

P0028

Paper Poster Session I

Severe sepsis, bloodstream infection and catheter-related bacteraemia

Patterns of bacteraemia before and after an incident episode of *Staphylococcus aureus* bacteraemia: a population-based study

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Objectives. *Staphylococcus aureus* is a leading cause of bacteraemia in patients of all age groups, and the impact on morbidity and mortality is significant. For decades *S. aureus* bacteraemia (SAB) has been studied rigorously with emphasis of features that distinguishes SAB from other types of bacteremia. Consequently, it is an open question how often SAB is part of a trajectory with both SAB and other types of bacteraemia. To investigate this issue we have analyzed all bloodstream infections (BSI) diagnosed during a 16-year period, 1997-2012, in a population-based setting.

Methods. Prospective recording of BSI has been undertaken in North Denmark Region since 1992 (0.65 million inhabitants in 2012). Every case of bloodstream infection was confirmed by blood culture and medically assessed. Each episode was defined by the date of the first positive blood culture, and a successive episode was determined by the interval between positive cultures: ≥ 30 days for homologous agents and ≥ 3 days for heterologous agents. Recurrence associated with a manifest secondary focus also defined a new episode. We retrieved data from the years 1994-2012 using the first 3 years to exclude patients with SAB before the study period (n=27). An incident episode of BSI, SAB included, was defined by no previous bloodstream infection of any kind from 1997 onwards.

Results. 14.799 patients had a total of 18.385 bloodstream infections. *S. aureus* was a causative agent in 2.443 cases (13.3%). The percentage was highest in incident monomicrobial cases (13.9%) and lowest in non-incident polymicrobial cases (6.9%).

Two thousands and three of the 2.443 cases (82.0%) were incident with *S. aureus* either being a sole pathogen (1858; 92.8%) or present in polymicrobial blood culture (145; 7.2%). Non-incident cases amounted to 18.0% (n=440) with a distribution of mono- and polymicrobial blood cultures similar to incident cases.

A total of 207 incident SAB cases (207/2443; 8.5%) was followed by another type of bloodstream infection with a median interval of 72 days [interquartile range 22-518 days]. Conversely, 249 cases of SAB occurred subsequently to another type of bloodstream infection (median interval 132 days [interquartile range 37-524 days]).

Conclusions. In this large population-based study *S. aureus* was not uncommon in polymicrobial bacteraemia, almost one in five cases of SAB had previously experienced a bloodstream infection of a different kind, and almost 10 percent of patients with SAB subsequently experienced a different bloodstream infection. This complex pattern may affect studies of both risk and prognosis in patients with SAB. In order to preclude bias and confounding associated with other causative agents it is prudent to include information on the entire pattern of bacteraemia within a time window relevant to the particular study.