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Paper Poster Session
New and old antibiotics against Gram-positive cocci in vitro

Activity of tedizolid tested against Staphylococcus collected from a nationwide study in Spain in 2014

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Background: Tedizolid (TZD), the active metabolite of tedizolid phosphate, is a novel oral/intravenous oxazolidinone prodrug with broad-spectrum in vitro activity against Gram-positive organisms, including methicillin-resistant *Staphylococcus aureus* (MRSA). We evaluate the in vitro activity of TZD tested against 905 staphylococcal isolates collected in a nationwide prevalence study in Spain.

Material/methods: On September 23rd 2014, we collected all staphylococci isolated in 144 Spanish hospitals. All microorganisms were sent to a central laboratory for identification and antimicrobial susceptibility testing. TZD susceptibility testing was performed by CLSI broth microdilution (BMD) methodology in cation-adjusted Mueller-Hinton and by the gradient diffusion (GD) method (epsilon-test, Liofilchem, Italy). CLSI and EUCAST breakpoints were applied for TZD (CLSI *S. aureus* susceptible ≤0.5 mg/L; EUCAST *Staphylococcus* spp. susceptible ≤0.5 mg/L). *S. aureus* ATCC 29213 and *E. faecalis* ATCC 29212 were used as control strains.

Results: We collected 579 *S. aureus* and 326 coagulase-negative staphylococci (CoNS) isolates. Among those, 161 isolates were MRSA, and 171 were methicillin-resistant (MR) CoNS. Tedizolid inhibited 99.2% of all isolates at an MIC of ≤1 mg/L and 98.7% at an MIC of ≤0.50 mg/L. The TZD MIC50, MIC90, and range (mg/L) for all isolates tested were 0.5, 0.5, and 0.06->64 mg/L, respectively. All *S. aureus* isolates were susceptible to tedizolid (MIC50 and MIC90 = 0.5 mg/L). Among CoNS, resistance to linezolid was 2.1% (7 isolates) and all were cross-resistant to tedizolid. All the tedizolid and linezolid-resistant isolates had the G2576T mutation and a mutation in the L4 ribosomal protein. In addition, one isolate had a mutation in the L3 ribosomal protein and was *cfr*-positive. A good essential agreement correlation was observed between tedizolid MIC values obtained by BMD and by the gradient diffusion method. MIC values obtained by the gradient diffusion method were slightly lower than those by the BMD method (Table).

Conclusions: This study shows potent in vitro activity of TZD against recent staphylococci, including MRSA strains, recovered in a nationwide study. Gradient diffusion is a good alternative to BMD for tedizolid susceptibility testing.

Tedizolid (BMD)	**MIC50**	**MIC90**	**Range**	**Tedizolid (GD)** **MIC50**	**MIC90**	**Range**
S. aureus (n=579)	0.5	0.5	0.06-1	0.38	0.5	0.094-1.5
CoNS (n=326)	0.25	0.5	0.06->64	0.25	0.5	0.03->32
MSSA (n=418)	0.5	0.5	0.06-1	0.38	0.5	0.19-1.5
MRSA (n=161)	0.5	0.5	0.12-1	0.38	0.5	0.12-0.75
CoNS-MS (n=155)	0.5	0.5	0.06-0.5	0.25	0.5	0.03-0.75
CoNS-MR (n=171)	0.25	0.5	0.06->64	0.25	0.38	0.094->32