S USCEPTIBILITY OF ENTEROCOCCUS SPP. NOSOCOMIAL ISOLATES Paper # K-1605 IN RUSSIA A. A. NIKULIN¹ /A. V. DEKHNICH¹ / O. I. KRETCHIKOVA¹ / N.V. IVANCHIK¹ / R. S. KOZLOV¹ / ROSNET STUDY GROUP²

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INTRODUCTION

Enterococci are important pathogens that cause infections in hospitalized patients through out the world. The resistance of this microorganism to antimicrobials is common and leads to increased mortality and decrease in cost-effectiveness of treatment. Therefore, appropriate initial antimicrobial therapy based on data of local susceptibility pattern is cruicial for outcome. The aim of this study was to evaluate antimicrobial susceptibility trends of nosocomial Enterococci in different regions of Russia.

METHODS

Perm), South (Krasnodar), Ural (Chelyabinsk, respectively). Ekaterinburg, Tyumen), Siberian (Krasnoyarsk, Novosibirsk, Noyabrsk, Seversk, Tomsk) and the Far-East (Yakutsk).

All bacterial cultures were delivered to a reference laboratory of Institute of Antimicrobial Chemotherapy (Smolensk, Russia) and re-identified by standard biochemical methods and stored at -70°C in glycerol broth. The susceptibility testing to ampicillin, (44.7 and 62.8) and tetracycline (71.8 and 74.4) for E. chloramphenicol, ciprofloxacin, gentamicin, levofloxacin, linezolid, streptomycin, tetracycline and vancomycin was performed by agar-dilution method Inoculated plates were incubated in ambient air at *faecium*. Non-susceptibility rates for levofloxacin have 35°C for 24 hours. Interpretation of results was performed in accordance with CLSI recommendations. E. faecalis ATCC[®]29212 strain was used for quality control.

A total of 530 clinical strains were collected The most active agents were linezolid (no resistance was during multicenter studies in two time periods: found, MIC₅₀ and MIC₉₀ - 2 mg/l) and vancomycin (MIC₅₀ 2001-2002 and 2006-2007. Strains were collected and MIC₉₀ - 1 mg/l and 2-4 mg/ml, respectively). Only from 29 centres in 19 cities (Figure 1) from the one vancomycin intermediate strain of *E. faecium* with following regions: Central (Kaluga, Lipetsk, MIC 8 mg/ml was found in 2006. Ampicillin retained good Moscow, Smolensk, Ryazan), North-West (Saint in vitro activity against *E. faecalis* (non-susceptibility rates Petersburg), Volga region (Kazan, N. Novgorod, are 7 and 10.3% for 2001-2002 and 2006-2007,



Figure 1. Geographical distribution of centers, participating in the studies.

RESULTS

All other antibiotics revealed low in vitro activity. High percentage of non-susceptible isolates was found to chloramphenicol (56.1 and 56.4 in 2001-2 and 2006-7, respectively), ciprofloxacin (69.6 and 71.8), gentamicin faecalis. High rates of non-susceptibility to ampicillin (66.1 and 90 2001-2 and 2006-7, respectively) and ciprofloxacin (88.1 and 96) was also revealed for E. increased from 11.4 to 59% for *E. faecalis* and from 39.1 to 94% for *E. faecium* in 2001-2002 and 2006-2007, respectively (fluoroquinolones MIC distribution presented at Figure 4). At the same time a relative decrease in non-susceptibility rates was noted for E. faecalis: to streptomycin (51.6 and 44.9), and for E. faecium: chloramphenicol (55.8 and 22), streptomycin (69.5 and 62) and tetracycline (45.8 and 22). Statistically significant increase of resistance was obtained only for gentamicin and levofloxacin for E. faecalis and ampicillin, chloramphenicol, levofloxacin for *E. faecium* (Table 1. Figures 2, 3).

AB	E. faecalis				E. faecium			
	2001-2002 (n=273)		2006-2007 (n=78)		2001-2002 (n=59)		2006-2007 (n=50)	
	I+R, %	MIC ₅₀ /MIC ₉₀	I+R, %	MIC_{50}/MIC_{90}	I+R, %	MIC_{50}/MIC_{90}	I+R, %	MIC_{50}/MIC_{90}
AMP	7	2/4	10.3	2/16	66.1	32/128	90	128/512
CHL	56.1	32/64	56.4	32/64	55.8	16/64	22	8/32
CIP	69.6	2/8	71.8	32/256	88.1	2/32	96	256/256
GEN	44.7	64/4096	62.8	8192/8192	69.5	4096/4096	90	8192/8192
LEV	11.4	2/4	59	8/64	39.1	2/32	94	64/64
LNZ	0	2/2	0	2/2	0	2/2	0	2/2
STR	51.6	2048/8192	44.9	1024/16384	69.5	8192/8192	62	2048/2048
TET	71.8	64/128	74.4	64/128	45.8	1/128	22	0.5/64
VAN	0	1/2	0	1/4	0	1/2	2	1/2

 Table 1. In vitro activity of tested antimicrobials against
nosocomial Enterococcus spp. isolates







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CONCLUSIONS

• The most active *in vitro* agents against nosocomial strains of *Enterococcus* spp. in Russia were linezolid and vancomycin.

• Resistance rates to ampicillin, gentamicin and levofloxacin are found to be substantially increased during the 5-year period.