Updated treatment guidelines reflect these findings by stressing the need for clinicians to keep in mind local antibiotic resistance patterns as well as patient risk factors for infection with drug-resistant pathogens, Dr. Niederman said at the Second International Conference on Community Acquired Pneumonia.

"Drug-resistant pneumococcus is more likely in certain at-risk populations, including people older than 65 years and those with immune suppression, exposure to a child in day care, or a history of alcoholism, multiple medical comorbidities, or therapy with a β-lactam in the past 3 months," he said.

To minimize the opportunity for clinical failure of community-acquired pneumonia therapy related to antibiotic resistance, which can occur with any drug class, clinicians should be prepared to modify management approaches accordingly, stressed Dr. Niederman of the State University of New York at Stony Brook. One such consideration is to use focused instead of broad-spectrum therapy as appropriate, he said.

"Broad-spectrum agents, such as quinolones, are frequently used in situations where they are both not indicated and unnecessary," he said. For example, in one study of 100 consecutive emergency department patients who were discharged on quinolone therapy, 81 of the patients had inappropriate indications for the drug, and of the 19 in whom quinolone therapy was appropriate, only 1 was given the correct dose for the correct duration, he said (Arch. Intern. Med. 2003;163:601-5).

"This is the type of behavior that drives more resistance and has to be avoided," Dr. Niederman added.

Because recent prior therapy with β-lactams, macrolides, or quinolones predicts subsequent pneumococcal resistance to the agent that was used, "it is imperative that clinicians take a history of recent antibiotic usage and be prepared to choose an agent that differs from what was used previously," Dr. Niederman said. "This form of patient-specific antibiotic rotation only works if we have choices, which requires an understanding of the acceptable options for therapy."

For example, studies have shown that penicillin resistance probably has therapeutic significance only when MIC values are at least 4 mg/L. "If β-lactam resistant pneumococcus is suspected, ceftriaxone [Rocephin] may be a reliable choice, while the cephalosporin cefuroxime [Ceftin] may be associated with increased mortality if used in the presence of in vitro resistance to this agent," he said.

In general, when managing patients at risk for drug resistance, "clinicians should choose a highly active antipneumococcal agent to minimize selection pressure for more organisms emerging with higher levels of resistance," Dr. Niederman said. Patients not likely to have resistance should receive focused therapy with macrolides or ketolides, "reserving more potent agents for the appropriate setting."

Ketolide use in particular "can improve the management of community-acquired pneumonia in this era of pneumococcal antibiotic resistance by adding another choice to the heterogeneity of options," he said.

Studies have shown that telithromycin (Ketek)—the first ketolide available for clinical use—is an effective outpatient treatment for mild to moderate community-acquired pneumonia, even in older patients, those with higher pneumonia severity index scores, and those with bacteremia.

"The agent's rapid bactericidal effects appear to make short treatment durations feasible, and its mechanisms of action may avoid the induction of resistance, while maintaining good intrinsic activity against pneumococci, including those that are macrolide resistant," Dr. Niederman said. ■

Early Thorascopic Surgery Can Resolve Postpneumonic Empyema

BY KATE JOHNSON
Montreal Bureau

MONTREAL — In patients with postpneumonic empyema, early intervention with video-assisted thorascopic surgery can result in immediate and complete resolution, according to Donna E. Maziak, M.D., a thoracic surgeon at Ottawa Hospital.

And if VATS does not solve the problem, thoracotomy should be the logical next step, she added.

"Rather than trying to choose between doing VATS or thoracotomy, we should probably consider them both as a combination approach," she said at the annual meeting of the Canadian Association of Thoracic Surgeons.

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The advantages of early VATS are that it is minimally invasive, requires a short-acting anesthetic, and can often completely resolve the parapneumonic effusion.

With this approach, loculations can also be broken down immediately with no wait-and-see period for assessing success, said Dr. Maziak, also of the department of medicine at the University of Ottawa.

A study comparing VATS to thoracotomy in the treatment of postpneumonic empyema favored VATS for a lower relapse rate (0% versus 12%) and a nonsignificant trend toward shorter hospital stay (7 versus 11 days), with identical morbidity and mortality rates (Ann. Thorac. Surg. 1996;61:1626-30), she said.

Expanded figures from the same group showed much lower morbidity and mortality rates for VATS (6% and 2%, respectively), compared with thoracotomy (15% and 3%).

The authors concluded that "VATS debridement for loculated fibrinopurulent postpneumonic empyema offers better results than thoracotomy in terms of resolution of the disease and length of stay in hospital. It also seems to be more advantageous, resulting in fewer surgical sequelae, lower cost, less labor impediment, and better cosmesis" (World J. Surg. 1999;23:1110-3).

Although early intervention with a minimally invasive technique such as VATS has obvious advantages, clinicians should not hesitate to move immediately on to thoracotomy if necessary, Dr. Maziak advised.

"Don't be afraid to operate. Think thoracotomy earlier rather than later," she said.

In fact, pooled data in the American College of Chest Physicians consensus statement on the treatment of parapneumonic effusions suggest that mortality is actually higher with VATS (4.8%) than with thoracotomy (1.9%), she said (Chest 2000;118:1158-71).

Balancing this, however, the statement also shows evidence that no VATS patients need a second intervention to resolve the effusion, while 10.7% of thoracotomy patients do, she said.

The ACCP statement says that existing evidence is equally supportive of VATS, surgery, or fibrinolytics as acceptable approaches for managing complicated empyema.

A randomized trial comparing VATS with chest-tube pleural drainage and streptokinase therapy favored VATS for higher efficacy and shorter hospital stay (Chest 1997;111:1548-51). However, the numbers in this study, as well as in the VATS versus thoracotomy studies, are too small to draw firm conclusions, according to the ACCP statement. ■

Rise in Empyema May Signal Crisis in CAP Management

MONTREAL — A dramatic increase in the incidence of postpneumonic empyema requiring decortication is an "alarming" phenomenon that may possibly signal a new crisis in the management of community-acquired pneumonia, according to Shona E. Smith, M.D., a third-year general surgery resident at the University of Western Ontario's London Health Sciences Centre.

In a review of all adult cases of postpneumonic empyema [defined as a pus-containing pleural effusion] requiring decortication at her center between April 1997 and December 2004, Dr. Smith discovered the annual numbers of cases of empyema were 44, 35, 36, 42, 75, 68, 72, and 55 in the final 9 months of the study period. The numbers of decortications required in each of those years were 0, 0, 6, 9, 20, 22, 30, and 24 in the final 9 months, she said.

When the first 4 years of the study period were compared with the last 3 years and 9 months, there was a 74% increase in the incidence of empyema and a 540% increase in empyema requiring decortication, she reported at the annual meeting of the Canadian Association of Thoracic Surgeons.

The etiology of this increase is not known, but it could be a reflection of changes in the treatment of community-acquired pneumonia, she suggested. "Empyema can be an indicator of delay in diagnosis and treatment of pneumonia, and this may be the case with more patients being treated at home."

The mean age of the patients was 56 years, and 77% were male. There was a median of 2 days from the time of diagnosis until admission to hospital and a median of 14 days spent in the hospital. A total of 12 deaths were recorded.

At the time of admission, 22% of patients had been treated with antibiotics alone, and the type of antibiotic was known in 32% of these cases (51% macrolides, 32% quinolones, 30% combination, and 17% other). Another 20% of patients had received thoracentesis in addition to antibiotics, and 45% had received both treatments as well as a chest tube.

Pleural cultures (obtained in 98% of patients) were negative in 36%, gram negative in 26%, and gram positive in 38% (streptococcal species in 29%, staphylococcal species in 7%), Dr. Smith said. Among those patients requiring decortication, 77% of patients had this performed by thoracotomy, 9% had video-assisted thorascopic surgery, and 14% had an initial VATS procedure that was then converted to thoracotomy.

—Kate Johnson