

Neuroinflammation and pain in Alzheimer's disease

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Have you ever wondered what is pain and why we feel it? Acute pain is an adaptive signal that notifies and protects us of potentially or actually harmful injury. Nonetheless, sometimes pain persists long after the initial injury, transforming chronic pain, which constitutes a major clinical problem due to its debilitating nature. Dysregulation of pain sensitivity is encountered under various comorbid conditions, including Alzheimer's disease, which is a neurodegenerative disorder in the elderly.

How can we understand what creates pain? To answer this question, we ought to take a closer look at our central nervous system (CNS), that consists of the brain and spinal cord. In the CNS landscape, neurons have been always thought of as the undisputedly most important cells. Nonetheless, as the imaging technologies improved, scientists noticed that microglia, a type of immune cells of the CNS are not merely bystanders but rather exhibit the most pronounced activity. Microglia are constantly surveying their environment with their branch-like arms, to pick up any indication of injury or distress, to which they react aggressively.

There is also a growing consensus that the activation of microglia in response to the damage is necessary for chronic pain and we know that AD is characterised by microglia struggling to keep the CNS healthy. Additionally, chronic pain conditions, which are common in the elderly, are undertreated in people with AD. Hence, the aim of my study is to understand whether and how microglia regulate pain perception in patients suffering from AD and find new avenues for the discovery of novel therapies.



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