

PSYCHONEUROIMMUNOLOGY AND GLOBAL HEALTH

Neuroinflammation: anxiety, stress and chronic pain.

Psychoneuroimmunology is the study of the interactions among behavioral, neural and endocrine, and immune processes. The brain communicates with the immune system through autonomic nervous system and neuroendocrine activity. Both pathways generate signals that are perceived by the immune system via receptors on the surface of lymphocytes and other immune cells. The direction and/or magnitude of the effects of behavioral factors in modulating immune responses, however, depend upon the nature of the behavioral circumstances, the nature of the antigenic stimulation, and the temporal relationship between them; the immune response and when it is measured; a variety of host factors; and the interactions among these variables. We will provide examples of these relationships and how this approach could help us to better health outcomes in our patients

Aim

Psychosocial stressors are a well-documented risk factor for mental illness. Neuroinflammation, in particular elevated microglial activity and Mast cell-Microglia crosstalk has been proposed to mediate this association. A number of preclinical studies have investigated the effect of stress on microglial activity. However, these have not been systematically reviewed before. We consider this implications for the role of stress in the development of mental and chronic pain disorders.

Conclusion

There is consistent evidence that a range of psychosocial stressors lead to elevated microglial activity in the hippocampus and good evidence that this is also the case in other brain regions. These effects were seen with early-life/prenatal stress, as well as stressors in adulthood. We consider these findings which proposes that early-life stress primes microglia, leading to a potentiated response to subsequent stress.

The implications for understanding the pathoetiology of mental and chronic pain disorders and new treatments will be considered.

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