Antimicrobial Susceptibility Patterns for Pathogens Isolated from Patients in Latin American Medical Centers with a Diagnosis of Pneumonia: Analysis from 5 Years of the SENTRY Antimicrobial Surveillance Program

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ABSTRACT

Background: Pneumonia is the most common hospital-acquired infection and a frequent cause of mortality and economic loss. The present study analyzed susceptibility data of pathogens associated with respiratory tract infections in Latin American medical centers over a 5-year period.

Methods: SENTRY participants from 10 Latin American medical centers, and the second most common nosocomial infection in the United States. To minimize longitudinal bias, only the carbapenems demonstrated reasonable activity against Acb (84.2-99.2%).

EXPERIMENTAL DESIGN

Collect data on the antimicrobial susceptibility of isolates from patients hospitalized with pneumonia in Latin American medical centers during the monitored period of 1997-2001, as part of SENTRY (165/4.9%). Amikacin, carbapenems, and piperacillin/tazobactam demonstrated the highest S rates (68.7 – 65.5%).

RESULTS

The five most frequently isolated pathogens were (n/%):

1. P. aeruginosa (298/8.9%)
2. S. pneumoniae (203/5.8%)
3. E. coli (473/13.3%)
4. K. pneumoniae (73/2.1%)
5. H. influenzae (34/1.0%)

• Among Enterobacteriaceae, piperacillin/tazobactam and aztreonam demonstrated very similar in vitro activity (Table 2).

MATERIAL & METHODS

Electrostatics were blasted from respiratory tract specimens of hospitalized patients with pneumonia in Latin American medical centers, and the second most common nosocomial infection in the United States. To minimize longitudinal bias, only the carbapenems demonstrated reasonable activity against Acb (84.2-99.2%).

S. pneumoniae and H. influenzae were the most common pathogens isolated from patients with pneumonia in Latin American medical centers during the monitored period of 1997-2001, as part of SENTRY (165/4.9%). Amikacin, carbapenems, and piperacillin/tazobactam demonstrated the highest S rates (68.7 – 65.5%).

Funding: This work was supported by the National Science Foundation (grant 0229881) and the American Heart Association (grant 0335245N). The Supporting Information is attached.

CONCLUSIONS

- Multi-drug resistant pathogens, including P. aeruginosa and Acinetobacter spp. resistant to most commercially available antimicrobials, oxacillin-resistant S. aureus, and vancomycin-resistant enterococci and E. coli accounted for approximately 40% of the isolates examined from patients with pneumonia.

- Not one of the compounds evaluated showed excellent coverage against the Gram-negative bacilli. The carbapenems, meropenem and imipenem, were very active against Enterobacteriaceae; however, high emerging rates of resistance to these compounds were detected among P. aeruginosa and Acinetobacter spp.

- No resistance to vancomycin, quinupristidaprilin or linezolid was detected among S. aureus or S. pneumoniae.

- In summary, resistance rates were extremely high among isolates from patients hospitalized with pneumonia in Latin American medical centers participating in the SENTRY Program. Continued surveillance through longitudinal programs remains necessary to develop therapeutic and infection control strategies for these patients.

SELECTED REFERENCES

Garenoxacin >4/>4 40.7 0.12/>4 88.5 >4/>4 24.5 0.12/>4 78.5 0.06/>4 73.2 Gatifloxacin 2/>4 50.9 0.06/2 89.9 >4/>4 25.1 0.06/4 83.6

Table 2. Antimicrobial activity and susceptibilities of drugs tested against the most prevalent Gram-negative pathogens isolated from patients hospitalized with pneumonia in Latin American medical centers (SENTRY Program – Latin America, 1997 - 2001).

Antimicrobial class/agent MIC 50/90 % Susc.a MIC50/90 % Susc.a MIC50/90 % Susc.a MIC50/90 % Susc.a MIC50/90 % Susc.a

Fluoroquinolones

Ciprofloxacin >2/>2 45.9 -- --

Levofloxacin >2/>2 50.9 0.06/1 89.2

Gatifloxacin 2/>4 50.9 0.06/2 89.9 >4/>4 25.1 0.06/4 83.6

Garenoxacin >4/>4 40.7 0.12/>4 88.5 >4/>4 24.5 0.12/>4 78.5 0.06/>4 73.2

Table 3. Antimicrobial activity and susceptibilities of drugs tested against the most prevalent Gram-positive pathogens isolated from patients hospitalized with pneumonia in Latin American medical centers (SENTRY Program – Latin America, 1997 - 2001).

Antimicrobial class/agent MIC 50/90 % Susc.a MIC50/90 % Susc.a MIC50/90 % Susc.a

S. aureus

Oxacillin >8/>8 37.4 0.06/1 89.2

Vancomycin 1/1 100.0 0.25/0.5 100.0

Teicoplanin 1/2 99.9 -- --

Flucloxacillin >8/>8 37.4 0.06/1 89.2

ERMI (Vancomycin ≥MIC ≤2/1) 99.9 -- --

Table 4. Antimicrobial activity and susceptibilities of drugs tested against the most prevalent Gram-positive pathogens isolated from patients hospitalized with pneumonia in Latin American medical centers (SENTRY Program – Latin America, 1997 - 2001).

Antimicrobial class/agent MIC 50/90 % Susc.a MIC50/90 % Susc.a MIC50/90 % Susc.a

Acinetobacter spp.

Erythromycin >8/>8 37.4 0.06/1 89.2

Teicoplanin 1/2 99.9 -- --

Vancomycin 1/1 100.0 0.25/0.5 100.0

Cefazolin >16/>16 - >16/>16 6.1 4/>16 56.3

Ceftriaxone >32/>32 45.4 a 0.25/1 94.9

Imipenem >8/>8 45.4 a 0.06/0.25 83.8

Table 5. Antimicrobial activity and susceptibilities of drugs tested against the most prevalent Gram-positive pathogens isolated from patients hospitalized with pneumonia in Latin American medical centers (SENTRY Program – Latin America, 1997 - 2001).

Antimicrobial class/agent MIC 50/90 % Susc.a MIC50/90 % Susc.a MIC50/90 % Susc.a

Enterococcus spp.

Vancomycin 1/1 100.0 0.25/0.5 100.0

Erythromycin >8/>8 37.4 0.06/1 89.2

Erulopenicillin >16/>16 - >16/>16 6.1 4/>16 56.3

Table 6. Antimicrobial activity and susceptibilities of drugs tested against the most prevalent Gram-positive pathogens isolated from patients hospitalized with pneumonia in Latin American medical centers (SENTRY Program – Latin America, 1997 - 2001).

Antimicrobial class/agent MIC 50/90 % Susc.a MIC50/90 % Susc.a

Cephalosporins

Cefazolin >16/>16 - 4/>16 54.6 >16/>16 - >16/>16 6.1 4/>16 56.3

Ceftriaxone >32/>32 45.4 a 0.25/1 94.9

Ceftazidime >32/>32 45.4 a 0.25/1 94.9

Cefepime 8/>16 58.5

Table 7. Antimicrobial activity and susceptibilities of drugs tested against the most prevalent Gram-positive pathogens isolated from patients hospitalized with pneumonia in Latin American medical centers (SENTRY Program – Latin America, 1997 - 2001).

Antimicrobial class/agent MIC 50/90 % Susc.a

Fluoroquinolones

Ciprofloxacin >2/>2 45.9 -- --

Levofloxacin >2/>2 50.9 0.06/1 89.2

Gatifloxacin 2/>4 50.9 0.06/2 89.9 >4/>4 25.1 0.06/4 83.6

Garenoxacin >4/>4 40.7 0.12/>4 88.5 >4/>4 24.5 0.12/>4 78.5 0.06/>4 73.2

Table 8. Antimicrobial activity and susceptibilities of drugs tested against the most prevalent Gram-positive pathogens isolated from patients hospitalized with pneumonia in Latin American medical centers (SENTRY Program – Latin America, 1997 - 2001).

Antimicrobial class/agent MIC 50/90 % Susc.aMIC50/90 % Susc.a

Piperacillin/Tazobactam 4/>64 45.4 a -- --

Aztreonam 16/>16 42.1

Cefepime 8/>16 58.5

Ceftazidime >32/>32 45.4 a 0.25/1 94.9