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Poster Presentation

Neuroinflammation and Cognitive Dysfunction as a Side Effect of Abdominal Surgery

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Abstract

One of the most common postoperative complications is Postoperative cognitive dysfunction (POCD), and it's usually a geriatric's disease. Although many studies have done, the exact molecular mechanisms of POCD is still largely unknown; nevertheless, neuroinflammation has been increasingly denoted as one of the core mechanisms for the pathogenesis of POCD. As a hypothesize, surgery-induced neuroinflammation was suggested to mediate POCD and also play an important role in pathobiology of neurodegenerative diseases, stroke, and neuropsychiatric disorders. The abdominal surgery as a different form of disease is symptoms, molecular imparity and area of disorder in the brain attracted lots of attentions. One of the probable mechanisms that shows that explains why abdominal surgery leads to POCD is Mast Cells-Neurovascular Unit Communication. There is a significant communication between the immune system and the central nervous system (CNS). Mast cells, as the first responders in the CNS, can other responses beyond the activation; in addition they can modulate inflammatory processes in initiate, strengthen and prolong multiple CNS pathologies by their secreted mediators; and surgery, generally, induces degranulation of them. Furthermore, surgery can induce neuroinflammatory responses, and pro-inflammatory cytokines, including TNF-α, IL-1β, IL-4 and IL- 6. Extracellular RNAs that released from necrotic cells, as another candidate, were observed to initiate the inflammatory responses in different pathological conditions and neuroprotective and edema protective effects of ribonuclease was suggested in acute stroke. Evidence indicates that surgery may lead to neuroinflammation and POCD, but because the exact mechanisms of it is unknown till now, more research is needed to regulate neuroinflammation and its relationship to cognitive performance.

Keywords: Postoperative Cognitive, Neuroinflammation, Abdominal Surgery

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