Size abnormalities of the superior parietal cortices are related to dissociation in borderline personality disorder

Eva Irle⁵, Claudia Lange⁵, Godehard Weniger⁵, Ulrich Sachsse⁵,⁶

⁵Department of Psychiatry and Psychotherapy, University of Göttingen, Von-Siebold-Str. 5, D-37075 Göttingen, Germany
⁶Psychiatric State Hospital of Lower Saxony, Göttingen, Germany

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Abstract

Recent evidence suggests that borderline personality disorder (BPD) is related to reduced size of the parietal lobe. Dissociative symptoms occur in the majority of individuals with BPD. Structural magnetic resonance imaging (3D-MRI) was used to assess volumes of the superior (precuneus, postcentral gyrus) and inferior parietal cortices in 30 young women with BPD who had been exposed to severe childhood sexual and physical abuse and 25 healthy control subjects. Compared with control subjects, BPD subjects had significantly smaller right-sided precuneus (−9%) volumes. The left postcentral gyrus of BPD subjects with the comorbid diagnosis of dissociative amnesia (DA) or dissociative identity disorder (DID) was significantly increased compared with controls (+13%) and compared with BPD subjects without these disorders (+11%). In BPD subjects, stronger depersonalization was significantly related to larger right precuneus size. Possibly, larger precuneus size in BPD is related to symptoms of depersonalization. Increased postcentral gyrus size in BPD may be related to the development of DA or DID in the presence of severe childhood abuse.

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1. Introduction

Borderline personality disorder (BPD) is defined as an intermediate level of personality organization that is considered to occupy a borderline area between neurosis and psychosis (Kernberg, 1967). Stress-related dissociative symptoms occur in about 75% of individuals with BPD (Skodol et al., 2002) and in about 40% of individuals with posttraumatic stress disorder (PTSD) (Bremner et al., 1992; David et al., 1999). Use of the Structured Clinical Interview for DSM-IV Dissociative Disorders has shown that dissociative amnesia is the area most strongly affected in persons who had been exposed to traumatic stress (Bremner et al., 1993). Childhood abuse, particularly chronic abuse beginning at early ages, was shown to be related to the development of high levels of dissociation, including dissociative amnesia (DA) and dissociative identity disorder (DID) (Boon and Draijer, 1993; Lewis et al., 1997; Chu et al., 1999).

Research so far has established size reduction and pronounced dysfunction of amygdala, hippocampus and prefrontal cortices in individuals with BPD (for review, see Zanarini, 2005). A recent study (Vermetten et al.,...
2. Methods

2.1. Subjects

The sample comprised 30 young female in-patients with the diagnosis of borderline personality disorder (BPD) according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 1994) consecutively admitted to the Psychiatric State Hospital of Lower Saxony, Göttingen, Germany. The hospital has a specialized therapeutic unit for women who have experienced severe childhood sexual and physical abuse. All subjects had been treated earlier in stationary units for BPD and/or chronic PTSD. Subjects with a history of neurological disease or psychotic disorders (DSM-IV axis I) were excluded. Eight subjects were on antidepressant medication (selective serotonin reuptake inhibitors). Six subjects were occasionally treated with sedatives (benzodiazepines: n = 5, hypnotics: n = 6). All subjects were included in a previous report on parietal cortex size in BPD (Irle et al., 2005).

BPD subjects were compared with 25 healthy female control subjects comparable with regard to age (31 ± 6 vs. 33 ± 7) and years of education (11 ± 2 vs. 11 ± 2). Control subjects were recruited for the study by an advertisement in a local newspaper and leaflets distributed in the Hospital of the University of Göttingen and in town. Only subjects without a history of neurological or psychiatric disorder were studied.

After a complete description of the study was given to the subjects, written informed consent was obtained. The study design was approved by the Ethical Committee of the Medical Faculty of the University of Göttingen.

2.2. Clinical assessment

All subjects were investigated with the Structured Clinical Interview for DSM-IV (SCID-I and SCID-II) (First et al., 1995, 1997; Wittchen et al., 1997) and the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D) (Steinberg, 1994; Gast et al., 2000). All subjects met DSM-IV criteria for BPD. Twenty-seven (90%) subjects met criteria for lifetime or current depersonalization disorder. Seven (23%) subjects met criteria for lifetime or current dissociative amnesia (DA), and four (13%) for current dissociative identity disorder (DID). Eleven BPD subjects (37%) met criteria for lifetime or current PTSD. Three (10%) subjects met criteria for lifetime panic disorder with agoraphobia, eight subjects (27%) for current panic...
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