

ACTIVITY OF LINEZOLID AGAINST NOSOCOMIAL STRAINS OF *Staphylococcus aureus* IN RUSSIA: RESULTS OF MULTICENTER STUDY

A.V. Dekhnich, L.S. Stratchounski, I.V. Edelstain, A.D. Narezkina, The StEnt Study Group

Institute of Antimicrobial Chemotherapy, Smolensk State Medical Academy, Russia



214019, PO Box 5,
Smolensk, Russia
Tel.: +7 0812 61 13 01
Fax: +7 0812 61 12 94
E mail: idt@antibiotic.ru
<http://www.antibiotic.ru>

ABSTRACT

Purpose: to determine the susceptibility of nosocomial strains of *Staphylococcus aureus* to linezolid in different regions of Russia. **Methods:** a total of 879 clinical strains of *S. aureus* isolated in 2000-2001 from patients hospitalized in 17 medical institutions in different parts of Russia - 4 in Central region (Moscow, Ryazan, Smolensk), 2 in North-Western region (St.-Petersburg), 3 in Southern region (Krasnodar, Stavropol), 2 in Volga region (N. Novgorod, Kazan), 3 in Ural region (Ekaterinburg, Ufa), 3 in Siberia (Krasnoyarsk, Novosibirsk, Tomsk), were included in the study. Antimicrobial susceptibility testing was performed by agar dilution method in accordance with the NCCLS recommendations. **Results:** all tested strains including 295 MRSA strains (33.6% of all strains) were found to be susceptible to linezolid with the MIC ranged from 0.5 to 4 mg/L. Both MIC50 and MIC90 were 2 mg/L. **Conclusions:** linezolid had excellent *in vitro* activity that was not affected by resistance to other classes of antimicrobials, so it has a potential as an option for the treatment of nosocomial infections caused by *S. aureus* including MRSA.

INTRODUCTION

Staphylococcus aureus is one of the most important pathogens that cause infections in hospitalized patients through the world. The resistance of this microorganism in both community and hospital settings to multiple antimicrobials is becoming more and more common. Treatment of infections caused by methicillin-resistant strains of *S. aureus* (MRSA) is one of the main problems of antimicrobial therapy in term of resistance of this pathogen to all b-lactams and to many other classes of antimicrobials. Such resistance leads to increased mortality and to decrease in cost-effectiveness of treatment. Glycopeptide antibiotic vancomycin has been the drug of choice for the treatment of the serious staphylococcal infections for the decades with no resistance emerged until the late 90s when first case of infection caused by MRSA with reduced susceptibility to vancomycin has been described. The only available antimicrobial with proved high activity against multiresistant *S. aureus*, including strains with reduced susceptibility to glycopeptides is linezolid. But there are no currently available data concerning the susceptibility of *S. aureus* to linezolid in Russia.

PURPOSE

To determine the susceptibility of nosocomial strains of *Staphylococcus aureus* to linezolid in different regions of Russia.

MATERIALS AND METHODS

A total of 879 clinical strains of *S. aureus* isolated in 2000-2001 from patients hospitalized in 17 hospitals in different parts of Russia (Fig. 1) were included in the study. The strains were identified using cultural growth test on mannitol-salt agar and tube coagulase test. The susceptibility testing was performed by agar-dilution method using Mueller-Hinton agar (Becton Dickinson, USA) supplemented with linezolid (Pharmacia, USA). Plates were inoculated with bacterial suspension using the multipoint inoculator (Mast Diagnostics Ltd, UK) approximately 10^4 CFU per spot and incubated in ambient air at 35°C for 24 hours. Interpretation of results was performed in accordance with NCCLS recommendations (2002). *S. aureus* ATCC@29213 strain was used for quality control.



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

RESULTS

All tested strains including 295 MRSA strains (33.6% of all strains) were found to be susceptible to linezolid with the MIC ranged from 0.5 to 4 mg/L. Both MIC50 and MIC90 were 2 mg/L in all participating centers and for both methicillin-susceptible and methicillin-resistant strains.

CONCLUSIONS

Linezolid has an excellent *in vitro* activity that is not affected by resistance to other classes of antimicrobials, so it has a potential as an option for the treatment of nosocomial infections caused by *S. aureus* including MRSA.