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ABSTRACT

Background: Urinary tract infections are one of the most frequently infections in children. *E.coli* is one of the leading bacterial pathogens causing CAUTIs. **Methods:** During the 2000-01 years 9 centers took part in the study. The MICs of antimicrobials were determined by the agar dilution method as described in the NCCLS guidelines. **Results:** A total of 710 consecutive urine isolates from 692 children aged 1 month to 18 years with CAUTI were collected. The most frequently isolated species from children with CAUTI was *E.coli* (52,3%), followed by *Klebsiella* spp. (8,0%) and *Proteus* spp. (7,6%). Results of the *in vitro* susceptibility testing of *E.coli* to AMG are shown in table below. Resistance of the strains was conditioned on production of AMG-modifying enzymes. There has been found following phenotypes among resistance strains: gentamicin-tobramycin-netilmicin (77,8% - AAC(3)-V and 13,9% - AAC(3)-IV enzymes) and gentamicin-tobramycin (8,3%, due to ANT(2'') enzyme). **Conclusion:** Amikacin is most active AMG against *E.coli*. Resistance to gentamicin and netilmicin was mainly determined by production of AAC(3)-V enzyme.

BACKGROUND

Urinary tract infections are one of the most frequently infections in children. These infections are usually caused by Gram-negative bacteria most of which belong to the family Enterobacteriaceae. *E.coli* is one of the leading bacterial pathogens causing CAUTIs. Therapy for these infections is usually begun before results of microbiological tests are known. In most cases, the choice of antibiotics for the treatment of UTI is made empirically and should be based on the local antibiotic susceptibility data including susceptibility to AMG.

MATERIALS AND METHODS

Bacterial isolates. A total of 710 consecutive urine isolates from 692 children aged 1 month to 18 years with CAUTI were collected. During the 2000-01 years 9 centers took part in the study.

Susceptibility testing. MICs of gentamicin, netilmicin and amikacin were determined by agar dilution method as described in the NCCLS guidelines.

AMG-modifying enzymes detection. Assignment of enzymatic mechanisms to each strain was based upon the unique pattern of resistance to 12 aminoglycosides: apramycin, fortimicin, 5-episisomicin, 2'-N-ethylnetilmicin, gentamicin, tobramycin, amikacin, isepamicin, netilmicin, 6'-N-ethylnetilmicin, kanamycin, neomycin (G. Miller, Schering Plough Research Institute, USA).

RESULTS

The most frequently isolated species from children with CAUTI was *E.coli* (52,3%), followed by *Klebsiella* spp. (8,0%) and *Proteus* spp. (7,6%). Results of the *in vitro* susceptibility testing of *E.coli* to AMG are shown in Table below. *E.coli* resistance to gentamicin and netilmicin were 9,7% and 5,4% respectively. No were resistant to amikacin. Resistance of the strains was due to production of AMG-modifying enzymes. The following phenotypes were found among resistance strains: gentamicin-tobramycin-netilmicin [77,8% - AAC(3)-V and 13,9% - AAC(3)-IV enzymes] and gentamicin-tobramycin [8,3%, due to ANT(2'') enzyme] (Fig. 1). Acetylating enzymes are present in most of resistant strains.

Table . Susceptibility *E.coli* to AMG

Antimicrobial	MIC breakpoints			S, %	I, %	R, %	MIC ₉₀ , mg/L	MIC ranges
	S	I	R					
Gentamicin	<4	8	>16	90,3	0	9,7	4	0,5-32
Netilmicin	<8	16	>32	91,6	3,0	5,4	4	0,5-64
Amikacin	<8	32	>64	100	0	0	4	1-16

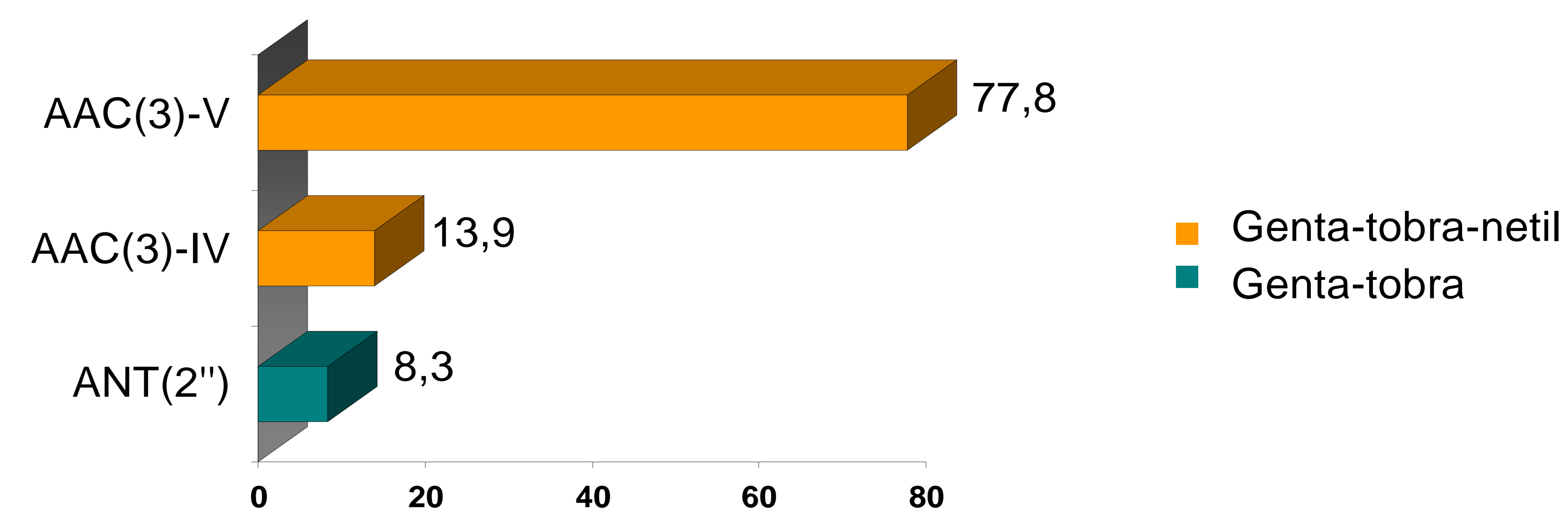


Fig. 1. Distribution by resistance phenotypes (%)

CONCLUSIONS

- Amikacin is most active AMG against *E.coli*.
- Resistance to gentamicin, tobramycin and netilmicin was mainly determined by production of AAC(3)-V enzyme.