Prevalence and mortality of infective endocarditis among community acquired and healthcare acquired staphylococcus aureus bacteremia: a nationwide study


1Rigshospitalet - Copenhagen University Hospital, The Heart Centre, Copenhagen, Denmark; 2Statens Serum Institut, Copenhagen, Denmark; 3Zealand University Hospital, Department of cardiology, Roskilde, Denmark; 4Herlev Hospital, Department of cardiology, Herlev, Denmark; 5Bispebjerg Hospital, Copenhagen, Denmark; 6Gentofte University Hospital, Department of cardiology, Copenhagen, Denmark; 7Rigshospitalet - Copenhagen University Hospital, Clinical Microbiology, Copenhagen, Denmark

Funding Acknowledgement: Type of funding sources: None.

Background: Staphylococcus aureus bacteremia (SAB) may be community acquired or healthcare acquired, and prior small studies have suggested that the place of acquisition impacts the subsequent prevalence of infective endocarditis (IE) and also patient outcomes. However, data on this relationship is sparse and this may influence optimal work-up and treatment of these patients.

Purpose: To examine the prevalence of IE among patients with community acquired and healthcare acquired SAB. Further, to investigate one-year mortality among patients with SAB-IE stratified by place of acquisition.

Methods: Patients with first-time SAB from 2010–2018 were identified using Danish nationwide registries and categorized into either community acquired (no health care contact within 30 days) or healthcare acquired (either a. hospital admission or emergency room visit within 30 days, b. SAB >48 hours after hospital admission, or c. out-patient dialysis). SAB was then related to IE and compared between the two study groups using multivariable adjusted logistic regression analysis. The one-year mortality was compared using multivariable adjusted Cox proportional hazard analysis for patients with SAB-IE stratified by place of bacteremia acquisition. The proportional hazard assumption was violated, and a landmark analysis was conducted comparing mortality between groups with a) 0–40 days of follow-up, and b) 40–365 days of follow-up.

Results: We identified 13,040 patients with SAB; 5,512 (62.3% male, median age 71.0 years) were community acquired and 7,528 (63.1% male, median age 69.0 years) were healthcare acquired. The prevalence of IE was 12.0% among patients with community acquired SAB and 6.6% among patients with healthcare acquired SAB, Figure. After accounting for patient characteristics, community acquired SAB was associated with a higher odds of IE as compared with healthcare acquired SAB, adjusted OR=2.12 (95% CI: 1.86–2.41). Sex- and age groups did not modify this association. The one-year mortality was 37.3% for community acquired SAB-IE and 47.3% for healthcare acquired SAB-IE, Figure. With up to 40 days after IE admission, no difference in associated mortality was seen between groups in adjusted analysis, HR=1.07 (95% CI: 0.83–1.37) with healthcare acquired SAB-IE as reference group. Beyond 40 days of follow-up patients with community acquired SAB-IE was associated with a lower mortality as compared with healthcare acquired SAB-IE, HR=0.71 (95% CI: 0.53–0.95).

Conclusion: Community acquired SAB was associated with twice the odds of IE as compared with healthcare acquired SAB. SAB-IE was associated with high mortality rates, with no difference between groups at short-term follow-up, however long-term follow-up revealed an associated lower mortality in patients with community acquired SAB-IE. These findings indicate a need for an intensified work-up strategy for IE in patients with community acquired SAB.