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Agents causative of sepsis-bacteremia in a four-year prospective surveillance study carried out at a teching Italian Hospital

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Background

A prospective microbiological surveillance study of bacteremias is ongoing at our Hospital since the year 2005.

Methods

The temporal trend of microbial isolates from blood cultures of inpatients hospitalized during the last four calendar years (2005 to 2008), was evaluated according to the main bacterial and fungal isolates. The same pathogens cultured more than once from the same patient within one month, have been considered only once.

Results

Of 4,168 overall episodes, *Staphylococcal epidermidis* remained the leading organism (761 cases: 18.3%), but a dramatic drop in its frequency occurred during the observation time (from 26.1% of cases in 2004, to 18.3% in 2008; $p < .0001$). The second causative agent of bacteremia was *Escherichia coli* (465 episodes: 11.2%), followed by *Staphylococcus aureus* (309 cases: 7.4%), *Enterococcus faecalis* (223 episodes: 5.4%), *Pseudomonas aeruginosa* (179 cases: 4.3%), *Klebsiella* spp. (143 episodes: 3.4%), and *Enterococcus faecium* (104 cases: 2.5%). When excluding the above-mentioned changes is staphylococcal isolations, significant time-based modifications occurred only for *Pseudomonas aeruginosa* (temporal increase: $p < .04$), and *Klebsiella* spp. (temporal increase: $p < .01$). Among fungi, *Candida albicans* was the most represented organism, with 104 episodes (2.5%), without changes in its frequency in the 2005-2008 period.

Discussion

A prospective microbiological monitoring is expected to significantly add to the awareness of local epidemiological figures and antimicrobial sensitivity profile of hospital infections, including bacteremias, which are responsible for considerable morbidity and mortality rates among inpatients. Although the main ethiological agents of inpatient bacteremias are still represented by coagulase-negative Staphylococci, these microorganisms significantly declined during the four-year study period, thus confirming a positive trend toward a progressively reduced incidence of contaminated blood cultures. On the other hand, an appreciable increased frequency occurred over time for *Pseudomonas* and *Klebsiella* spp. A major, persisting role as agents of hospital bacteremic episodes is still exerted by *Escherichia coli* among Gram-negative pathogens, and *Staphylococcus aureus* among Gram-positive ones.

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