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Poster Presentation

The Role of Microglia in Cortical Spreading Depression in Migraine

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Abstract

Migraine is a disorder that afflicts nearly one tenth of the population. Involving both nervous and vascular system, it has been found as a prominent factor of disability. The migraine attacks may be initiated in the brainstem or may begin peripherally in the meninges while the role of cortical activation preceding an attack is also debated. Although available treatments, more studies on migraine pathogenesis is needed to introduce more effective treatments. Microglia realized to have a central role in innate immunity within the central nervous system, by generating inflammatory responses. They develop from myeloerythroid progenitor cells in the yolk sac to make a colony of tissue macrophages in the brain. In patients suffering from migraine with aura, cortical spreading depression (CSD) waves are caused by increased neurological activity, that spread slowly across the cortical surface at a certain rate, leading to transient loss of signaling capabilities. This can happen due to different factors like increasing neuro-transmitter production, such as glutamate, which boosts NMDA activity resulting in an ionic imbalance. Following this, as an immune response, the microglia cells increase the intensity of the wave by giving inflammatory responses through producing substances, like alpha-TNF, and this in turn may lead to induction of CSD. Microglia plays an important role in CSD cyclic pattern in migraine pathogenesis, by producing inflammatory factors. Further studies should be planned to clarify signaling cascades between microglia and CSD for making new therapeutic procedures in migraine treatment.

Keywords: Migraine, Microglia, Cortical Spreading Depression

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