Bacteraemia and antibiotic-resistant pathogens in community acquired pneumonia: risk and prognosis

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Abstract

The sensitivity of blood cultures in the diagnosis of bacteraemia for community-acquired pneumonia is low. Recommendations, by guidelines, to perform blood cultures are discordant. We aimed to determine the incidence, microbial aetiology, risk factors and outcomes of bacteraemic patients with community-acquired pneumonia, including cases with antibiotic-resistant pathogens (ARP).

A prospective, observational study was undertaken on consecutive adult patients admitted to the Hospital Clinic of Barcelona (Barcelona, Spain) with community-acquired pneumonia and blood cultures were obtained.

Of the 2892 patients included, bacteraemia was present in 297 (10%) patients; 30 (10%) of whom had ARP (multidrug-resistant *Streptococcus pneumoniae*, methicillin-resistant *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and an extended spectrum of beta-lactamase producing *Enterobacteriaceae*). In multivariate analyses, pleuritic pain, C-reactive protein ≥21.6 mg·dL^{-1} and intensive care unit admissions were independently associated with bacteraemia, while prior antibiotic treatment and pneumococcal vaccine were protective factors. The risk factors for ARP bacteraemia were previous antibiotics and C-reactive protein <22.2 mg·dL^{-1}, while pleuritic pain was the only protective factor in the multivariate analysis. Bacteraemia (excluding ARP), appropriate empiric treatment, neurological disease, arterial oxygen tension/inspiratory oxygen fraction <250, pneumonia severity index risk classes IV and V, and intensive care unit admission were independently associated with a 30-day hospital mortality in the multivariate analysis.

Inappropriate therapy was more frequent in ARP bacteraemia, compared with other bacteraemias (27% *versus* 3%, respectively, $p<0.001$).

Antibiotic therapy protected against bacteraemia, but increased specifically the risk of bacteraemia from ARP due to the inappropriate coverage of these pathogens. Identifying patients at risk of ARP bacteraemia would help in deciding appropriate empiric antimicrobial therapy. The results from this study provide evidence concerning community-acquired pneumonia patients in