

Abstract

Psychiatric disorders are becoming an increasing problem and possess a socio-economic burden on societies worldwide. There has been an association between inflammation and psychiatric disorders for some time now, but the causal relationships and mechanisms are not fully understood yet. Better understanding of those mechanisms could help us in dividing patients into different mechanistic subtypes which could react differently to a treatment. That way we could prescribe the most effective treatment depending on the mechanism involved. Inflammation is sensitizing an individual to react in more pro-inflammatory fashion to a stressor leading to chronically inflamed states. This is something that we can observe in an array of mechanisms, which creates many positive inflammatory feedback loops. Those feedback loops are very hard to interrupt, because they reinforce each other, plus the immune system is overreacting to subsequent stressor creating a vicious cycle. This could potentially lead to development of neurodegenerative diseases. As it turns out, physical activity acts on several of those mechanisms involved in inflammatory feedback loops at the same time, making it an ideal prevention/treatment candidate. It plays a huge role in regulation of inflammation in anti-inflammatory manner and might be one of the ways to prevent and treat patients with psychiatric disorders such as major depressive disorder as well as neurodegenerative diseases. This thesis is going to explore relationship between inflammation and mental health. Possible causal relationships between inflammation and psychiatric disorders will be discussed. Mechanisms involved in inflammation regulation, effects of physical activity and inflammation induced pathology observed in psychiatric disorders will be described.

Key words:

Inflammation, psychiatric disorders, neuroinflammation, exercise, chronic inflammation, kynurenine, SIRT1, interleukin 6, brain derived neurotrophic factor