Poster | Disorders of Nervous Systems and Treatment

[2P]Depression and Bipolar Disorders

Thu. Jul 30, 2020 1:30 PM - 3:30 PM Poster Session

*Videos are available throughout the meeting period.

[2P-243]Neuroinflammation in the hippocampus of female mice exposed to social defeat stress

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A number of animal models were developed to analyze the depressive disorder till today. Particularly, the rodent model of the social defeat stress (SDS) has recently become a popular animal model, because it has been suggested that socially stressful experiences in humans can be simulated by this model. In our previous experiment, male C57BL/6J mice were repeatedly subjected to bouts of social defeat stress by a larger and more aggressive male ICR mouse for 10 days. After that, the densities of microglia, resident immune cells of the brain parenchyma, were increased in the hippocampus of C57BL/6J male mice. However, it should also be noted that the prevalence of depression in women is twice as high as that in men. To examine the difference in the vulnerability to social stress between male and female, we thus have started developing a new rodent model of SDS using female mice. Because normal male (as well as female) resident mice usually do not attack female intruder mice, it has been accepted that establishment of SDS model using female mice is technically difficult. To address this issue, we applied male odorants to female mice by refereeing recent studies, which increased the aggressive behaviors of male resident mice to female intruder mice. Although our results are still preliminary, we have found that female mice exposed to SDS may exhibit anxiety-like behaviors in an elevated plus-maze test and depression-like behaviors in a social interaction test. To evaluate the neuroinflammation in the female SDS model, we are currently working on the potential alterations in the densities and morphological characteristics of microglia in the hippocampus. We are also planning to test the potential effects of genistein, a plant-derived estrogen analog, on depression-like behaviors and hippocampal microglia using female SDS model. The main aim of our poster is to discuss the potential mechanistic differences in the vulnerability to social stress between female and male mice at the 43rd annual meeting of the Japan Neuroscience Society.