

Co-occurrence of Emotional Dysregulation and Impaired Functional Connectivity Between the Amygdala and Geschwind's Territory in the Dominant Hemisphere of Adolescents with Non-suicide Self-injury

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Abstract

Non-suicide self-injury (NSSI) is defined as a deliberate, self-inflicted damage to body tissue of a person in the absence of suicidal intent. Relative to the other populations, adolescents are more susceptible to NSSI. This study aims to explore the sociodemographic risk factors for NSSI and to investigate its underlying neural correlates. A total of 270 adolescents (12-18 years old) with major depressive symptoms were registered as the participants of this study. Among them, 154 reported engaging in NSSI (MDN), while the others denied such behavior (MD). Compared to the MD group, the MDN group had higher proportions of patients being females, grown in a single parent family, or having left-behind experience. Although the two groups exhibited the same scores of HAMD 24, the MDN persons presented lower levels of emotional understanding and experienced difficulties in impulse control and using emotion regulation strategies than MD group. When watching negative images under the three emotion regulation strategies of cognitive reappraisal, response inhibition, and neutral emotion, MDN group rated lower emotional valence than MD group. MDN group had lower P300 and LPP amplitudes recorded in the centroparietal zone, under all the three emotion regulation strategies. Furthermore, the functional connectivity between the left amygdala and the Geschwind area in the MDN group was significantly lower than that in the MD group. These data correlate emotional dysregulation to impaired functional connectivity between amygdala and Geschwind's territory in the dominant hemisphere of NSSI adolescents.

Keywords

Adolescents, Emotion Regulation Strategy, Event-related Potential, Nonsuicide Self-injury, Resting-state Functional Magnetic Resonance Imaging