Inflammasome

Inflammasomes are multiprotein complexes that function as sensors of cellular stress, infection, or damage, leading to the activation of inflammatory responses.

They trigger the activation of Caspase-1 and subsequently the maturation of proinflammatory cytokines interleukin-1β and interleukin-18. These cytokines play a critical role in mediating inflammation and innate immunity response.

Among various inflammasome complexes, the NLRP3 inflammasome is the best characterized, which has been demonstrated as a crucial role in various diseases.

Since cytokine storm has been known as a major mechanism followed by SARS-CoV-2, inflammasome may trigger an inflammatory form of lytic programmed cell death (pyroptosis) following SARS-CoV-2 infection and contribute to associated neurological complications.

Sepehrinezhad et al. reviewed and discussed the possible role of inflammasome and its consequence pyroptosis following coronavirus infections as potential mechanisms of neurotropism by SARS-CoV-2. Further studies, particularly postmortem analysis of brain samples obtained from COVID-19 patients, can shed light on the possible role of the inflammasome in neurotropism of SARS-CoV-2 [1)]

1)
Sepehrinezhad A, Gorji A, Sahab Negah S. SARS-CoV-2 may trigger inflammasome and pyroptosis in the central nervous system: a mechanistic view of neurotropism. Inflammopharmacology. 2021 Jul 9. doi: 10.1007/s10787-021-00845-4. Epub ahead of print. PMID: 34241783.