



Host-pathogen interactions and prognosis of critically ill immunocompetent patients with pneumococcal pneumonia: the nationwide prospective observational STREPTOGENE study

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PURPOSE: To assess the relative importance of host and bacterial factors associated with hospital mortality in patients admitted to the intensive care unit (ICU) for pneumococcal community-acquired pneumonia (PCAP).

METHODS: Immunocompetent Caucasian ICU patients with PCAP documented by cultures and/or pneumococcal urinary antigen (UAg Sp) test were included in this multicenter prospective study between 2008 and 2012. All pneumococcal strains were serotyped. Logistic regression analyses were performed to identify risk factors for hospital mortality.

RESULTS: Of the 614 patients, 278 (45%) had septic shock, 270 (44%) had bacteremia, 307 (50%) required mechanical ventilation at admission, and 161 (26%) had a diagnosis based only on the UAg Sp test. No strains were penicillin-resistant, but 23% had decreased susceptibility. Of the 36 serotypes identified, 7 accounted for 72% of the isolates, with different distributions according to age. Although antibiotics were consistently appropriate and were started within 6 h after admission in 454 (74%) patients, 116 (18.9%) patients died. Independent predictors of hospital mortality in the adjusted analysis were platelets $\leq 100 \times 10^9/L$ (OR, 7.7; 95% CI, 2.8-21.1), McCabe score ≥ 2 (4.58; 1.61-13), age > 65 years (2.92; 1.49-5.74), lactates > 4 mmol/L (2.41; 1.27-4.56), male gender and septic shock (2.23; 1.30-3.83 for each), invasive mechanical ventilation (1.78; 1-3.19), and bilateral pneumonia (1.59; 1.02-2.47). Women with platelets $\leq 100 \times 10^9/L$ had the highest mortality risk (adjusted OR, 7.7; 2.8-21).

CONCLUSIONS: In critically ill patients with PCAP, age, gender, and organ failures at ICU admission were more strongly associated with hospital mortality than were comorbidities. Neither pneumococcal serotype nor antibiotic regimen was associated with hospital mortality.

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