Journal of Psychiatric Research 56 (2014) 10–17

Contents lists available at ScienceDirect

Journal of Psychiatric Research

journal homepage: www.elsevier.com/locate/psychires

History of childhood maltreatment in Intermittent Explosive Disorder and suicidal behavior

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ARTICLE INFO

Article history:
Received 31 December 2013
Received in revised form
2 April 2014
Accepted 11 April 2014

Keywords:
Intermittent Explosive Disorder
Aggression
Impulsivity
Suicide attempt
Childhood maltreatment

ABSTRACT

Intermittent Explosive Disorder (IED) is a relatively common disorder of impulsive aggression that typically emerges by adulthood. Maltreatment in childhood (CM) may contribute to the development of IED, but little is known about the association between CM and IED, including about how subtypes of CM may specifically relate to IED. This study aimed to test the association between CM and IED diagnosis. A second aim was to examine history of CM in suicide attempters, and to explore whether impulsivity and aggression account for the relationship between CM and suicide attempt (SA). Adults with Intermittent Explosive Disorder (IED; $n = 264$), with non-IED psychiatric (Axis I or II) disorders (psychiatric controls; PC; $n = 199$), and with no psychiatric disorder (healthy control subjects; HC; $n = 185$) were assessed for history of childhood maltreatment, aggression, impulsivity, and history of SA. IED subjects reported significantly greater CM compared to PC and HC subjects, and suicide attempters ($n = 62$) reported greater CM compared to non-attempters ($n = 586$). Physical abuse in childhood was independently associated with IED, while sexual abuse and emotional abuse were independently associated with SA. Impulsivity and aggression were potential mediators of the relationship between physical abuse and IED and emotional abuse and SA, but sexual abuse was associated with SA independently of aggression and impulsivity. The results suggest pathways by which environmental factors may influence impulsivity and aggression and, in turn, clinically significant self- and other-directed aggression.

1. Introduction

Aggression and suicide are destructive behaviors that exact a considerable toll on individuals, families, and society. Each year, approximately 1.6 million people die as a result of violence, both self- and other-directed (WHO, 2009), and these events and other non-lethal forms of aggression (i.e., interpersonal assaults and suicide attempts) have substantial economic costs (Czernin et al., 2012; WHO, 2004). Despite the severity of these behaviors they are relatively common. In the National Comorbidity Study (NCS), 4.6% of respondents reported making a suicide attempt in their lifetime (Kessler et al., 1999), while the lifetime prevalence of clinically significant aggression, as defined by Intermittent Explosive Disorder (IED) DSM-IV criteria, was reported as high as 7.3% (Kessler et al., 2006).

Impulsive aggression is the core feature of IED and is also a risk factor for suicidal behavior, making it an important target of efforts to reduce both self- and other-directed aggressive behavior. Behavioral genetics studies indicate that both genetic and environmental factors contribute to the development of aggression (Coccaro et al., 1997a; Miles and Carey, 1997; Yeh et al., 2010); however, relatively little is known about environmental variables which may contribute to the development of clinically significant impulsive aggression (IED). Understanding the factors that promote the development of impulsivity and aggression (and which may in turn increase the likelihood of suicide attempt and persistent aggression) is thus an important scientific and therapeutic goal.

One set of environmental circumstances that has been shown to contribute to the development of impulsive aggression is childhood maltreatment (CM). CM includes experiences of physical, emotional, and sexual abuse, and emotional and physical neglect. CM predicts a range of negative outcomes, including psychopathology (Briere and Elliott, 2003; Green et al., 2010; Lobbestael

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http://dx.doi.org/10.1016/j.jpsychires.2014.04.012
0022-3956/

et al., 2010; Scott et al., 2012), aggression (Singer et al., 1999; Song et al., 1998), and suicidal behaviors (Miller et al., 2013; Silverman et al., 1996), but little is known specifically about the role of CM in the development of IED. Individuals with IED have been found to have significant histories of trauma (e.g., accidents, disaster-related traumas; Fincham, 2011), and interpersonal traumas and traumas experienced early in life are particularly predictive of IED (Nickerson et al., 2012), suggesting that CM may significantly increase the risk of developing IED. Furthermore, childhood adversities related to a maladaptive family environment have been shown to be particularly predictive of later psychopathology in general (Green et al., 2010; McLaughlin et al., 2012). Studies on the effects of CM on suicidality suggest that most forms of CM increase the risk of suicide attempt when considered separately (Miller et al., 2013), but that sexual, physical, and emotional abuse are particularly robust predictors when different forms of CM are considered together in multivariate analyses (Beautrais et al., 1996; Hacker et al., 2006; Joiner et al., 2007; Ystgaard et al., 2004).

In addition to being a core feature of IED, impulsive aggression is also associated with Antisocial Personality Disorder (ASPD) and Borderline Personality Disorder (BPD). Further, suicide attempters and completers have been found to have higher levels of impulsivity and aggression (Brodsky et al., 2001; Dumais et al., 2005; Mann et al., 1999). Brodsky (2001) examined childhood abuse history, BPD, and impulsive and aggressive personality traits as predictors of lifetime suicide attempt. Participants reporting a history of childhood abuse were more likely to have attempted suicide, had higher reported levels of impulsivity and aggression, and were more likely to meet criteria for BPD. However, when considered together, childhood abuse, but not BPD, impulsivity, or aggression, contributed uniquely to the prediction of SA.

The purpose of this study was to examine the associations between early experiences of abuse and neglect and clinically significant aggressive and self-aggressive behavior in an adult sample of research volunteers with and without psychopathology. We first sought to extend prior research on the association between trauma and IED by using a well-validated measure of childhood maltreatment that distinguishes different forms of CM including physical and sexual abuse and neglect. Specifically, we compared participants with IED to non-IED psychiatric control subjects (PC) and healthy control (HC) subjects on subtypes of CM and total CM. Next, we examined which forms of childhood maltreatment were independently associated with impulsive and aggressive traits, and with a lifetime diagnosis of IED. Finally, we explored impulsivity and aggression as potential mediators of the relationship between CM and IED. We conducted similar analyses for lifetime history of suicide attempt. This was done to replicate and extend prior findings by examining potential specific associations between type of childhood abuse and suicide attempt as well as the roles of impulsivity and aggression in these relationships. These relationships were tested in a series of hierarchical models. In order test whether these effects were independent of Antisocial and Borderline Personality Disorders, as these are associated with impulsive aggression, suicide risk, and early life trauma (Beautrais et al., 1996; Brodsky et al., 2001; Lobbestael et al., 2010; Silverman et al., 1996), we included these diagnoses as covariates in a final logistic regression model. We predicted that: 1) IED subjects would report more childhood maltreatment compared with healthy control and psychiatric control subjects; 2) subjects with history of suicide attempt would report more CM and have higher scores on aggression and impulsivity; and 3) trait aggression and impulsivity (assessed dimensionally) would at least partially explain the relationship between CM and later IED and SA, suggesting that CM may increase impulsivity and aggressiveness and thereby increase the risk of negative outcomes.

2. Methods

2.1. Subjects

Six-hundred-forty-eight medically healthy subjects participated in this study as research volunteers. All subjects were systematically evaluated with regard to aggression, impulsivity, and other behaviors as part of a larger program designed to study correlates of impulsive aggression and other personality-related behaviors in human subjects. Subjects were recruited from public service announcements and through media advertisements seeking individuals who: a) were experiencing psychosocial difficulty related to one or more Axis I and Axis II conditions or, b) had no evidence of psychopathology. All subjects provided written informed consent as approved by the Committee for the Protection of Human Subjects (IRB). By study exclusion criteria, no subject had current alcohol or other drug dependence and none had a life history of mania/hypomania, schizophrenia, or delusional disorder.

2.2. Diagnostic assessment

Axis I and Axis II personality disorder diagnoses were made according to DSM-IV criteria (American Psychiatric Association, 1994). Diagnoses of Intermittent Explosive Disorder (IED) were made by research criteria (Coccaro, 2011) and all IED subjects also met the new DSM-5 criteria for IED (APA, 2013). Diagnoses were made using information from: (a) the Structured Clinical Interview for DSM Diagnoses (SCID; First et al., 1997) for Axis I disorders and the Structured Interview for the Diagnosis of DSM Personality Disorder (Pfohl et al., 1997) for Axis II disorders; (b) clinical interview by a diagnostic rater with at least master's level training; and; and (c) a review of all other available clinical data. All diagnostic raters completed a rigorous training program that included lectures on DSM diagnoses and rating systems, videos of expert raters conducting SCID/SIDP interviews, and practice interviews and ratings until the rater was deemed reliable with the trainer. This process resulted in good to excellent inter-rater reliabilities (mean kappa of 0.84 ± 0.05; range: 0.79 to 0.93) across mood, anxiety, substance use, impulse control, and personality disorders. Final diagnoses were assigned by team best-estimate consensus procedures (Klein et al., 1994; Leckman et al., 1982) involving research psychiatrists and clinical psychologists as previously described (Coccaro, 2011). This methodology has previously been shown to enhance the accuracy of diagnosis over direct interview alone (Kosten and Rounsaville, 1992).

IED participants were those with a lifetime diagnosis of IED. Psychiatric control participants had a current or lifetime syndromal (Axis I) or personality (Axis II) disorder. By definition, none of the 185 healthy control subjects had a current or lifetime history of any syndromal or personality disorder. Demographic characteristics of the subjects are displayed in Table 1. Rates of syndromal and personality disorders among the 199 PC and 264 IED subjects are displayed in Table 2. In addition to meeting criteria for syndromal and personality disorders, a majority of PC and IED subjects (71%) reported a history of psychiatric treatment (57%) or of a behavioral disturbance for which the subject, or others, thought they should have sought mental health services but did not (46%). History of suicide attempt was assessed during the diagnostic interview and underwent the same best estimate procedure. An act was considered a suicide attempt if it involved engaging in a behavior with the conscious (even if ambivalent) intent to die by means the subject believed could end his or her life.

2.3. History of childhood maltreatment

History of CM was assessed using the 28-item Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994). Five subscales