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Poster Session VI
Epidemiology and clinical impact of S. aureus resistance

IMPACT OF ELEVATED VANCOMYCIN MINIMUM INHIBITORY CONCENTRATIONS ON THE OUTCOME OF CATHETER-RELATED BLOODSTREAM INFECTION DUE TO METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS

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Objective: The increased risk of vancomycin treatment failure in episodes of methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infection (BSI) due to strains with elevated minimum inhibitory concentrations (MICs) to vancomycin is well established. Nevertheless, the impact of this variable in the setting of low-risk sources of BSI, such as intravascular catheter, remains less defined.

Methods: A multicentre study on MRSA BSI occurring in adult patients was conducted from June 2008 to December 2009 in 21 Spanish hospitals (REIPI/GEIH Study Groups). Epidemiology, clinical data, therapy and outcome were prospectively recorded. Antimicrobial susceptibilities were centrally tested by broth microdilution and E-test. We assessed the predictors for clinical and microbiological outcome in 218 episodes of catheter-related (CR)-BSI out of a total of 579 episodes of MRSA BSI included in the study. Initial antibiotic therapy was defined as that administered in the first 48 hours after CR-BSI onset, whereas definitive therapy was that administered once the results of susceptibility tests were available. Haematogenous seeding was diagnosed in presence of a focal infection different from intravascular catheter. BSI persistence was defined as growth of MRSA in blood cultures after more than 48 hours of appropriate antibiotic therapy.

Results: Elevated vancomycin MICs by microdilution (≥1.0 mg/L) and E-test (≥1.5 mg/L) were observed in 21.3% and 46.9% of the isolates, respectively. Initial antibiotic therapy consisted of vancomycin (106 episodes), daptomycin (25 episodes), linezolid (18 episodes) and other agents (18 episodes). In 51 episodes no therapy was initiated until the antibiotic susceptibility was obtained. Haematogenous seeding infections were diagnosed in 43 episodes (19.8%), including 10 cases of infective endocarditis (IE). Early (first 48 hours) and late (0-30 days) in-hospital mortality rates were 3.2% and 24.4%, respectively. The occurrence of haematogenous seeding (30.2% vs. 13.0%; *P*-value = 0.041) and, specifically, IE (11.3% vs. 0.0%; *P*-value = 0.020) was more common in episodes whose isolates exhibited a vancomycin MIC ≥1.5 mg/L by E-test and that were initially treated with vancomycin. This association remained after adjusting for potential confounders, including catheter removal, in a multivariate regression model (odds ratio: 3.39; 95% confidence interval: 1.15-10.08; *P*-value = 0.027). Among those episodes initially treated with daptomycin we found a similar trend between the presence of elevated vancomycin MICs by E-test (≥1.5 mg/L) and the occurrence of IE (33.3% vs. 5.3%; *P*-value = 0.133). There were no differences in the rates of BSI persistence or early or late mortality according to the vancomycin MIC of the isolate.

Conclusions: Decreased susceptibility to vancomycin was a predictor for the development of complicated CR-BSI due to MRSA in form of haematogenous seeding. This association appeared to be evident when vancomycin was used as initial therapy, although might be also present in episodes treated with other antistaphylococcal agents such as daptomycin.