

Steroids provide no survival benefit for children with bacterial meningitis

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Corticosteroids given to children who are hospitalized for bacterial meningitis do not provide a benefit in survival or in reduced hospital stays, according to a large multicenter study by pediatric researchers. This finding stands in contrast to previous studies in hospitalized adults, for which corticosteroids dramatically reduced mortality.

“Because of the demonstrated benefits of these drugs in adults, physicians have increasingly been using corticosteroids in children with bacterial meningitis,” said study leader Samir S. Shah, M.D., an infectious diseases specialist from The Children’s Hospital of Philadelphia. “This study reminds us again that children are not just small adults. We need to consider whether the problems associated with corticosteroid use, such as gastrointestinal bleeding, outweigh any potential benefits.”

He added that further research should analyze whether corticosteroids may provide other benefits to children, such as improved neurological outcomes among survivors, a question not considered in this study.

The study appears in the May 7 issue of the *Journal of the American Medical Association*.

Shah’s team analyzed medical records of 2,780 children with bacterial meningitis at 27 U.S. pediatric hospitals from 2001 to 2006. The median age of the children was nine months. Approximately 9 percent, or 248, of the children studied received corticosteroids, with steroid use

doubling during the study period, from under 6 percent of children in 2001 to 12 percent in 2006.

There was no significant difference in mortality nor in time to hospital discharge, between children who received corticosteroids and those who did not. Overall, unadjusted mortality rates were 6 percent among children receiving corticosteroids, versus 4 percent among those not receiving them. There also was no significant difference in those outcomes between those receiving and not receiving corticosteroids in the subsets of children with meningitis caused by pneumococcal bacteria or by meningococcal bacteria.

Meningitis is an inflammation of the meninges, the membrane lining the brain. The bacterial form is relatively rare in children, with an incidence of about eight in 100,000 in the U.S. However, bacterial meningitis is potentially life-threatening, and requires hospitalization and treatment with antibiotics. Several different varieties of bacteria may cause meningitis, although the patterns have changed with the introduction of vaccines.

Previous studies had shown that corticosteroids had a clear benefit in preventing hearing loss in children whose meningitis was caused by *Hemophilus influenzae* type b (Hib) bacteria. However, since the Hib vaccine was approved for routine use in childhood immunizations in 1985, cases of Hib meningitis have dropped sharply in the United States. Now bacterial meningitis in children is more commonly caused by pneumococcal or meningococcal bacteria.

Further studies may reveal that corticosteroids may also reduce hearing loss or other neurologic injuries in children with bacterial meningitis not caused by Hib, said Shah, but there is currently no such evidence. He added, "Our study shows the need for a further study in children—a large randomized clinical trial to examine all outcomes of steroid use,

before the use of these medicines becomes routine in children with bacterial meningitis.”

Source: Children's Hospital of Philadelphia

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