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Cytokines and mental status at ICU

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Statement of the problem: Brain, assumed to be an immune-privileged organ, has been shown to be invaded by immune system in response to various injuries. Discovering the presence of lymphatic system in the meninges and special T helpers in the cerebrospinal fluid, scientists have speculated that immune system itself may have a great impact, sometimes of refreshing fashion, on the brain activities.

Methodology: Over 70 relevant articles were reviewed systematically in Pubmed, Clinical Key and Science Direct. Analyses were conducted for different cytokines with special insight on IL-1, IL- β , TNF- α , TGF- β , IL-6, IL-8, IL-10, other cytokines and their receptors, and their effects on the brain.

Results: According to the reported studies an intricate relationship between CNS and the immune system and dysregulation of cytokines could be found in different types of neurological disorders including psychiatric diseases, Alzheimer's disease, dementia, and specially sepsis encephalopathy.

Conclusion and Significance: Over the past decades CNS was thought of as an immune-privileged organ. It is now obvious that immune system has an intimately functional relationship with the neurons, neurovascular units and neurites. Cytokines as signaling molecules are involved not only in various injuries in the brain but also in mood regulation, anxiety, learning ability, memory, appetite and sleep pattern modulation and even in mental status. Even in septic encephalopathy the imbalance between good and bad cytokines might play a crucial role in modulation of the level of patient's consciousness at ICU. Cytokines seem to be regulatory mediators with great impacts on CNS. Manipulating these immunotransmitters may open new horizons in treating some disabling neurological disorders.

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Biography

Reza Nejat is a board certified Anesthesiologist and FCCM. After graduating from Tehran University of Medical Sciences (TUMS) as a general practitioner, he could achieve the ECFMG certification and also attained board certification in Anesthesiology from Iran University of Medical Sciences. He passed the fellowship programme in Critical Care Medicine at Sina Hospital, TUMS. During this period he was inclined to study molecular medicine in the field of sepsis and neurocritical care medicine in which the relationship between cytokines and mental status at ICU has attracted his attention. His studies on neuroprotective effect of erythropoietin was presented in the 29th International Conference on Public Mental Health and Neuroscience held in July 16-18, 2018, Dubai. He was the chief of few hospitals and assistant professor at Shahid Beheshti University of Medical Sciences for 8 years. Dr. Nejat has published 4 books in the fields of cardiology, nephrology, fluid and electrolyte, nutrition, metabolism and endocrinology. Recently, he contributed to the chapter of "Acute Heart Failure" in the reference book "Comprehensive Textbook of Therapeutics" studied by post-doc residents of pharmacotherapy. His CV can be found through <http://rezanejat.com/cv/>.

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