Drug-Resistant Streptococcus pneumoniae in a Day Care Population

Sir—We read with interest the article by Joloba et al. [1] and would like to present some of our data from a study that we conducted to evaluate Streptococcus pneumoniae colonization rates in a day care population at several military facilities. The purpose of our study was to determine the incidence of drug-resistant S. pneumoniae in a day care population at a military facility and to assess its association with recurrent upper respiratory infections. Surveys to determine risk factors for colonization were distributed at the beginning of the study to the patients of children enrolled. Anterior nasal samples were obtained for culture in September and December 1998 as well as in March 1999. At the conclusion of the study, a chart review was done to determine the number of visits and the number and type of antibiotics prescribed. No clear risk factors for colonization with drug-resistant S. pneumoniae were identified among the 186 children enrolled in the study. There also was no clear association between colonization with drug-resistant S. pneumoniae and either recurrence of upper respiratory infections or increased antibiotic use.

Of more interest were the laboratory data, which were largely consistent with the findings of Joloba et al. [1]. Fifty-three (29%) of 186 children enrolled were colonized with drug-resistant S. pneumoniae on ≥1 occasion. Seventy (39%) of all 179 S. pneumoniae isolates were resistant to penicillin. Of the 70 resistant isolates, 18 (26%) had a high level of resistance (MIC, >2 μg/mL), and 51 (74%) had an intermediate level of resistance (MIC, 0.125–2 μg/mL). All of the penicillin-resistant strains were cross-resistant to trimethoprim-sulfamethoxazole (TMP-SMX); 30 (44%) were resistant to clindamycin, and 59 (84%) were cross-resistant to erythromycin. No isolates were resistant to rifampin.

Serotypes 6B, 19F, 14, and 23F were the most frequently noted isolate serotypes. Of the 70 drug-resistant S. pneumoniae isolates, 5 (7%) were serotype 6A, 27 (38%) were serotype 19F, 8 (11%) were serotype 14, 17 (24%) were serotype 6B, 6 (9%) were serotype 23F, 1 (1%) was serotype 9V, and 1 (1%) was a nonvaccine serotype. One isolate underwent autoagglutination and was unable to be serotyped. Three isolates (4%) had Quellung reactions that were positive for both serotype 19A and serotype 19F, and 1 isolate (1%) had Quellung reactions that were positive for both serotype 14 and serotype 23F. Most of the serotype 6A and 6B isolates (80% and 84%, respectively) were resistant to clindamycin, whereas 26%, 13%, and 17% of isolates of serotypes 19F, 14, and 23F, respectively, were resistant to clindamycin. A total of 30% of the combined 19A and 19F serotypes were resistant to clindamycin. All of the serotype 6B isolates were resistant to erythromycin. Of the serotype 19F, 6A, and 14 isolates, 87%, 80%, and 89%, respectively, were resistant to erythromycin. Only 33% of the serotype 23F isolates were resistant to erythromycin. Only 1 serotype 9V isolate was identified, and it was cross-resistant to TMP-SMX. All of the serotype 6B isolates were cross-resistant to all antibiotics tested, except for rifampin. Of the isolates with 19F, 14, and 23F serotypes, 30%, 22%, and 17%, respectively, were resistant to multiple drugs, with the exception of rifampin. These data further support the use of the conjugate vaccine, because 98% of the serotypes identified were included in the vaccine.

A question that remains unanswered in this era of vaccination with conjugate vaccine is whether children that are immunized and colonized with nonvaccine serotypes will develop infections due to these nonvaccine serotypes. More studies are needed to evaluate pneumococcal disease and colonization in those children who have been vaccinated with the conjugate vaccine.

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References

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