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Title: Local and systemic cytokine profiles in patients with non-severe and severe community-acquired pneumonia

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Body: Background Cytokines are important mediators in the host response to infection. Local inflammatory responses in community-acquired pneumonia (CAP) however remain insufficiently elucidated, especially in patients with non-severe CAP. Objectives In this study we aimed to determine both local and systemic cytokine responses in patients with non-severe and severe CAP and to correlate these with pneumonia severity index (PSI) and other clinical parameters. Methods In a prospective study, 20 CAP patients and 10 healthy individuals were included. Upon admission, levels of interleukin (IL)-6, IL-8, IL-10, IL-1 β , tumor necrosis factor (TNF) α , interferon (IFN) γ , IL-22, IL-17A and IL-4 were determined in bronchoalveolar lavage (BAL) fluid and serum by enzyme-linked immunosorbent assay (ELISA). Systemic cytokine levels were also measured on days 7 and 30. Results In BAL fluid of CAP patients, levels of IL-6, IL-8, and IFN γ were significantly increased compared with healthy individuals, but no correlations with disease severity were found. Systemic levels of IL-6, IL-10 and IFN γ were significantly higher in severe CAP patients than in non-severe CAP patients and healthy individuals. Moreover, these cytokines showed a strong correlation with the PSI. In the total group of CAP patients IL-8 and IL-22 levels were also increased compared with healthy individuals. Conclusions IL-6 and IFN γ are important cytokines in both the local and systemic inflammatory response in CAP. Differences in disease severity upon admission are however only reflected by the systemic levels of these cytokines and IL-10.