ACTIVITY OF MACROLIDES, CLINDAMYCIN AND QUINUPRISTIN/DALFOPRISTIN AGAINST CLINICAL STRAINS OF *S. pneumoniae* ISOLATED FROM CHILDREN WITH COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS (CARTI)

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ABSTRACT

Background: Community-acquired respiratory tract infections (CARTI) in children are highly prevalent and one of the most common reasons for seeking of medical advice. *S. pneumoniae* is one of the leading bacterial pathogens causing various CARTI. **Methods:**A total of 56 non-duplicate strains isolated from children of 1-14 years old were included in this study. Antimicrobials tested included erythromycin, azithromycin, clarithromycin, midecamycin, midecamycin acetate, spiramycin, clindamycin and quinupristin/dalfopristin. **Results:** The susceptibility testing results are presented in the Table.

Antimicrobial	MIC Breakpoint			S %	R/I %	MIC_{90}, mg/L	MIC range, mg/L
	S	I	R				
ERY	≤0.25	0.5	≥1	93.2	6.8	0.06	0.016-8
CLA	≤0.25	0.5	≥1	93.2	5.1/1.7	0.125	0.008-4
AZI	≤0.5	1	≥2	93.2	6.8	0.125	0.03-8
MID*	≤1	-	≥4	95.2	4.8	0.5	0.03-1
MIDa*	≤1	-	≥4	95.2	4.8	0.5	0.03-1
SPI*	≤1	-	≥4	100	0	0.125	0.03-0.25
CLI	≤0.25	0.5	≥1	100	0	0.016	0.008-0.125
Q/D	≤1	2	≥4	93.7	0/6.3	1	0.5-2

* - CA - SFM 1996

Conclusions: Macrolides, CLI and Q/D retained comparatively high activity against clinical strains *S. pneumoniae.* SPI and CLI were the most active against tested *S. pneumoniae.*

INTRODUCTION

S. pneumoniae is one of the most common bacterial pathogens in children causing community-acquired respiratory tract infections (e.g. acute otitis media, sinusitis, pneumonia, etc.) which are among the most frequent reasons for seeking of medical advice. Currently the prevalence *S. pneumoniae* resistant to antimicrobials is increasing globally. For the time being, macrolides are frequently recommended as drugs of choice for a varienty of respiratory tract infections. However, an increase of use of macrolides might select for resistance in pneumococci, which potentially can limit their usage for empiric therapy of CARTI. Thus, regional and local data on resistance are of extreme importance.

OBJECTIVE

To determine the activity of macrolides, clindamycin and quinupristin/dalfopristin against *S. pneumoniae* isolated from children in different regions of Russia.

MATERIALS AND METHODS

This study was conducted in 9 cities (Ekaterinburg, Kazan, Krasnodar, Moscow, Novosibirsk, Ryazan, Saint-Petersburg, Smolensk, Tomsk) in Russia (see Fig.1). Identification of the strains was done on the basis of colony morphology, Gram strain, optochin susceptibility and bile solubility tests. Susceptibility testing was performed using cation-adjusted Mueller-Hinton broth (BBL, USA) with 2-5% lysed horse blood. Microtiter plates were incubated for 24 h at 35^{o}C at ambient air. *S. pneumoniae* ATCC 49619 strain was used for quality control. Interpretation of results was done according to NCCLS guidelines (2001). A total of 56 non-duplicate strains isolated from children of 1-14 years old were included in this study.

Fig 1. Distribution of centers.

RESULTS

The resistance of *S. pneumoniae* is presented in Fig. 2.

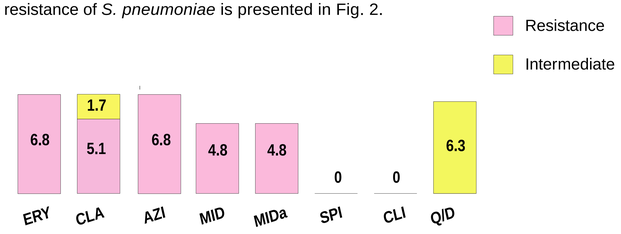

Fig. 2. Resistance (%) to tested antimicrobials

The potency of macrolides based on MIC_{90} were as follows: erythromycin > azithromycin = spiramycin = clarithromycin > midecamycin = midecamycin acetate. No resistance to clindamycin was detected. Only 6.3% of pneumococci had an intermediate resistance to quinupristin/dalfopristin.

CONCLUSIONS

- Macrolides, CLI and Q/D retained comparatively high activity against clinical strains *S. pneumoniae* isolated from children different regions in Russia with the resistance levels varied from 0 to 6.8%.
- SPI and CLI were the most activite *in vitro* against tested *S. pneumoniae.*
- Macrolides still might be considered as drugs of choice for treatment of CARTI in children.