Symposium

2025年9月28日(日) 16:30 ~ 18:00 Session Room 1 (Main Hall A)

[Symposium 108] Recent Advances and Future Directions in Nuroimaging and Neurophysiological Studies in Schizophrenia

Moderator: Yoji Hirano (University of Miyazaki), Shunsuke Koike (University of Tokyo)

[SY-108-02] Automated diagnosis of schizophrenia using ERP components in the auditory oddball paradigm through deep learning

*Ming H. Hsieh[1], Yi-han Sheu[2], Yi-Ting Lin[1] (1.Department of Psychiatry, National Taiwan University Hospital and College of Medicine, Taipei(Taiwan), 2.Center for Precision Psychiatry, Massachusetts General Hospital, Boston, MA(United States of America))

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Neuroimaging-based disease diagnosis has been widely used in many fields of clinical medicine. In addition, single-subject classification of psychiatry disorders based on MRI dataset is also the focus of clinical research. Auditory event-related potentials (ERP) have been utilized to study defective information processing of patients with schizophrenia. However, there are only few automated diagnosis studies utilizing the pre-attentional, task-independent, high temporal resolution ERP.

The auditory oddball paradigm, a common experimental framework in cognitive repetitive ones, enabling researchers to investigate cognitive processing anomalies associated with schizophrenia. By focusing on ERP components such as MMN/P3a, researchers can assess how individuals with schizophrenia process auditory information differently compared to healthy controls, providing insights into the cognitive dysfunction characteristic of the disorder. Our dataset comprised 400subjects (256 patients with schizophrenia and 144 healthy controls). The classification and predictive accuracy of schizophrenia according to different models of deep learning would be presented. This innovative approach holds promise for early detection and personalized treatment strategies.

Overall, the automated diagnosis of schizophrenia through ERP components and deep learning offers a promising avenue for enhancing diagnostic precision and treatment personalization, yet requires ongoing research to fully realize its potential in clinical practice.