

Role of circumventricular organ in Covid-19 and progression of depression: Immunologic mechanism and novel treatment: A systematic review and meta-analysis

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Background: Circumventricular organs (CVOs) are unique areas of brain outside the blood-brain barrier (BBB) bordering the third and fourth ventricle. Covid-19 may cross the BBB through CVOs infecting the brain, culminating in the secretion of cytokines. Pathogenesis of depression has been linked to proinflammatory cytokines like IL-6. Our objective is to evaluate the relationship between IL-6 and depression due to Covid-19 and explore the possible treatment option with Tocilizumab.

Method: We conducted a systematic review and meta-analysis of Randomized Controlled Trials, Controlled Clinical Trials and Observational Designs published between 2019 -2021 through PubMed, Clinical Trials.gov, Cochrane data search. The receiver operating characteristic (ROC) curve was utilized to analyze the prognostic ability of cytokine in depression in Covid 19 patients. Heterogeneity was assessed using Cochran's Q test and I² test and the bias was evaluated by visual inspection of the symmetry in funnel plots.

Results: Fourteen studies met the inclusion criteria, 11 studies were included in meta-analysis with more than 2000 participants and 3 studies are included in qualitative synthesis with more than 3000 participants. The ROC curve shows that AUC (IL-6) =87% (95% CI of 0.87037 to 1) and Youden index optimum cut-off point selected is 19. The Kaplan-Meier curve and the log-rank test were applied to further assess the potential risk factors associated with the progression of depression from COVID-19. The Data analysis was conducted using StasDirect software.

Conclusion: This systematic review and meta-analysis implies that IL-6 could be a marker to anticipate depression from COVID-19 and provide the evidence of an immunosuppressive drug Tocilizumab to improve depression. However, more studies should be lead to confirm this conclusion.

References

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Biography

Elona Greca is an experienced resident Doctor ready to take career to the next level. Areas of expertise and passions include clinical research and medical care, advocating for better accessibility to healthcare, health policy and education. Believing that quality education is essential to develop all the attributes and skills to achieve potential as human being, regardless of age or academic background. I have done Harvard Medical School Fundamentals courses that improved my knowledge for work on health care applicants, projects, and research. Being part of Larkin Hospital Research team have built me strong foundation in the field of research, had provide me exciting opportunities to work as part of team and most importantly add to the evidence base ,leading to better outcomes for patients.