

Susceptibility of clinical *Staphylococcus* and *Enterococcus* isolates to glycopeptides, linezolid and daptomycin in oncohematological patients in Northwestern Greece, during a two year period.



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INTRODUCTION

Gram positive infections are a major cause of morbidity and mortality in oncohematological patients and increasing antimicrobial resistance among Gram positive bacteria is of serious concern, especially regarding these patients.

The aim of this study was

- ✓ to assess the sensitivity profile of *Staphylococcus* and *Enterococcus* strains to last line antimicrobials (glycopeptides, linezolid and daptomycin) as well as
- ✓ to determine the MIC values of these agents.

MATERIALS & METHODS I

From January 2012 to October 2013, a total of 64 strains consisted of (figure 1):

32 staphylococci

16 *Staphylococcus aureus* (25%)

16 coagulase negative staphylococci, CNS (25%)

32 enterococci

21 *Enterococcus faecalis* (33%)

11 *Enterococcus faecium* (17%)

Figure 1



■ *S. aureus* ■ CNS
■ *E. faecalis* ■ *E. faecium*

isolated from various clinical specimens obtained from oncology patients and patients with hematological malignancies in University Hospital of Ioannina (figure 2).

RESULTS I

- ✓ Three (18.8%) of *S. aureus* strains and 13 (81.3%) of CNS, were resistant to methicillin and possessed the *mecA* gene.
- ✓ None of *Staphylococcus* and *Enterococcus* isolates was resistant to DAPT.
- ✓ All staphylococci were susceptible to VAN.
- ✓ With the exception of one intermediate *Staphylococcus epidermidis* (6.3%), recovered from blood culture, they were also susceptible to TEIC.
- ✓ Only one strain *E. faecium* (3%), derived from CVC culture, was resistant to glycopeptides, carrying the VanA gene.
- ✓ Regarding LIN, only 2 CNS (12.5%), isolated from blood and CVC cultures, were resistant

REFERENCES

1. Montassier E et al. Eur J Clin Microbiol Infect Dis 2013; 32(7): 841-50.
2. Rolston KV et al. Support Care Cancer 2014; 22(1): 7-14.

MATERIALS & METHODS II

- ❖ Sixteen (50%) staphylococcal strains (4 *S. aureus* and 12 CNS) and 10 (31.25%) enterococcal strains (4 *E. faecalis* and 6 *E. faecium*) derived from blood and central venous catheter (CVC) cultures.

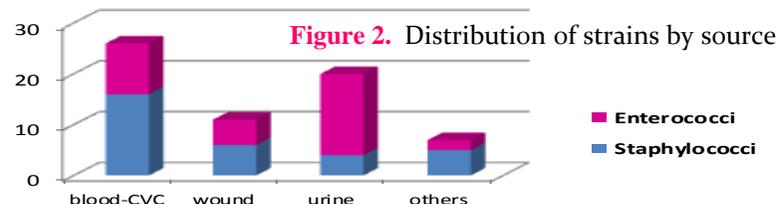


Figure 2. Distribution of strains by source

- ❖ Identification and susceptibility testing were performed using the Vitek 2 system (bioMerieux, France).
- ❖ MICs of vancomycin (VAN), teicoplanin (TEIC), linezolid (LIN) and daptomycin (DAPT), were confirmed by E-test (AB Biodisk) according to CLSI guidelines.
- ❖ Methicillin and glycopeptides resistance genes (*mecA* and *vanA/vanB* respectively) were detected by a method combining PCR and reverse hybridization (GenoType MRSA and VRE, HAIN-Lifescience).

RESULTS II

The MIC range ($\mu\text{g/ml}$), as well as the MIC₅₀ and the MIC₉₀ ($\mu\text{g/ml}$), are summarized in the following table:

	<i>S.aureus</i> (n=16)			CNS (n=16)			<i>Enterococcus</i> sp. (n=32)		
	MIC range	MIC ₅₀	MIC ₉₀	MIC range	MIC ₅₀	MIC ₉₀	MIC range	MIC ₅₀	MIC ₉₀
VAN	0.5-2	1	1	1-4	1	3	0.5->256	1	2
TEIC	0.5	0.5	0.5	0.5-16	4	8	0.5-128	0.5	0.5
LIN	1-2	2	2	1->256	2	2	1-2	2	2
DAPT	0.25-1	0.5	1	0.25-1	0.5	1	1-4	2	4

CONCLUSION

- ❖ Only daptomycin had a 100% sensitivity rate, thus could be a very good alternative solution.
- ❖ In general, glycopeptides retain a good in vitro activity with MICs remaining in relatively low levels despite their extensive use, which enforce the necessity to take the appropriate measures in order to avoid not only the amplification of resistance but also the reduced susceptibility.