

Different association between inflammatory markers and executive function across different psychiatric disorders

Tzu-Yun Wang¹, Ru-Band Lu¹, Sheng-Yu Lee², Yun-Hsuan Chang³

¹Department of Psychiatry, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Taiwan.

²Department of Psychiatry, Kaohsiung Veterans General Hospital, Taiwan.

³Institute of Genomics and Bioinformatics, College of Life Sciences, National Chung Hsing University, Taiwan.

Background

Executive function impairment is the major clinical characteristics in many psychiatric disorders [1]. Inflammation has been suggested to be the underlying common neurobiological pathways for the executive dysfunction across different psychiatric disorders [2], yet whether there is specific association between inflammatory markers and executive performance in different psychiatric diagnosis is unknown.

Aims & Objectives

Our study aims were: (1) to compare the peripheral cytokines expression and executive function in patients with bipolar disorder (BD), substance use disorders (SUD) and schizophrenia (SCH), and in healthy controls (HC); (2) to explore the potential different association between inflammatory cytokines and executive function in different patient groups and HC.

Methods

Patients with BD (n=828, BD-I/BD-II: 121/707), SUD (opioid use disorder and/ or methamphetamine use disorder, n=526), SCH (n=146) and HC (n=186) were recruited. We assessed their plasma cytokines [tumor necrosis factor (TNF)- α , C-reactive protein (CRP), interleukin (IL)-8, transforming growth factor (TGF)- β 1], brain-derived neurotrophic factor (BDNF), and executive function in terms of the Wisconsin Card Sorting Test (WCST) and Continuous Performance Test (CPT). We compared the inflammatory cytokines levels and executive function in patients with different psychiatric disorders and HC. The association between inflammatory cytokines and executive performance was analyzed in different patient groups and HC.

Results

The patient groups, despite their diagnosis, had poor executive performance and higher inflammatory cytokine levels than the HC group did. Patients with SCH had worst executive performance, while patients with SUD had highest inflammatory cytokine levels. Higher inflammatory cytokine levels were associated with poor executive performance in all patient groups, but not in HC. More specifically, the increased plasma IL-8 levels were significantly associated with poor executive performance in BD and SUD patient group but associated with better performance in HC.

Discussion & Conclusion

Dysregulated inflammation might be a common pathophysiological change in different psychiatric disorders and associated with their executive dysfunction. However, increased inflammatory cytokines may not have similar catastrophic effects on executive function in healthy individuals.