TITLE: DISTRIBUTION OF SPECIES AND ANTIMICROBIAL RESISTANCE AMONG ENTEROCOCCAL ISOLATES FROM ESPÍRITO SANTO STATE, BRAZIL

AUTHORS: MIRANDA, M.M[1,4]; TEIXEIRA, C.D[2]; LOPES-SILVA, E[3];MORAIS, J.M. [4]; RIBEIRO, R.L.[1]; PERALTA, J.M.[4]; TEIXEIRA, L.M.[4]

INSTITUTION: [1]UNIVERSIDADE FEDERAL DO RIO DE JANEIRO, RIO DE JANEIRO – RJ (DEPARTAMENTO DE DOENÇAS INFECCIOSAS E PARASITÁRIAS, FACULDADE DE MEDICINA, AVENIDA CARLOS CHAGAS FILHO, 373, CIDADE UNIVERSITÁRIA, CEP 21044-020, RIO DE JANEIRO – RJ, BRAZIL), [2]CENTRO UNIVERSITÁRIO SÃO CAMILO – ES (LABORATÓRIO DE CIÊNCIAS FARMACÊUTICAS II, RUA SÃO CAMILO DE LÉLIS, 1, PARAÍSO, CEP 29304-910, CACHOEIRO DE ITAPEMIRIM –ES, BRAZIL) [3]LABORATÓRIO DE MICROBIOLOGIA DA SANTA CASA DE MISERICÓRDIA DE CACHOEIRO DE ITAPEMIRIM –ES (RUA DR. RAULINO DE OLIVEIRA, 67, CENTRO, CEP 29300-150, CACHOEIRO DE ITAPEMIRIM –ES, BRAZIL), [4]UNIVERSIDADE FEDERAL DO RIO DE JANEIRO (INSTITUTO DE MICROBIOLOGIA PAULO DE GOÉS, AVENIDA CARLOS CHAGAS FILHO, 373, CIDADE UNIVERSITÁRIA, CEP 21941-902, RIO DE JANEIRO – RJ, BRAZIL)

ABSTRACT:

The genus *Enterococcus* has emerged as an important agent of healthcare-associated infections that are difficult to treat, due to its remarkable capacity of acquiring resistance to different antimicrobial agents. In the present study, we have investigated the distribution of species and occurrence of antimicrobial resistance among 74 enterococcal isolates recovered from patients receiving assistance (mostly at intensive care units) in two hospitals located in Espírito Santo state (with 129 and 217 beds, respectively). Most of the isolates [45 (60.8%)] were recovered in a philanthropic tertiary hospital (129 beds). The most frequent clinical sources were urine [28 (37.9%)] and blood [11 (14.9%)]; while 31% (23 isolates) were from surveillance cultures. The strains were identified by MALDI-TOF MS. *Enterococcus faecalis* represented 66.2% (49) of isolates, followed by *Enterococcus faecium* [21 (28.3%)], and *Enterococcus gallinarum* and *Enterococcus avium* [2 (2,7%) each]. Susceptibility to a panel of 18 antimicrobials was evaluated by using the disk-diffusion method. The highest percentages of resistance were related to erythromycin (45 isolates; 60.8%), tetracycline (43 isolates; 58.1%), vancomycin (41 isolates; 55.4%) and quinolones (39 isolates; 52.7%). Resistance to vancomycin was found in a considerable proportion of the isolates from cases of infection (19 out of 51; 37.2%) associated with both *E. faecalis* and *E. faecium*. Most of the vancomycin-resistant enterococci (VRE) identified also presented resistance to teicoplanin, indicating the predominance of the VanA phenotype. All VRE isolates were multidrug-resistant. High-level resistance to aminoglycosides (HLRA) was detected in 27 (36.5%) isolates and reached 52.1% when only isolates from colonization were considered. No isolate was simultaneously resistant to both aminoglycosides tested: most of the isolates presenting HLRA were resistant to gentamicin only and one was resistant to streptomycin only. Resistance to β-lactams included 17 (22.9%) isolates resistant to both ampicillin and penicillin and 16 (21.6%) isolates that were resistant to penicillin only. Resistance to linezolid was found in 6 (8.1%) isolates. The results indicate that multidrug-resistant enterococci, including VRE, constitute a significant proportion of the enterococcal isolates circulating in both institutions investigated, indicating the need for continuous monitoring and improvements on antimicrobials usage.

Keywords: *Enterococcus*, Vancomycin-resistant enterococci, antimicrobial resistance, multidrug resistance.

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