Comparison of S. pneumoniae and H. influenzae Susceptibilities from Community-Acquired Respiratory Tract Infections and Hospitalized Patients with Pneumonia: SENTRY Antimicrobial Surveillance Program


ABSTRACT

Community-acquired respiratory tract infections (CATIs) such as pneumonia and respiratory tract infections (RTIs) are major causes of morbidity and mortality worldwide. Among hospitalized patients, pneumonia is strongly associated with increased mortality. However, pathogen occurrence and resistance rates among certain key pathogens and antimicrobial agents can vary greatly between CATIs and hospitalizations with pneumonia caused by Streptococcus pneumoniae and Haemophilus influenzae. This study used the SENTRY Antimicrobial Surveillance Program (AP) to determine resistance rates among various antimicrobial agents for S. pneumoniae and H. influenzae, and compare them to historical data reported from the SENTRY AP.

MATERIALS AND METHODS

During the years 1997 to 2001, pneumonia and RTIs were isolated from patients with S. pneumoniae (1,186 isolates) and H. influenzae (1,802 isolates) from various countries. Among the pneumonia isolates, 1,000 were from patients with CATIs and 100 were from patients with hospitalizations (hospitalized patients). All isolates were submitted to the SENTRY AP in blinded fashion.

RESULTS

Among both S. pneumoniae and H. influenzae isolates, ≤2 µg/ml for both patient populations. However, strains with potential target modification (e.g., resistance to macrolides) were more frequent in hospitalized patients at a rate of 4.0% versus 2.7% for CATIs and were more prevalent in 2001 (6.0% and 5.5%) compared to 1997 (0.6% and 0.5%) among both patient populations (data not shown).

CONCLUSIONS

• Among the S. pneumoniae, high-level penicillin resistance was greater for CATIs (16.7%) compared to hospitalized patients (11.2%) for the five years monitored (1997 - 2001). Similarly, erythromycin resistance was slightly higher for CATIs (20.1%) isolates than for hospitalized patients (20.7%).

• Susceptibility of S. pneumoniae isolates to levofloxacin was >99.2% in both CATIs and hospitalized patients. All isolates were susceptible to garenoxacin and the MIC50 values of 0.008µg/ml were found for both patient populations. However, strains with potential target modification (e.g., quinolone resistance) were more frequent in hospitalized patients at a rate of 4% versus 2.7% for CATIs and were more prevalent in 2001 (6.0% and 5.5%) compared to 1997 (0.6% and 0.5%) among both patient populations (data not shown).

• Resistance of S. pneumoniae to trimethoprim/sulfamethoxazole was significantly (p<0.0001) higher among CATIs (US5%) compared to hospitalized patients (6.7%).

SELECTED REFERENCES


 quality-controlled results were obtained using a wide variety of methods, including the Clinical and Laboratory Standards Institute (CLSI) methods. The standard CLSI methods were used to determine the minimum inhibitory concentration (MIC) of the antimicrobial agents tested. The MIC was defined as the lowest concentration of the antimicrobial agent that inhibited visible growth of the bacteria.