Significance

Staphylococcus lugdunensis Bacteraemia audit.

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Introduction

Staphylococcus lugdunensis has a reputation of being perhaps the most pathogenic coagulase negative Staphylococcus, with a well documented predilection for endocarditis1,2,3. It is, however, often dismissed as a contaminant.

Given the pathogenic potential and wide spectrum of clinical disease associated with S.lugdunensis, there is a need to study and clarify the significance of the isolates.

Aim

To determine the prevalence of infective endocarditis, true bacteraemias and contaminants amongst patients in which S.lugdunensis was identified in blood cultures, with reference to the number of positive isolates and clinical risk factors.

Methods

• We performed a retrospective audit of all S.lugdunensis bacteraemias identified in the laboratory information system of Pathology Queensland.
• 305 bacteraemias were identified, across 34 Queensland hospitals, between 1998-2017.
• An audit questionnaire was sent to all centres with 2 or more cases for clinical data to ascertain patient characteristics, risk factors for infective endocarditis and comorbidities (see acknowledgements).
• Based on the available information from the survey and laboratory test results, the Duke criteria were applied to establish the classification of patients into the following categories:
  1. IE confirmed based on Duke criteria with S.lugdunensis as a causative agent.
  2. Possible IE based on Duke criteria with S.lugdunensis as a causative agent.
  3. Blood stream infection (BSI) with known non-cardiac source.
  4. BSI with unknown source.
  5. Contaminants.

Results

• A total of 255 completed surveys have been received to date. Of these, 25 patients had definite or probable IE, giving an incidence of 10.6% amongst patients with positive S.lugdunensis blood cultures.
• 80% of the isolates were judged as contaminants if only one set positive, and only 5% if multiple isolates positive.
• Preliminary data of the 19 year audit suggests that the incidence of endocarditis was low (1.03% or 2/195) if only a single blood culture (BC) set was positive, but the incidence was higher if 2 (22.5% or 7/31) or more (69.2% or 18/26) were positive.
• In regards to Blood Stream Infections of a non-cardiac source, incidence was 17.7% (or 27/193) if only a single BC set was positive, and increased if 2 (58% or 18/31) or more (30.8% or 8/26) sets were positive. Data suggests that pre-existing central vascular catheters were a risk factor (30% or 16/53) for significant BSI.
• The Odds Ratio for IE if pre-existing cardiac structural abnormalities were present was 6.6 (95% CI 2.3-9.3 p<0.001).
• We also observed on review of the first 207 surveys that the introduction of MALDI-TOF* (in 2013) resulted in a 4-fold overall rise in identification of S.lugdunensis and a 5-fold increase in contaminants with an affiliated 2-fold increase in IE and significant bacteraemia.

References: