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Prognostic assessment in community acquired pneumonia

AKADEMISK AVHANDLING

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ABSTRACT

Community acquired pneumonia (CAP) is the most commonly occurring infectious disease that requires hospital admission. CAP affects mainly, the youngest, the oldest, the poorest and the sickest. Annual incidence is 5-12 per 1000 adults. Between 20% and 40% of patients with CAP need in-hospital treatment. Mortality is below 1% among those who are treated in the community, however in-hospital mortality can be as high as 50% in patients who are critically ill due to CAP. In Europe the annual costs from pneumonia is estimated to be more than €10 billion. Streptococcus pneumoniae is the main aetiology of CAP, as well as it carries the highest fatality rate. In the pre-antibiotic era the observed death toll from bacteraemic pneumococcal pneumonia could reach, and even exceed, 80%. Today, with access to effective antibiotics the observed fatality rate from bacteraemic pneumococcal pneumonia usually varies between 5% and 25%.

In paper 1, 460 patients were included, from five centres in five countries, in a prospective multicentre study. All patients had pneumococcal bacteraemic disease and 12% of the patients died during period of hospitalisation. Independent prognostic factors of death present on admission were age >65 years, chronic pulmonary disease, nursing home residency, high Acute Physiologic and Chronic Health Evaluation (APACHE II) score, and ≥ 2 lung lobes affected. Need for mechanical ventilation after admission was also an independent prognostic risk factor for death.

In paper 2, 340 patients with pneumonia, included in paper 1, were analysed. Aim of the study was to examine if the combination of β -lactam and macrolide antibiotics could reduce the case fatality rate (CFR) in patients with bacteraemic pneumococcal pneumonia. Despite use of univariate, as well as multivariate analysis, we were unable to find any reduction in fatality rate among patients, with bacteraemic pneumococcal CAP, who received antibiotic combination therapy.

Paper 3 included 375 patients who all suffered from bacteraemic pneumococcal pneumonia and were enrolled during two periods of time, 1993-1995 and 1999-2000. Patients enrolled during the first time period were identical with the Swedish patients who took part in the studies described in paper 1 and 2. In paper 4, 1172 patients were included from one hospital during 16 months. All patients in paper 4 had pneumonia of different microbial aetiology. In both papers the proposed, and modified new scoring system, DS CRB-65, proved to be significantly more accurate, than CRB-65, to predict 30-day mortality in patients with bacteraemic pneumococcal CAP, as well as in patients with CAP of different microbial aetiology.

Keywords: β -lactam, macrolide, pneumonia, prognosis, scoring system, Streptococcus pneumoniae,

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