“Cytokine Storm” & COVID-19

Cytokine Storm
• Overwhelming inflammatory immune response to an illness or trigger with release of:
  • Interferon (IFN), interleukins (IL), tumor-necrosis factor (TNF), chemokines
  • Results in cell and tissue damage

COVID-19
• Pathogenesis of lung injury & multiple organ dysfunction syndrome remain uncertain
  • Cytokine storm is one proposed theory of pathogenesis in severe COVID-19 illness
    • ↑ IL-6 has been associated with disease severity\(^1\)

Acute Respiratory Distress Syndrome (ARDS)
• IL-6 plays a key role in pathogenesis in several known viral etiologies\(^2\)
  • eg, Influenza & SARS-CoV
• Mechanisms other than cytokine storm may contribute to COVID-19 ARDS
  • Median levels of IL-6 in COVID-19 ARDS are ↑ but reported ≤ than median levels seen in typical ARDS\(^3\)

Therapies
• Clinical trials are evaluating IL-6 pathway targeted treatments such as:
  • Tocilizumab (IL-6 receptor inhibitor)
  • Sarilumab (IL-6 receptor antagonist)
  • Siltuximab (monoclonal antibody with high affinity for IL-6 receptor)

Further study is needed to evaluate the role of cytokine storm in the pathogenesis and severity of COVID-19 disease.