ANTIMICROBIAL AGENTS AND CHEMOTHERAPY, Jan. 1983, p. 161–162
0066-4804/83/010161-02$02.00/0

Vol. 23, No. 1

NOTES

Susceptibility of *Pseudomonas paucimobilis* to 24 Antimicrobial Agents

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Received 6 August 1982/Accepted 15 October 1982

Pseudomonas paucimobilis (group IIK, biotype 1) clinical isolates showed in vitro resistance to ampicillin, carbenicillin, cephalothin, cefoxitin, cefamandole, moxalactam, cefotaxime, cefoperazone, mezlocillin, azlocillin, piperacillin, and ticarcillin. Those agents to which the microbes were shown to be susceptible were tetracycline, chloramphenicol, gentamicin, tobramycin, kanamycin, amikacin, netilmicin, sisomicin, trimethoprim-sulfamethoxazole, ceftazidime, ceftriaxone, and ceftizoxime.

Pseudomonas paucimobilis (group IIK, biotype 1) is a yellow-pigmented, nonfermentative, gram-negative bacillus (3). The natural habitat of *P. paucimobilis* has not been totally defined; however, Reinhardt et al. (5) reported that this organism may be found in diverse aqueous and aquatic environments. Recently, *P. paucimobilis* has been reported to be a causative agent for infection in humans (4, 6, 7). Because of its potential as an opportunistic pathogen, the present investigation determined the susceptibility of *P. paucimobilis* to 24 antimicrobial agents, including several newer cephalosporins and antipseudomonal penicillins.

Twenty clinical isolates of *P. paucimobilis* were tested in this study. Eighteen of these strains were provided by Robert Weaver, Centers for Disease Control, Atlanta, Ga. One strain was a subculture of *P. paucimobilis* provided by Margaret Peel, University of Melbourne, Victoria, Australia (4). The last strain was isolated from a patient at the Medical Center, University of Tennessee, Memphis, Tenn. The strains were maintained on Trypticase soy agar with 5% sheep blood (BBL Microbiology Systems, Cockeysville, Md.) with incubation at 37°C for 24 h before testing.

Antimicrobial susceptibility testing was done by microbroth dilution, using cation-supplemented MicroScan trays (MicroScan, Sacramento, Calif.). Several colonies from each strain were picked from the culture plates, inoculated into brain heart infusion broth (BBL), and incubated for 2 to 4 h at 35°C (1). The suspension was diluted to a turbidity equivalent to a 0.5 McFarland standard. A total of 0.5 ml of standardized suspension was pipetted into 25 ml of sterile distilled water with 0.02% Tween 80. The final dilution of each strain was poured into an inoculation tray, and two antibiotic trays containing various concentrations of the 24 agents were inoculated with the standard MicroScan inoculator (1). The trays were covered and incubated for 18 h at 35°C before observation of growth inhibition. The minimal inhibitory concentration (MIC) of a drug was defined as the lowest concentration of antibiotic resulting in complete inhibition of growth after 18 h of incubation at 35°C.

Escherichia coli ATCC 25922, *Staphylococcus aureus* ATCC 29213, *Pseudomonas aeruginosa* ATCC 27853, and *Streptococcus faecalis* ATCC 29212 were used as controls for determinations of MICs. The MIC determinations of the control strains were performed as previously described, with observation at 18 h.

β-Lactamase tests were done by the lactamase test strip (PADAC; Calbiochem-Behring Corp., San Diego, Calif.). Briefly, each reaction zone was moistened with a drop of sterile distilled water, followed by application of three to four bacterial colonies with a sterile bacteriological loop. Known positive and negative β-lactamase-producing organisms were used as controls. The test strips were allowed to stand at room temperature for 30 min before observation. A color change from purple to yellow on the reaction zone was interpreted as the production of β-lactamase.

The results for the control strains were always

Table 1. Susceptibility of isolates of *P. paucimobilis* to antimicrobial agents

Drug	No. of strains	MIC (μg/ml)[a]		
		Range	50%	90%
Ampicillin	20	<0.25–16	16	16
Carbenicillin	20	<8–512	64	128
Ticarcillin	10	4–128	64	64
Azlocillin	11	32–>128	>128	>128
Mezlocillin	11	64–>128	>128	>128
Piperacillin	11	32–>128	>128	>128
Cephalothin	20	>16	>16	>16
Cefamandole	20	>16	>16	>16
Cefoxitin	20	<1–16	16	>16
Cefoperazone	11	>32	>32	>32
Cefotaxime	11	0.5–32	4	>32
Moxalactam	11	16–32	>32	>32
Ceftriaxone	11	1–>32	4	8
Ceftazidime	11	2–>32	8	8
Ceftizoxime	10	5–>32	0.5	1
Kanamycin	20	<1–4	2	2
Gentamicin	20	<0.5–2	<0.5	>0.5
Tobramycin	20	<0.5–2	<0.5	1
Amikacin	20	<1–4	2	2
Sisomicin	11	0.5–>8	0.5	2
Netilmicin	11	0.5–>8	0.5	2
Tetracycline	20	<0.25–4	0.5	4
Chloramphenicol	20	1–8	4	8
Trimethoprim-sulfamethoxazole	20	0.5–9.5	0.5–9.5	0.5–9.5

[a] The MIC was defined as the lowest concentration of antibiotic resulting in complete inhibition of visible growth after 18 h of incubation at 35°C. 50% and 90%. Concentration at which 50 and 90% of the isolates, respectively, were inhibited.

within accepted limits (2). The MICs of the antimicrobial agents are shown in Table 1. Those agents to which the organism was considered resistant included ampicillin, carbenicillin, cephalothin, cefoxitin, cefamandole, moxalactam, cefotaxime, cefoperazone, mezlocillin, azlocillin, piperacillin, and ticarcillin (Table 1). Those antimicrobial agents to which the organism was considered susceptible included ceftriaxone, ceftazidime, ceftizoxime, tetracycline, chloramphenicol, gentamicin, tobramycin, kanamycin, trimethoprim-sulfamethoxazole, amikacin, netilmicin, and sisomicin. All twenty isolates of *P. paucimobilis* were positive for β-lactamase.

The results of the MIC determinations of the β-lactams correlate closely with those reported by Southern and Kutscher (7) in a case of bacteremia due to *P. paucimobilis* and in which survival of the patient was due to aggressive surgical treatment of the source rather than antimicrobial therapy. Similar results with disk diffusion techniques were observed in two other reports (4, 6). On the basis of the findings of the present investigation and those of reported cases of infection by *P. paucimobilis*, in vitro antimicrobial susceptibility of *P. paucimobilis* should be required to determine appropriate antibiotic therapy.

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