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Short Note on Acute Community-acquired Pneumonia

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Description

Community-acquired Pneumonia (CAP) is an acute inflammatory lung condition that occurs outside of the health-care system. People of all ages are affected. The disease is distinguished by a high risk of rapid deterioration and mortality, which is difficult to predict. As a result, hospitalisation and close monitoring of patients are frequently required. Because of the complex regulation of the immune system, which includes highly non-linear dynamics, CAP has a high inter-individual heterogeneity [1]. Cytokines produced during an inflammatory response have been shown to predict treatment failure and mortality. In the past, we demonstrated that cytokine dynamics are causally related to relevant clinical outcome parameters.

Because cross-sectional data on cytokines in population-based cohorts are less informative for acute conditions, and patients with acute disease are particularly difficult to collect, genetic determinants of immune response are understudied. The impact of MCP-1 on the risk of stroke, the pharmacogenomics of rheumatoid arthritis treatment using anti-TNF therapy, the causal role of cytokines in immune-related and chronic diseases, the comorbidity of schizophrenia with tuberculosis identifying common cytokines involved, and pleiotropic effects on cytokines were all examined in genome-wide association analyses [2].

Community-acquired Pneumonia (CAP) is one of the most common acute infections that necessitate hospitalisation. *Streptococcus pneumoniae*, influenza A, *Mycoplasma pneumoniae*, and *Chlamydophila pneumoniae* are the most common pathogens that cause CAP, and age, smoking, and comorbidities are the most common risk factors. The prevalence of CAP and its common complications, such as the need for intensive care and complicated parapneumonic effusions, is rising, making it critical for all physicians to understand CAP management. Although the diagnosis and treatment of CAP is simple in most cases, it can be complicated in others, and recent data show that CAP mortality in the UK is surprisingly high. Routine use of biomarkers to improve risk stratification and tailor management to individual patients may improve outcomes in the future, and there is some evidence that modulation of CAP-associated inflammation may also be beneficial. To combat the rising morbidity and mortality associated with CAP, both research into host–microbial interactions in the lung and clinical trials of various management and preventative treatments are urgently needed [3].

Smoking (which is estimated to be responsible for more than 30% of CAP cases) and alcohol abuse are two behavioural factors that can be modified to reduce the incidence of CAP. Because pneumonia is often preceded by a respiratory virus infection, influenza vaccination is also highly effective at preventing CAP. The existing adult *S. pneumoniae* vaccine (Pneumovax') does not prevent pneumonia, and its use in older people is intended to prevent sepsis rather than lung infection. Although the new conjugated vaccine may be more immunogenic than Pneumovax, it is currently only used in children [4]. There is currently no data on whether adult vaccination with the conjugated vaccine prevents CAP; trials are ongoing.

CAP remains a significant and increasingly common medical problem in the industrialised world, despite the readily available antibiotics and vaccines for important respiratory pathogens, with a high rate of complication and mortality. In the future, routine use of biomarkers to improve risk stratification and tailor management to individual patients, as well as modulation of CAP-associated inflammation, may result in better outcomes [5]. In addition to clinical trials of various management and preventative treatments, more basic research on host–microbial interactions in the lung is required so that clinicians can fully understand why CAP develops and thus design novel therapeutic strategies.

Conflict of Interest

None.

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