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Do serum BDNF levels vary in self-harm behavior among adolescents and are they correlated with traumatic experiences?

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Abstract

The aim of this study was to compare serum brain-derived neurotrophic factor (BDNF) levels between adolescents that harm themselves, those that receive psychiatric treatment but do not harm themselves, healthy adolescents, and childhood traumas and to investigate the relationship between traumatic experiences and serum BDNF levels. The cases were divided into two groups of 40 adolescents exhibiting self-harm behavior (self-harm/diagnosed group) and 30 adolescents receiving psychiatric treatment but not exhibiting self-harm behaviors (non self-harm/diagnosed group). The control group (healthy control group) consisted of 35 healthy adolescents with no psychiatric disorders or self-harm behaviors. The adolescents were asked to fill in the Inventory of Statements About Self Injury (ISAS) and Childhood Trauma Questionnaire (CTQ). For BDNF measurement, blood samples were taken from the cases and controls. The serum BDNF level of self-harming adolescents who used the self-cutting method was significantly lower than that of other groups, and serum BDNF levels decreased with the increase in the emotional neglect and abuse severity of self-harming adolescents during childhood. In our study, serum BDNF levels decreased with the increase in emotional abuse in self-harming adolescents. This finding may indicate that neuroplasticity can be affected by a negative emotional environment during the early period.

Keywords: BDNF, self-harm, neuroplasticity, childhood trauma.

1. Introduction

Adolescent self-harm which includes suicidality behavior and non-suicidal self-harm, is a worldwide public health concern. The heterogeneity of self-harm is strongly associated with psychopathologies, environment interaction and other social threats such as sexual abuse (Lundh et al. 2011). Previous researches on self-harm is

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