

Assessment of proinflammatory cytokines among patients with Middle East Respiratory Syndrome Coronavirus infection

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Abstract

Background Middle East Respiratory Syndrome Coronavirus (MERS-CoV) emerged in the Middle East in 2012 and was associated with significant morbidity and mortality. Considering the role of cytokines in MERS-CoV infection and pathogenesis, this study was performed to assess the plasma levels of proinflammatory cytokines among MERS-CoV patients. Methods A total of 46 MERS-CoV infected patients (19 asymptomatic and 27 with symptoms) were compared to 52 normal healthy controls for the levels of proinflammatory cytokines (IL-1 β , TNF- α , IL-17, IL-7, IL-6, IFN- α , IL-15) using a customized luminex kit. Results There was no difference observed between asymptomatic MERS-CoV patients and controls, however; the mean plasma levels among MERS-CoV symptomatic patients were significantly higher than asymptomatic MERS-CoV patients and normal controls: IL-1 β (16.89 \pm 1.23 pg/mL vs 12.80 \pm 0.59 pg/mL; p<0.001), TNF- α (14.04 \pm 0.93 pg/mL vs 10.35 \pm 0.29 pg/mL; p<0.0001), IL-17 (14.33 \pm 0.89 pg/mL vs 11.47 \pm 0.61 pg/mL; p<0.001), IL-7 (21.56 \pm 1.00 pg/mL vs 16.31 \pm 0.30 pg/mL; p<0.0001), IL-6 (156.5 \pm 37.90 pg/mL vs 18.60 \pm 1.59 pg/mL; p<0.0001), and IFN- α (68.73 \pm 13.06 pg/mL vs 23.57 \pm 1.05 pg/mL; p<0.0001). The mean plasma levels of IL-15 were no different among the groups. Conclusion Significantly elevated proinflammatory cytokines (IL-1 β , TNF- α , IL-17, IL-7, IL-6, IFN- α) among symptomatic MERS-CoV infected patients may contribute to manifestations of cytokine storm frequently observed among critically ill MERS-CoV patients.

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