Findings Predict Pneumonia Treatment Failure

BY MITCHELL L. ZOLER
Philadelphia Bureau

WASHINGTON — Five clinical findings at initial presentation in patients with severe, community-acquired pneumonia identified those who failed to respond to the first 3 days of antibiotic therapy in a study with 260 patients. Prompt assessment of these five clinical flags may potentially distinguish patients who require close monitoring from those who face little risk from an early hospital discharge and oral antibiotic therapy, Martin Hoogewerf, M.D., said at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

But the prognostic value of these five findings requires validation in a larger group of patients before they can be used in routine practice, cautioned Dr. Hoogewerf, an infectious diseases specialist at the University Medical Center in Utrecht, the Netherlands.

The five findings were confusion, a gram-negative infection, an arterial pH of less than 7.35, an arterial oxygen pressure (PO2) of less than 60 mm Hg, and a diagnosis of heart failure.

In a multivariate analysis of potential predictors of early treatment failure, these five variables were associated with statistically significant differences in response.

The first four factors identified patients with an increased risk of failure, while the presence of heart failure identified patients with a reduced risk.

Two possible explanations for the “protective” role of heart failure were that some patients with heart failure are mistreated with pneumonia, and when they actually have pneumonia, it often has a viral etiology. Dr. Hoogewerf said. Among patients in the study, 68% of those with heart failure had no identified etiologic pathogen, among those without heart failure, 45% had no identified etiologic pathogen.

Dr. Hoogewerf and her associates converted their findings on predictive features into a scoring system. Based on the relative predictive value of these five clinical parameters, they created a scoring scheme for health care workers to use when first evaluating patients with severe, community-acquired pneumonia.

The system scores an arterial pH of less than 7.35 as 3 points, confusion as 2 points, a gram-negative infection as 1 point, an arterial PO2 of less than 60 mm Hg as 2 points, and heart failure as -2 points. Across the 260 patients in the study, 61% had a score of less than 2 points, and 18% of these patients had treatment failure after 3 days of antibiotic therapy. Another 35% of patients had a score of 2-4 points, and they had a treatment failure rate of 47%. The remaining 4% of patients had a score of 3 points or higher, and their failure rate was 80%. Dr. Hoogewerf said at the conference, sponsored by the American Society for Microbiology.

The study involved adults with community-acquired pneumonia seen at seven hospitals and medical centers in the Netherlands. All patients had either a pneumonia severity index score of more than 90 at their initial evaluation or met the criteria of the American Thoracic Society for severe pneumonia. All patients were started on antibiotic therapy and assessed 3 days later.

A total of 40 patients (31%) had not responded to treatment after 3 days. The clinical importance of treatment failure at this time was documented by additional follow-up of all patients. The average hospital length of stay for patients who had early treatment success was 9.6 days, compared with an average length of stay of 13.4 days for the early treatment failures. The difference of 3.8 days is statistically significant.

In addition, patients with early treatment success had a 4.4% mortality rate by 28 days after the start of treatment. Patients who were early treatment failures had a 12% mortality rate 28 days after treatment started. The multivariate analysis of baseline parameters showed that patients with an arterial pH of less than 7.4 had a 4.46-fold increased risk of treatment failure, compared with patients whose arterial pH was at or above this cutoff. Patients who were confused had a 3.8-fold increased risk of failure, compared with those who were not.

Patients with a gram-negative infection had a 3.2-fold increased risk of treatment failure, compared with patients without an identified gram-negative infection. Patients with an arterial PO2 of less than 60 mm Hg had a 77% increased risk of failure, compared with patients whose arterial PO2 was at or above this cutoff. And patients with heart failure had a 68% increased risk of treatment failure, compared with patients with no heart failure.

Keeping Score: Five Factors Predict Risk

Clinical Factor
Arterial pH < 7.35
Confusion
Gram-negative infection
Arterial PO2 < 60 mm Hg
Heart failure
Points
+3
+2
+2
+2
-2

Source: Dr. Hoogewerf

Malaria Web Site Offers Therapy Strategies and Telediagnosis

BY DAMIAN McNAMARA
Miami Bureau

MIAMI BEACH, Fla. — Want to confirm a suspected case of malaria? You can e-mail a digital image to the Centers for Disease Control and Prevention for telediagnosis, and if necessary download guidelines for treatment from its new malaria Web site, Pluc Nguyen-Dinh, M.D., said at the annual meeting of the American Society of Tropical Medicine & Hygiene.

In less than 1 year, the CDC’s online malaria initiative (www.cdc.gov/malaria) has supplanted many calls to the center’s malaria hotline. Because malaria is relatively rare in the United States, with an estimated 1,200 cases identified per year, clinicians often need assistance in diagnosis and management. To that end, the CDC offers malaria publications, diagnostic reference services, and training seminars for laboratory personnel.

“Now information is downloadable from the Web site. We believe it is more accurate to print the guidelines than to get information over the telephone. Plus, we are able to update the site easily,” said Dr. Nguyen-Dinh, medical officer in the division of parasitic diseases at the Centers for Disease Control and Prevention, Atlanta.

The response to the Web site has been positive, Dr. Nguyen-Dinh said. The clinical guidelines are especially useful, according to 430 physicians surveyed through the Infectious Diseases Society of America’s Emerging Infections Network. The site features preventive information with a link to the CDC’s travelers’ information site. It also features interactive training for recognition of malaria.

“We know there is a need in the United States for better diagnosis,” said Stephanie Johnson, MBA, CDC researcher in the Division of Parasitic Diseases. In 2002-2003, the CDC received 188 requests for telediagnosis of which 79 were for suspected malaria. If the telediagnosis is malaria, the CDC requests the sender submit samples for verification.

Images of other suspected parasitic infections can be e-mailed to the CDC’s Laboratory Identification of Parasites of Public Health Concern program (www.dphp.dph.us).