

Diabetes mellitus and community-acquired bacteremia: risk and prognosis

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ABSTRACT

The studies were carried out at the Departments of Clinical Epidemiology and Clinical Microbiology, Aalborg Hospital, Aarhus University Hospital.

The aim was to examine the association of diabetes mellitus with risk and prognosis of important groups of community-acquired bacteremia. The studies were based on data from the North Jutland County Bacteremia Registry, Prescription Database and Hospital Discharge Registry.

We conducted a prognostic cohort study among 628 patients hospitalized with community-acquired pneumococcal bacteremia in North Jutland County from January 1992 to December 2001. After adjustment for potential confounders, the mortality rate ratio (MRR) for diabetic patients with bacteremia was 0.6 (95% confidence interval: 0.3-1.2) after both 30 and 90 days of follow-up, compared with the non-diabetic bacteremia patients. Our findings combined with previous results give strong evidence that, against common clinical belief, diabetes is not associated with a worse prognosis in pneumococcal bacteremia.

The association between diabetes and the relative risk of community-acquired pneumococcal bacteremia was investigated in a population-based case-control design, including ten gender- and age-matched population controls per case. We found a 50% increased risk of pneumococcal bacteremia in diabetic individuals. The odds ratio of bacteremia from diabetes was greatest among young persons and persons without other morbidity.

In a third study we included 1317 patients with community-acquired bacteremia due to *E. coli* and other enterobacteria, combining our case-control and cohort study design. We found that diabetes was associated with a highly increased risk of enterobacterial bacteremia, with a six-fold increased risk in diabetic adults below 65 years. Even in our region with a relatively low prevalence of diabetes, one out of every ten cases of enterobacterial bacteremia may be attributable to diabetes. In addition, diabetes was associated with a 30-40% increased mortality rate for enterobacterial bacteremia, regardless of the underlying focus of infection.

In conclusion, we found evidence that diabetes mellitus may have a substantial impact on the risk for community-acquired bacteremia, at both an individual level and a population level. The association of diabetes with risk and prognosis of community-acquired bacteremia shows notable differences related to the microbial agent, underscoring the complexity of bacteremia as a disease entity. The combination of primary and secondary data sources and the epidemiological analytic strategies used, proved an efficient approach to examine the association of diabetes with infection, which should be further explored in the future.