

Utility of Blood Culture in Patients with Community-Acquired Pneumonia: A Propensity Score-Matched Analysis Based on a Japanese National Health Insurance Database

Abstract

Community-acquired pneumonia (CAP) is an acute pulmonary parenchymal infection acquired outside the hospital. The utility of blood cultures in inpatients with CAP to reduce mortality and length of hospital stay is controversial. This study aimed to determine the utility of blood cultures on the first day of hospitalization for CAP inpatients and its influence on mortality, length of hospital stay, and antibiotics use. We conducted a fact-finding survey on the implementation of blood culture in inpatients with CAP in Japan. A propensity score (PS)-matched analysis based on the National Database of Health Insurance Claims and Specific Health Check-ups of Japan database was conducted. Overall, 163173 patients were included in the analysis, and PS matching extracted 68104 pairs. The results of the comparison between the PS-matched blood culture group and PS-matched control group were as follows: mortality and length of hospital stay were significantly lower in the PS-matched blood culture group than in the control group. The adjusted odds ratio (OR) (95% confidence interval (CI)) for in-hospital mortality with blood culture test was 0.73 (0.68-0.79). Moreover, for days of antibiotic usage, number of antibiotics used were significantly higher in the PS-matched blood culture group than that in the control group. Our findings indicated that performing a blood culture on the first day of hospitalization for inpatients with CAP was associated with reduced mortality. To our knowledge, this is the largest epidemiological study to assess the utility of blood culture in Japanese inpatients with CAP. This testing method shows potential for application in clinical practice.