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Abstract (oral session)

The need to rethink infection control measures to reduce bloodstream infections: stability of methicillin-resistant Staphylococcus aureus and increase in multidrug-resistant Gram-negative bacteria

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Objectives: In the last years an increase in bloodstream infections (BSI) due to gram negative bacteria (GN) has been reported in many clinical centers of Europe. The main objective of this study was to verify the epidemiology of BSI and the impact of antimicrobial resistance over the current scenario. Methods: All episodes of BSI in hospitalised patients between January 2007 and December 2011 were recorded. A linear regression analysis was performed to describe the trend of gram positive (GP) and GN over time. Results: Over the 5-year study period, 5826 episodes of BSI were detected: 3404 (58.4%) were due to GP and 2422 (41.6%) to GN bacteria. The regression analysis showed that both GP ($p=0.04$) and GN ($p<=0.001$) BSI significantly increased over the study period. After adjustment for the total number of blood cultures performed, number of hospital admission and patient-day, only episodes due to GN bacteria significantly increased over the time period ($p=0.003$). Klebsiella spp and Escherichia coli were major responsible of the increase showing a significantly adjusted increase over time ($p<=0.001$ and $p=0.004$, respectively). The analysis of antimicrobial susceptibility patterns showed that the increase was associated to the episodes due to extended spectrum beta lactamases producing (ESBL) strains and carbapenem resistant Klebsiella spp. ($p<0.007$). Methicillin-resistant Staphylococcus aureus (MRSA) causing BSI did not significantly change over the 5 years of observation. Conclusions: Epidemiology of BSI is changing with an inversion between infections due to multidrug resistant (MDR) GN and those related to MRSA. Of even more concern, the increase seems mainly related to the increase in the episodes due to carbapenem resistant and ESBL strains. This change in epidemiology needs urgent further investigation in order to implement appropriate infection control measures to reduce the spread of MDR-GN and the burden associated to these infections in European hospitalised patients.