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Suicidality and trait aggression related to childhood victimization in patients with alcoholism

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Abstract

The relationship between physical abuse in childhood and suicide attempts in adulthood has long been known. However, the phenomenon has not been examined in patients who are undergoing treatment for alcoholism. In this study we seek an answer to the questions of whether exposure to physical abuse in childhood predisposes to violence, which in turn increases the likelihood of suicidal behavior in adulthood. The sample studied comprised 172 patients with alcohol dependence and with data for childhood physical abuse, trait aggression and lifetime suicide attempts. The measuring instruments used for the investigation were the European Addiction Severity Index, the Buss and Perry Aggression Questionnaire and the Janus Questionnaire. Generalized Linear Model analysis revealed a significant gender-dependent association between physical abuse by the parents suffered in childhood and later suicide attempts. In females, childhood victimization by parents increased the likelihood of suicide attempts by approximately 15 times; in males, the increase was about twofold. Association of suicide attempts with the overall level of trait aggression also significantly interacted with gender. In females, the increase in the level of total scores of the trait aggression from 0 to 50 points (approximately the mean level in the study population) elevated the likelihood of the suicide attempts by almost ninefold, whereas the analogous increase in males was about threefold. The results draw attention to the importance of preventing suicide in clinical populations of alcohol-dependent patients.

Keywords: Suicide attempts; Childhood victimization; Alcohol dependence; Trait aggression

1. Introduction

Suicidal behavior is complex and heterogeneous (Conner et al., 2006). It may be related to treatable conditions such as alcohol use/alcohol dependence, depression and aggression/impulsivity (Bacaner et al., 2002). Exploring the associations among these conditions may contribute to elaborating effective and targeted preventive and intervention programs.

Population-based studies suggest an association between alcohol consumption and suicide, indicating that greater alcohol use results in a greater risk for suicide (Stack, 2000). This association may be culture-dependent; an increase of 1 liter per capita in alcohol consumption was associated with a different likelihood of

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increase in suicide across 17 countries. Suicide rate in individuals under 50 years old was related to per capita alcohol use (Makela, 1996). Results showing an association between suicide attempts and alcohol use were also seen in alcohol-dependent patients (Preuss et al., 2003) as well as in patients after a suicide attempt (Suokas and Lonnquist, 1995). Patients with alcohol abuse have a 9.8 times greater predisposition for completed suicide compared with the general population (Wilcox et al., 2004), and a 6.5 times greater predisposition for attempted suicide compared with people without alcoholism (Kessler et al., 1999).

According to the qualitative research findings of Bergman and Brismar (1994), 57% of treated alcohol-dependent patients exhibit violent behavior. One third of violent patients with alcoholism had a prior history of suicide attempts in contrast to the non-violent patients where this proportion was 17%. Impulsive and aggressive personality traits increase the suicide risk (Plutchik and van Praag, 1989; Greenwald et al., 1994; Horesh et al., 1999). The combination of aggression and impulsivity is a very strong predictor of suicidal behavior (Conner et al., 2001; Mann et al., 1999; McGirr et al., 2007). Several previous studies explored the associations between trait aggression and suicide (Angst and Clayton, 1986; Brent et al., 1994; de Chateau, 1990; Shaffer e al., 1996), as well as between impulsivity and suicide (Duberstein et al., 1994).

Conceptual models are available in the literature that integrate the associations between alcohol-related aggression and suicide. Brady (2006) summarized two potential causal pathways in this regard. In one of these, the excessive alcohol use leads to suicide through impulsive/aggressive behavior. In the second, heavy alcohol use contributes to the emergence of suicidal ideation in association with depression, observed in patients with primary depression. In her review, Rossow (2000) considered three possible path models for the development of suicidal behavior in alcohol-abusing subjects: (1) chronic alcohol abuse leads to secondary depression with suicide; (2) alcohol abuse and suicide have a common root (primary depression and/or certain specific personality traits) leading to suicide; (3) acute alcohol intoxication can trigger self-destructive behavior with depressive thoughts and feelings of helplessness. A suggested model of Conner and Duberstein (2004) differentiated between predisposing (aggression/impulsivity, severity of alcoholism, negative affect, helplessness) and precipitating (interpersonal problems, major depressive episode) factors. Alcoholism can lead to suicide directly or through these potential mediating factors.

Victims of childhood physical, emotional and sexual abuse showed a greater risk to the development of alcoholism compared with people who did not have such a victimization in their history (McKinney and Frank, 1998; McCauley et al., 1997; Kelley and Fals-Steward, 2004; Sartor et al., 2007). In a longitudinal study, men and women who experienced sexual abuse as a child reported more alcohol-related problems compared with the control group (Galaif et al., 2001). In adulthood, men were characterized by problematic drinking, whereas sexual abuse of women was more prevalent. Violent patients with alcohol dependence suffered more childhood abuse and their fathers were more likely to have had drinking problems than their non-violent counterparts who suffered from alcoholism (Bergman and Brismar, 1994).

Childhood aggressive victimization emerged as one of the strongest explanatory factors for aggression in adolescents (Brook et al., 2003; Vaughn, 2004; Brook et al., 2004). There are several potential developmental paths between child abuse and adult aggressive behavior (Widom, 1989a; Pettit, 1997). Mothers who had been punished often during their childhoods were at greater risk as adults of being punitive with their own children compared with mothers without punitive parents (Frias-Armenta, 2002). The "violence-begets-violence" phenomenon has been described in the literature as a 'cycle of violence' (Widom, 1989a,b).

Investigating the associations among child abuse, substance abuse and suicide in 352 pregnant adolescent girls, Bayatpour (1992) found a strong association between child abuse and completed and attempted suicide and suicide ideation. Sexually abused adolescents reported more suicidal thoughts and attempts compared with adolescents without sexual victimization (Garnefski and Diekstra, 1997; Wozencraft et al., 1991).

Data based on qualitative research suggest a positive association between childhood victimization and violent and suicidal behavior in adulthood in patients with alcohol dependence (Bergman and Brismar, 1994). In our hypothesized model (Gerevich and Bácskai, 2006), childhood victimization was expected to lead to adult aggressive behavior and alcohol dependence. We assumed that there would be a causal relationship between childhood victimization and suicide behavior through trait aggression as a mediator. In other words, childhood victimization is expected to be associated with suicide, both directly and indirectly, through trait aggression in patients with alcoholism.

In this study, we investigated whether exposure to physical abuse in childhood predisposes to violence, which in turn increases the likelihood of suicidal behavior in adulthood in patients with alcohol dependence.

2. Methods

2.1. Study design and setting

A cross-sectional survey was conducted in Budapest to assess levels of trait aggression and history of suicidal behavior as well as childhood and lifetime victimization of inpatients seeking medical help for the symptoms of alcohol dependence. The study was conducted in six special addiction units of psychiatric hospital departments. No hospital refused participation, and written consent was provided by the participating institutions. An informed consent was obtained from the participating patients.

2.2. Sample characteristics

Data collection was performed from August to October, 2005, among all newly admitted male and female inpatients between ages 18 and 65 in psychiatric departments of general hospitals in Budapest. Patients were excluded from the study if they had acute alcohol intoxication or serious physical or mental conditions.

2.3. Procedure

Specially trained psychiatrists and research assistants identified eligible people with alcohol dependence. Trained research assistants obtained the Addiction Severity Index within the framework of a face-to-face interview. Participants completed the Buss–Perry Aggression Questionnaire and the Janus Questionnaire in privacy. A DSM-IV diagnosis of alcohol dependence was made by the addiction treatment psychiatrists. The presence of a serious physical or mental state or alcohol intoxication was determined by a psychiatrist.

2.4. Measurements

The questionnaires used in this investigation measured child abuse of patients and child and partner perpetration and victimization, lifetime and current suicide attempts, and trait aggression and urges to hit or harm someone. In addition, basic demographic information including gender, age, and educational and marital status was also collected.

2.4.1. Trait aggression

Trait aggression was measured by the total score of the Buss–Perry Aggression Questionnaire (AQ) and scores of the subscales including physical aggression, verbal aggression, anger, and hostility (PA, VA, A, H). The AQ comprises 29 items in a 5-point Likert format from 0 (extremely uncharacteristic) to 4 (extremely characteristic of me). Evidence for the scale's construct validity is available elsewhere (Buss and Perry, 1992). The Buss–Perry Aggression Questionnaire was adapted to Hungarian settings (Gerevich et al., 2007).

2.4.2. Childhood victimization

Child abuse of patients, and child and partner perpetration and victimization were investigated by the Janus Questionnaire. The questionnaire was developed and validated to assess the cycle of violence in alcohol dependence (Bácskai et al., 2005, 2006). The questions included from the Janus Questionnaire were: "Did your parents ever abuse you physically in your childhood?" The possible answers for this trichotomous variable included "never", "seldom" and "often". Physical abuse at any point during the lifetime that resulted in an injury was examined by the Addiction Severity Index, Version 5 (McLellan et al., 1980), which has been validated in the Hungarian language (Gerevich et al., 2004, 2005). The question from the version of the ASI used in this study was the following: "Has anyone ever abused you physically?" The possible answers for this dichotomous variable were "no", or "yes".

2.4.3. Suicidal attempts

Lifetime history of suicidal attempts was indexed by the ASI. The pertinent question that we focused on in this study was: "Have you had a significant period (that was not a direct result of drug/alcohol use) in which you have attempted suicide (including discrete suicidal gestures or attempts); number of attempts in the past?" The count of lifetime history of suicidal attempts was considered as the principal dependent variable for this investigation.

2.5. Data analyses

The relationship between suicide attempts and childhood physical abuse was investigated by Generalized Linear Model analysis (GENMOD). In our primary analysis, the number of suicide attempts was used was the dependent variable, whereas childhood physical abuse, as measured by the Janus Questionnaire, served as the independent variable. Gender and age were used as covariates. Since the number of suicide attempts followed a distribution with an "inverse J-curve", a Poisson distribution was used for modeling purposes in the GENMOD analyses. The strength of the association between dependent and independent variables was characterized by the odds ratio. Secondary analyses tested the association of suicide attempts with lifetime

victimization as measured by the ASI, and trait-aggression scores as indexed by the total and the four subscale scores of the Buss–Perry Aggression Questionnaire.

3. Results

3.1. Demographics and patient disposition

The target population of this study ($N=209$) comprised patients who met the DSM-IV criteria of alcohol dependence, were free of severe physical and mental conditions including acute alcohol intoxication, and had no reading difficulty precluding the conduct of the study. Nineteen patients refused to participate in this study, and data were missing for 18 subjects. This resulted in a sample of 172 subjects with data available for the analyses (Table 1).

3.2. Descriptive summaries for suicide attempts, childhood victimization, and trait aggression

Almost half of the patients ($N=81$; 47.1%) reported that there was a considerable period in their life when they had serious suicidal thoughts independently of drug or alcohol consumption. Of the 171 patients, 45 (26.2%) also reported that they had at least one actual suicide attempt in their lifetime history. Among the patients who had attempted suicide ($N=45$), around one third ($N=15$; 33.3%) did so only once, and 10 subjects (22.2%) had made five or more attempts.

Frequent childhood physical victimization by parents was reported by 25 patients (15%); 81 (48%) were victimized occasionally; 64 patients (37%) were never victimized. Physical abuse at any point during the lifetime that resulted in an injury was reported in 62 (36%) patients.

Table 1
Basic demographic characteristics of the study population

		Mean	S.D.
Age		42.1	13.1
		N	%
Gender	Male	127	73.8
	Female	45	26.2
Education	Low	74	43.0
	Middle	59	34.3
	High	39	27.7
Marital status	Single	65	37.8
	Married	47	27.3
	Divorced, widowed	60	34.9
Lifetime number of suicide attempts	0	127	73.8
	1–5	35	20.3
	>5	10	5.9

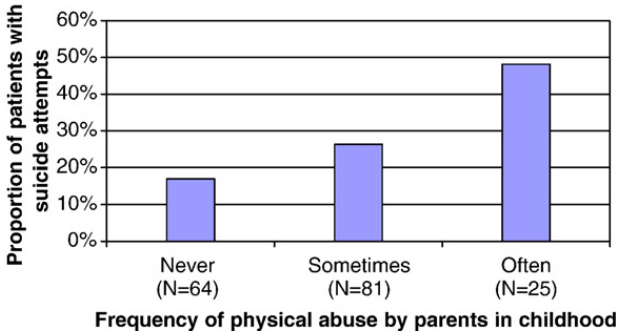

Fig. 1. Suicide attempts as a function of childhood victimization.

The average severity of trait aggression, as measured by the total score of the Buss–Perry Aggression Questionnaire was (AQ) was 47.7 (S.D.=16.1); the severity of physical aggression on the AQ was 11.3 (S.D.=7.3).

Patients with frequent, occasional and no history of occurrence of childhood physical victimization by parents had 48%, 26%, and 17% chance of attempting suicide during their lifetime, respectively (Fig. 1).

3.3. Generalized Linear Model analyses

The GENMOD analysis indicated that the number of suicide attempts varied as a function of an interaction between the childhood victimization by parents and gender (Chi square=21.0; $P<0.0001$). In particular, in females childhood victimization by parents increased the likelihood of suicide attempts by approximately 15 times (OR=14.8[5.36] for frequent ['often'] vs. no victimization). In males, the increase was of smaller magnitude (OR=2.03[0.55]). Further analyses indicated that the number of suicide attempts also varied as a function of an interaction between lifetime victimization and gender (Chi square=25.6; $P<0.0001$). Specifically, in female patients with lifetime victimization, the likelihood of later suicide attempts increased more than sixfold as compared with those with no victimization (OR: 6.39 [SE=2.17]) whereas in males essentially no increase was detectable (OR=1.07[0.22]).

Investigation of the association of suicide attempts with the level of trait aggression as indexed by the total score on the Buss–Perry scale revealed an interaction with gender (Chi square=6.02; $P<0.014$). Specifically, in females the increase of the level of total scores of the trait aggression from 0 to 50 points (from no aggression

to approximately the mean level in our study population) elevated the likelihood of the suicide attempts by almost ninefold (OR: 8.64 [SE=2.42]) whereas the analogous increase in males was about threefold (OR: 2.94 [SE=0.87]). Similar to the overall level of trait aggression, a difference in gender with regard to the association between the number of suicide attempts and physical aggression on the Buss–Perry Scale was also detectable (Chi square=8.83; $P<0.003$). In females, the increase in the level of physical aggression scores from 0 to 11 points (i.e., from no aggression to the mean level of physical aggression in our sample) resulted in an elevation in the likelihood of the suicide attempts by almost threefold (OR: 2.89 [SE=0.41]). In males, the increase was less than twofold (OR: 1.53 [SE=0.20]) (Table 2).

Based on the above two-way associations between lifetime history of suicide attempts and childhood victimization by parents and level of trait aggression, respectively, we performed GENMOD analyses to examine whether there is an interaction between childhood victimization and trait aggression in determining suicide attempts. In our initial model, gender was included in the model as an interacting covariate, but it was omitted from the final analysis since it failed to reach statistical significance in the analysis.

The analysis revealed a significant interaction between the two independent variables in the model (childhood victimization and the overall level of trait aggression; Chi square=6.86; $P<0.009$). In particular, for an increase in the level of total scores for trait aggression from 0 to 50 points, the odds ratios of an increase in the likelihood of suicide attempts were 12.16 (SE=6.79), 2.59 (SE=0.7), and 0.59 (SE=0.43), respectively, for those who were never, seldom or often victimized in childhood by their parents. With regard to physical aggression, the interaction with childhood victimization also reached statistical significance (Chi square=25.3; $P<0.0001$). For those patients who never, seldom or often were victimized in childhood by their parents, the odds ratios of an increase in the likelihood of suicide attempts were 4.01 (SE=1.11), 1.44 (SE=0.25), and 0.20 (SE=0.06), respectively. In other words, in patients who had childhood victimization (seldom or often), as opposed to those who did experience such victimization, the personality trait of physical aggression per se was not associated with any increase in the likelihood of suicide.

Table 2
Associations between childhood victimization and trait aggression

Childhood victimization by parents		Buss–Perry total	Physical aggression
Often	Male	60.2 (12.8)	17.6 (8.3)
	Female	53.03 (13.92)	12.55 (5.77)
Seldom	Male	48.49 (15.22)	11.59 (6.53)
	Female	50.12 (20.06)	9.99 (7.92)
Never	Male	43.82 (14.54)	10.73 (6.62)
	Female	37.75 (14.50)	5.76 (5.11)

4. Discussion

Almost half of the patients reported that there was a considerable period in their life when they had serious suicidal thoughts independently of drug or alcohol consumption. Furthermore, close to one third of interviewees also reported that they had not only had suicidal thoughts in the course of their lives but had also attempted suicide. On the whole, it can be said that the percentage of suicide attempts made by patients treated for alcohol problems (26%) is more than tenfold higher than the figures reflecting the prevalence of suicide attempts in the average population (2.3%), based on available national statistics (Hungarostudy, 2002). Such a high proportion of suicide attempts can presumably be explained by the high co-morbidity rate of alcoholism and depression (Quigley and Leonard, 2000; Speranza et al., 2004). An earlier study has drawn attention to the fact that around 25 to 30% of suicide attempts are associated with drinking (Ramstedt, 2005), and another study suggests that the greater the alcohol use, the greater the suicide risk (Stack, 2000). Although the present investigation was not conducted among persons who had attempted suicide, the findings of this study of patients with alcohol dependence reinforce the above association. The present research also corroborated prior data from the literature indicating persons struggling with alcohol problems and violent behavior also have a greater tendency to suicide than non-drinkers (Rossow et al., 1999).

Our findings are consistent with previous studies from the literature (Duberstein et al., 1994; Brady, 2006), which show that violent behavior in adulthood displays a significant correlation with suicidality. Specifically, in these studies the most aggressive patients reported the most suicide attempts.

Our research data contribute to the models that integrate the associations between alcohol-related aggression and suicide (Rossow, 2000; Conner and Duberstein, 2004; Brady, 2006). In particular, based on our data, in patients without childhood victimization, alcohol dependence triggers the suicide attempts through

the trait aggression. This finding is consistent with an empirically based pathway described in a recent review, suggesting that excessive alcohol use is associated with suicide via aggressive behavior (Brady, 2006). Based on our data, it is not a personality trait (i.e., trait aggression), per se, that is associated with alcohol abuse and suicide as Rossow suggested (Rossow, 2000), but the occurrence of childhood victimization. In contrast to the model of Conner and Duberstein (2004), in our study the strongest predisposing factor to suicide is childhood victimization co-occurring with alcohol dependence in this study population.

Our current findings about the prevalence of childhood victimization in patients with alcohol dependence (63%) show a strong long-term association between child abuse and alcoholism, confirming data of a recent study with documented cases of child abuse (Widom et al., 2007).

The fact that abuse in childhood was significantly associated with the total scores for trait aggression and scores for physical aggression in our study can be seen as a reflection of the 'cycle of violence' (Widom, 1989a,b). Although this interpretation is consistent with the literature showing a strong causal association between childhood victimization and aggressive behavior in adolescence (Brook et al., 2003, 2004), further longitudinal studies are needed to confirm this association.

Almost two-thirds of victimized patients (63%) attempted suicide in their lifetimes compared with 17% in patients without victimization. This finding shows a strong association between childhood victimization and suicide, and corresponds with previous data on adolescents with sexual abuse (Bayatpour et al., 1992; Garnefski and Diekstra, 1997; Wozencraft et al., 1991).

In our hypothesized model described in Section 1, we assumed a causal association between childhood victimization and suicide behavior through trait aggression as a mediator. In contrast to our assumption, we could not identify trait aggression as a general mediating factor in the above association. Specifically, childhood victimization had a direct association with suicidality in our study.

Consistent with the literature emphasizing gender differences in the development of suicide attempts in alcohol-dependent people victimized by their parents in childhood (Bayatpour et al., 1992), the likelihood of suicide attempts is characterized by a stronger association with childhood victimization in women than in men in our study. It is important to note that in females Widom et al. (2007) reported a stronger association between childhood victimization and alcohol use/excessive drinking in middle adulthood than in males. These data, taken together with our findings, suggest a more marked vulnerability to childhood victimization in females than in males.

Studies on child victimization based on retrospective self-report suffer from methodological shortcomings as reviewed by Widom et al. (2007). Our cross-sectional study was based on retrospective reports of the patients, which may be open to potential biases. For example, it is conceivable that many people who have been objectively abused (e.g., report having been physically hurt by a caretaker) do not identify themselves as abused. Although this might potentially limit the generalizability of our results, the findings of this study are consistent with findings from prospective, longitudinal studies.

The findings of this study indicate that assessment of earlier suicide attempts and present suicidal thoughts and urges and planned measures to prevent suicide arise as an important consideration in the clinical treatment of patients with alcoholism (Cornelius et al., 2004; Hernandez-Avila et al., 2004), with special regard to women. In addition, there is also a need to establish the level of trait aggression of alcohol-dependent patients using psychometrically sound instruments, because a reduction in the level of aggression can prevent not only heteroaggressive manifestations but also suicide attempts.

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