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The cytokine storm in COVID-19: An overview of the involvement of the chemokine/chemokine-receptor system

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Abstract

In 2019-2020 a new coronavirus named SARS-CoV-2 was identified as the causative agent of a several acute respiratory infection named COVID-19, which is causing a worldwide pandemic. There are still many unresolved questions regarding the pathogenesis of this disease and especially the reasons underlying the extremely different clinical course, ranging from asymptomatic forms to severe manifestations, including the Acute Respiratory Distress Syndrome (ARDS). SARS-CoV-2 showed phylogenetic similarities to both SARS-CoV and MERS-CoV viruses, and some of the clinical features are shared between COVID-19 and previously identified beta-coronavirus infections. Available evidence indicate that the so called "cytokine storm" an uncontrolled over-production of soluble markers of inflammation which, in turn, sustain an aberrant systemic inflammatory response, is a major responsible for the occurrence of ARDS. Chemokines are low molecular weight proteins with powerful chemoattractant activity which play a role in the immune cell recruitment during inflammation. This review will be aimed at providing an overview of the current knowledge on the involvement of the chemokine/chemokine-receptor system in the cytokine storm related to SARS-CoV-2 infection. Basic and clinical evidences obtained from previous SARS and MERS epidemics and available data from COVID-19 will be taken into account.

Keywords: COVID-19; CXCL10; CXCL8; Chemokines; Coronavirus; Cytokine storm.

Figures

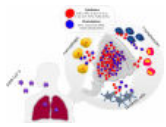

Fig. 1 Schematic representation of the "Cytokine...

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