The role of regulatory T cells in central nerve system diseases

Minako Ito

Abstract

The importance of relationship between immune system and central nerve system disease such as multiple sclerosis, anti-NMDA receptor antibody encephalitis, Alzheimer's disease has been revealed. In addition to innate immunity, acquired immunity contributes to exacerbation of the diseases or tissue repair after brain injury. It is expected that elucidation of the interaction of immune cells with brain cells and the repair mechanism by immune cells will lead to the development of therapeutic / preventive methods of various neuroinflammation related diseases.

Previously, we found that mice with ischemic stroke were resistant to EAE and ischemic stroke and Treg cells were increased in the brain and spinal cord from these mice. To elucidate the mechanisms of resistance, we performed bulk RNA sequence and single-cell RNA sequence of brain cells in the acute phase, chronic phase, and contralateral side after stroke onset. The population of immune cells and brain cells in the brain dynamically changed after stroke. Interestingly, the changes were observed not only in infarct side but also contralateral side. These data suggested that damage resistance affects not only the injured area but also the other side and spinal cord via immune cells after brain injury.