JT03

Cytokine measurement in tracheal epithelial fluid (ELF) from patients with severe COVID-19 pneumonia using microsampling tubes

Abstract

Background; It has been reported that patients with severe pneumonia due to the new coronavirus infection (COVID-19) have high levels of various cytokines. However, there are few reports on cytokine concentrations in the airways of COVID-19 patients with severe pneumonia. In this study, we used microsampling tubes to measure cytokine levels in tracheal epithelial fluid (ELF) in patients with severe COVID-19 pneumonia who required mechanical ventilation and aimed to investigate whether they were related to patient severity.

Methods: The subjects were 29 COVID-19 patients and 6 healthy subjects who were admitted to our hospital from April 2021 to March 2022 and obtained informed consent. After tracheal intubation and administration of a muscle relaxant, ELF was collected using a microsampling tube, and the cytokine concentration was measured using Bio-plex 200 (Bio-Rad; Tokyo, Japan).

Results: Elevation of cytokines in the blood and ELF of healthy subjects was not observed. Cytokine levels in ELF were markedly elevated compared to blood cytokine levels. Conversely, GCF was high in blood and ELF was low. Interleukin-6, interleukin-8, Tumor Necrosis Factor-α (TNF-α), monocyte chemoattractant protein-1 (MCP-1), interleukin-10, interleukin-33, interferon-gamma (IFN-γ), and interleukin-1b were significantly elevated especially in ELF, and *sars-cov-2* excessive release of these pro-inflammatory cytokines is thought to lead to adverse outcomes such as diffuse alveolar injury and fibrosis, progressive respiratory failure, and multiple organ dysfunction.

consideration;

Conclusion: The severity of COVID-19 pneumonia may be affected by high concentrations of cytokines in the airways. Further detailed research is needed on the role of each cytokine in the future.