Prophylactic antibiotics prevent urinary tract infection recurrences in children with vesicoureteral reflux

by Carla Kemp • Senior Editor

VANCOUVER, BRITISH COLUMBIA – Children diagnosed with vesicoureteral reflux (VUR) following a urinary tract infection (UTI) are at risk for kidney scarring with subsequent UTIs. New research shows that children receiving antimicrobials over a two-year period to prevent infections had a substantially reduced risk of UTI recurrences compared with children receiving a placebo.

The study will be presented Sunday, May 4, at the Pediatric Academic Societies (PAS) annual meeting in Vancouver, British Columbia, Canada. The study also is published in the New England Journal of Medicine on May 4.

Normally, urine flows only down from the kidneys to the bladder. VUR is the abnormal flow of urine from the bladder back up the tubes that connect the kidneys to the bladder. VUR is present in one-third of children presenting with urinary tract infection accompanied by a fever and has been associated with a heightened risk of kidney scarring.

Earlier randomized, controlled trials that compared anti-reflux surgery with antimicrobial prophylaxis showed no differences in rates of recurrent urinary tract infection and renal scarring; however, lack of a placebo or observation group precluded a determination that either surgery or prophylaxis was effective. Recently conducted randomized trials, most unblinded, have reported conflicting results about the effectiveness of antimicrobial prophylaxis in reducing recurrences.

The aim of this study was to determine if giving children low-dose trimethoprim-sulfamethoxazole would prevent recurrent UTIs, decrease kidney scarring and contribute to the emergence of bacterial resistance. Called the Randomized Intervention for Children with Vesicoureteral Reflux (RIVUR) Trial, the study enrolled 607 children ages 2-71 months who were diagnosed with VUR following a first or second episode of UTI.

Participants were recruited from 19 clinical trial centers in the United States and underwent kidney scans to determine if scarring was present at baseline. Then they were randomized to receive trimethoprim-sulfamethoxazole or a placebo; kidney scans were repeated at one and two years.

Results showed that 39 of 302 children (13%) receiving antimicrobial prophylaxis developed UTIs compared to 72 of 305 (24%) receiving placebo. Antimicrobial prophylaxis reduced the risk of infections by 50% compared with placebo.

Prophylaxis was most effective in children who had a fever with their initial UTI and in those with bladder and bowel dysfunction at baseline. The occurrence of kidney scarring did not differ between the two groups (12% for the treatment group vs. 10% for the placebo group).

"Rates of renal scarring at the outcome visit were low and not reduced by prophylaxis, perhaps because most children were enrolled after their first infection and because parents, instructed to be vigilant, sought early medical attention," said lead author Alejandro Hoberman, M.D., FAAP, chief of the Division of General Academic Pediatrics at Children's Hospital of Pittsburgh and professor of pediatrics at University of Pittsburgh School of Medicine. "Not unexpectedly, recurrences that did occur in children who received prophylaxis were more likely to have been caused by a resistant pathogen."

"This study showed unequivocal evidence that antimicrobial prophylaxis reduced at least in half the likelihood of children having recurrent UTIs," Dr. Hoberman concluded. "Some subgroups of children derived the most benefit, particularly those with bladder and bowel dysfunction at baseline, and those in whom the UTI occurred with fever."

To view the study abstract, go to http://www.abstracts2view.com/pas/view.php?nu=PAS14L1_2823.9&terms=. 

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