Dexamethasone Beneficial in Bacterial Meningitis

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CHICAGO — The use of dexamethasone therapy either before or with the first dose of standard antibiotics was associated with a favorable outcome in adults with community-acquired bacterial meningitis, according to preliminary data from a prospective nationwide cohort of 154 Dutch patients.

Adjunctive dexamethasone has been recommended as routine therapy for adults with suspected or proven pneumococcal meningitis in recent practice management guidelines in the Netherlands and by the Infectious Diseases Society of America (Clin. Infect. Dis. 2004;39:1267-84). In making its recommendation concerning adults, the society cited a randomized trial, conducted by the same study group, demonstrating that adjunctive dexamethasone reduces both unfavorable outcomes and mortality in adults with bacterial meningitis (N. Engl. J. Med. 2002;347:1549-56).

The current study identified 215 patients aged at least 17 years who had a positive cerebrospinal fluid culture for community-acquired bacterial meningitis from March 2006 to April 2007, Dr. Matthijs C. Brouwer reported at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

Complete data were available on 154 of the patients. In all, 106 were infected with *Streptococcus pneumoniae* (69%), 26 with *Neisseria meningitidis* (17%), and 22 with other bacteria (14%), said Dr. Brouwer of the Academic Medical Center of the University of Amsterdam. Upon admission, patients' median age was 60 years (range 43-69 years), 87 were male, 29 had a Glasgow Coma Scale score lower than 8, and 39 (25%) had neurologic deficits.

The use of dexamethasone therapy was recorded in 151 (98%) of the patients. Of these, 121 received 10 mg four times daily for 4 days before or with antibiotics, 13 received other dexamethasone regimens that continued for as long as 10 days in some cases, and 17 did not receive dexamethasone.

Of the 154 patients, 31 died; 47 had an unfavorable outcome as defined by a Glasgow Outcome Scale score of 4 or lower; 22 suffered sequelae defined as neurologic deficits and cranial nerve palsy including hearing loss; and 104 had a favorable outcome. (Some patients were assigned to more than one category.)

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Of those with pneumococcal meningitis, 25 died and 37 experienced unfavorable outcomes. None of the patients with meningococcal meningitis died, but two had unfavorable outcomes. Of those with meningitis resulting from other bacteria, six died and eight had unfavorable outcomes.

Compared with all cases of bacterial meningitis in the cohort, mortality and unfavorable outcomes were slightly higher for pneumococcal meningitis, which is more severe than other types. However, the rates were lower than those reported by the study group for pneumococcal meningitis in its earlier (1998-2002) cohort.

"We believe the decrease in mortality in pneumococcal meningitis (from 30% to 24%) and unfavorable outcome (from 50% to 35%) was due to the introduction of dexamethasone," Dr. Brouwer said in an interview.

In a multivariate analysis, significant risk factors for an unfavorable outcome were age older than 60 years (odds ratio 5.79), a white blood cell count lower than 1,000 cells/mL of cerebral spinal fluid (OR 7.75), a Glasgow Coma Scale score lower than 8 (OR 3.09), and a heart rate greater than 120 beats per minute (OR 10.1).

Standard dexamethasone therapy was a significant protective factor against unfavorable outcome, with an odds ratio of 0.21 and a *P* value of .004. When the causative bacterium was added to the model, the effect of dexamethasone remained unchanged, Dr. Brouwer said at the meeting, which was sponsored by the American Society for Microbiology.

The researchers also found that the incidence of meningococcal meningitis in the Netherlands has fallen to less than 20% from 37% during 1998-2002. ■