

Innovative Research Program on Suicide Countermeasures in FY2021: Report on Commissioned Research Results

Field 3: Developing new policy areas

Topic number : 3-2

Research topic:

Study on Enhancement and Improvement of Psychological Care/Support for People with Traumatic Experience of Disaster and/or Child Abuse

Principal Researcher:

Yoshiharu Kim

Director General, National Institute of Mental Health, National Center of Neurology and Psychiatry

Co-Researcher:

Hiroaki Hori,

Section Chief, Department of Behavioral Medicine, National Center of Neurology and Psychiatry

Summary:

Childhood adversity, especially maltreatment, has been shown to increase the risk of developing psychiatric disorders such as depression and posttraumatic stress disorder (PTSD), as well as the risk of suicide. Individuals with a history of childhood maltreatment tend not to use help-seeking behaviors that can prevent suicidal behaviors, and thus it is difficult to predict their suicidal behaviors. Therefore, it is important to develop objective markers that can detect individuals with high suicide risk.

A growing number of studies have examined the biological basis of suicide, and evidence has suggested an association of suicide with inflammation and hypothalamic-pituitary-adrenal (HPA) axis function. However, such research is scarce on PTSD. Childhood maltreatment has been associated with alterations in the inflammatory system and HPA axis function and with increased suicide risk. To identify useful predictive markers of suicide risk in patients with PTSD, the present study investigated the relationship of suicide risk with

blood levels of inflammatory molecules and HPA axis hormones, and further explored possible effects of childhood maltreatment.

A total of 93 civilian patients with PTSD and 119 healthy volunteers without traumatic experiences (all women, average age: late 30s) participated in this study. Suicidal ideation/risk and history of childhood maltreatment were assessed with a structured interview and self-report questionnaires. Blood was drawn from each participant around noon, and levels of proinflammatory markers (including high-sensitivity CRP, IL-6, and high-sensitivity TNF- α) and HPA axis hormones (Cortisol, ACTH, and DHEAS) were measured.

Compared with healthy controls, patients showed significantly higher suicidal ideation and more experience with childhood maltreatment. For example, 36.2% of the patients endorsed “I would like to kill myself” or “I would kill myself if I had the chance” whereas none of the controls did. Suicidal ideation and risk in patients were significantly associated with childhood maltreatment history. In patients, suicidal ideation was significantly positively correlated with high-sensitivity CRP and IL-6 levels, and suicide risk was significantly correlated with high-sensitivity CRP levels. Regarding HPA axis hormones, Cortisol and ACTH levels were not significantly correlated with any of the indices of suicide. DHEAS levels were significantly negatively correlated with suicide risk, and the Cortisol/DHEAS ratio was significantly positively correlated with suicidal ideation and risk.

Our results confirmed that PTSD patients show elevated suicidal ideation/risk, and those with a history of childhood maltreatment have an even higher risk of suicide. Our findings suggest that high-sensitivity CRP levels and Cortisol/DHEAS ratio may serve as state markers of suicide risk in PTSD. Based on these findings we are planning to explore protective factors for suicide, in addition to risk factors, and to investigate their association with biomarkers. Although the elucidation of how various biological factors affect suicidal behaviors is a big challenge, it is expected that these lines of research will eventually lead to the development of more effective suicide countermeasures.