Posttraumatic Stress Disorder in Hospitalized Adolescents: Psychiatric Comorbidity and Clinical Correlates

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ABSTRACT

Objective: To describe the diagnostic comorbidity and clinical correlates of posttraumatic stress disorder (PTSD) in adolescent psychiatric inpatients. **Method:** Seventy-four adolescent inpatients were given a structured diagnostic interview, the revised version of the Diagnostic Interview for Children and Adolescents, and a battery of standard self-report measures to assess general trauma exposure, posttraumatic stress symptoms, suicidal behavior, dissociation, and depression. **Results:** Ninety-three percent of subjects reported exposure to at least one traumatic event such as being a witness/victim of community violence, witnessing family violence, or being the victim of physical/sexual abuse. Thirty-two percent of subjects met diagnostic criteria for current PTSD, with sexual abuse cited as the most common traumatic stressor in 69% of PTSD cases. Girls were significantly more likely to develop PTSD than boys, although the total number of types of trauma did not differ by gender. Compared with psychiatric controls, male youngsters with PTSD were significantly more likely to have comorbid diagnoses of eating disorders, other anxiety disorders, and somatization disorder. Furthermore, male and female youngsters with PTSD were significantly more likely to have attempted suicide and report greater depressive and dissociative symptoms. **Conclusion:** In clinical populations of hospitalized adolescents exposed to multiple forms of trauma, PTSD is a common, but highly comorbid disorder. Specific multimodal assessments and treatments targeted to both PTSD and its comorbidity profile are warranted. *J. Am. Acad. Child Adolesc. Psychiatry,* 1999, 38(4):385–392. **Key Words:** posttraumatic stress disorder, adolescents, comorbidity.

The National Comorbidity Survey, a recent community study of more than 5,000 adults, estimates the lifetime prevalence of posttraumatic stress disorder (PTSD) to be 10.4% for women and 5.0% for men (Kessler et al., 1995). Much less information exists about the prevalence of this disorder in children and adolescents. Reported rates of PTSD after a single episode of trauma have ranged from 5% in victims of Hurricane Hugo (Shannon et al., 1994) to 11.9% in survivors of an industrial fire (March et al., 1997). Higher rates have been found in children exposed to chronic and repetitive trauma such as the Cambodian Pol Pot regime (Hubbard et al., 1995), the war zone of Beirut (Saigh, 1985), or ongoing community violence (Fitzpatick and Boldizar, 1993). In one recent epidemiological study of high school students, Giaconia and colleagues (1995) reported that 40% of youngsters had experienced at least one qualifying traumatic event and that 15% of them or 6.3% of the total sample met *DSM-III-R* criteria for PTSD.

In adults, PTSD is known to be a highly comorbid disorder. A lifetime history of at least one other comorbid *DSM-III-R* Axis I psychiatric disorder was present in 88.3% of men and 79% of women with diagnoses of PTSD who were surveyed in the National Comorbidity Survey (Kessler et al., 1995). Other studies conducted in adults exposed to natural disasters (Green et al., 1992; McFarlane and Papay, 1992) and studies with combat veterans from the Vietnam war era (Kulka et al., 1990)

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and World War II era (Davidson et al., 1990) highlight that PTSD is a highly comorbid condition, particularly with depressive disorders, other anxiety disorders, substance use disorders, and personality disorders.

The comorbidity of PTSD in child and adolescent populations has not been systematically studied, although high rates of comorbidity have been reported in child victims of sexual abuse who subsequently meet criteria for PTSD (Famularo et al., 1996; McLeer et al., 1994; Wolfe et al., 1994). In one study of sexually abused psychiatric outpatients aged 6 to 16 years, McLeer et al. (1994) reported that youngsters with PTSD had higher rates of externalizing-type behavioral problems but did not display significantly higher rates of comorbid attention-deficit hyperactivity disorder (ADHD) or conduct disorder when measured by a structured diagnostic interview (Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic version). In a forensic sample of maltreated children who had been removed by the courts because of severe maltreatment, Famularo et al. (1996) found that 35% of 117 youngsters met diagnostic criteria for PTSD. Youngsters with PTSD, as established by the revised version of the Diagnostic Interview for Children and Adolescents (DICA-R), were significantly more likely to have comorbid diagnoses of ADHD, other anxiety disorders, and psychotic disorder not otherwise specified (NOS) than abused controls who did not meet diagnostic criteria for PTSD.

Even fewer studies have focused on the comorbidity of PTSD in samples composed exclusively of adolescents. In their community-based study of high school students, Giaconia and colleagues (1995) noted that comorbid diagnoses of major depression and substance abuse were significantly more common in youngsters with PTSD compared with traumatized teenagers without PTSD and with nontraumatized controls. In a clinical sample of 52 adolescent inpatients, Brand and colleagues (1996) found that comorbid diagnoses of PTSD and major depression were significantly more common among sexually abused, depressed patients than among non–sexually abused, depressed controls. In a recent study of older adolescents in substance abuse treatment facilities, rates of comorbid current PTSD and substance abuse were estimated to be 12% for males and 40% for females (Deykin and Buka, 1997).

This study systematically characterized the diagnostic comorbidity and clinical correlates of current PTSD in a clinical sample of consecutively hospitalized adolescents. Based on our knowledge of this group's high exposure rate to multiple forms of familial and extrafamilial violence (Lipschitz et al., 1999), we anticipated that this population of hospitalized adolescents would be at high risk of developing PTSD. Aims of this study were to determine the prevalence of current PTSD in hospitalized adolescents, to determine the most often identified traumatic stressor(s) for PTSD, to assess the frequency of comorbid *DSM-III-R* Axis I diagnoses, and to characterize associated clinical correlates of PTSD in a cohort of adolescent psychiatric inpatients.

METHOD

Subjects

Subjects were consecutive admissions over a period of 1 year to an acute adolescent inpatient unit in a state facility for children and adolescents located in an urban setting. Twelve patients with histories of significant head injuries, neurological disorders, extreme agitation, and disorganized behavior on admission and/or a diagnosis of mental retardation (IQ <70) were excluded from this study. Thirty-nine subjects and/or their guardians declined participation, and 18 patients were discharged prior to enrollment in the study. Seventy-four subjects and their parent/legal guardian gave written, informed consent for participation in the study. There were no significant sociodemographic differences between our study participants and nonparticipants. The sample consisted of 35 (47.3%) boys and 39 (52.7%) girls with a mean age of 14.8 years (SD = 1.6, range = 11.1–18.3) and a mean educational level of the eighth grade. The ethnic composition of the sample was as follows: 48% Latino, 42% African-American, 6% white, and 4% Asian/other. Fifty-four percent of the sample were Catholic, 26% were Protestant, 3% were Jewish, and 17% were of other faiths. Thirty-six percent of subjects lived in a single-parent household, 13% lived with both parents, 16% lived with one biological parent and another adult, 16% lived in an extended family configuration, 7% lived in a foster home, and 11% lived in residential treatment settings or group homes. Forty-eight percent of the sample's caretakers received public assistance.

Psychiatric Diagnostic Assessment

Subjects completed the DICA-R (Reich et al., 1991), a structured interview based on *DSM-III-R* criteria consisting of more than 250 questions that are organized into diagnostic (most Axis I diagnoses) and symptom profiles. The computerized format of the interview for adolescents was used because of its ease of administration and its appeal to youngsters. However, the computerized format is designed to be self-administered, and test-retest κ values for certain psychiatric diagnoses by this format are lower than with the pen-and-paper interview (Reich et al., 1995). To maximize reliability, a trained master's-level research assistant administered the computerized interview. Final psychiatric diagnoses were made by a consensus team composed of 2 study psychiatrists (D.S.L., B.F.) and the research assistant who conducted each interview. All available information, including results of the DICA-R, self-report scales, the medical record, and *DSM-III-R*–based discharge diagnoses formulated by the clinical treatment team, was used to establish "consensus" diagnoses. The clinical treatment team was blind to the results of the DICA-R and trauma assessment.

Trauma Assessment and Diagnosis of PTSD

Subjects completed the Traumatic Events Questionnaire-Adolescent version (TEQ-A) (Lipschitz et al., 1999), a 46-item self-report questionnaire designed to elicit details about 5 types of traumatic experiences. They include witnessing home violence, witnessing community violence, and being a victim of community violence, physical abuse, and sexual abuse. Each of the events included in this questionnaire is consistent with the *DSM-IV* criterion of a traumatic event. Details of each traumatic event include the age at onset, duration, frequency, use of force, type of injury, and identity of perpetrator(s). All answers are in a multiple-choice format. At the end of the questionnaire, subjects endorse the most traumatic event/stressor witnessed or experienced. Using an adult version of this scale, 50 subjects showed a high rate of agreement between self-reported responses to abuse items and responses to the same questions given in a face-to-face interview ($\kappa = 0.83$) (Lipschitz et al., 1996). Elsewhere, adolescent subjects' responses to items about sexual abuse on the TEQ-A showed an 88% rate of agreement with a "best-estimate" source, based on information about the sexual abuse from the therapist, the chart, and child protective agencies ($\kappa = 0.75$). Adolescent responses to items of physical abuse showed an 83% rate of agreement with a "best-estimate" source ($\kappa = 0.65$) (Winegar and Lipschitz, 1997). Upon completion of the TEQ-A, trained master's-level research assistants administered the Child Posttraumatic Stress Reaction Index (CPTS-RI) (Pynoos et al., 1987) to each subject who endorsed a criterion A stressor. The CPTS-RI is a 20-item semistructured interview that assesses for PTSD on the basis of some *DSM* criteria for PTSD and some associated features. Items are rated on a 5-point Likert scale and scores range from 0 to 80. A total score of 12 to 24 indicates a mild PTSD reaction, 25 to 39 a moderate reaction, 40 to 59 a severe reaction, and greater than 60 a very severe reaction. Scores greater than 40 have been shown to correlate with a clinical diagnosis of PTSD (Goenjian et al., 1994). In addition, subjects completed the PTSD module on the DICA-R as part of their general psychiatric diagnostic assessment. Our consensus diagnostic team used concordance on 2 out of 3 PTSD measures to establish a diagnosis of current PTSD. Thus, a diagnosis of PTSD was made when a subject scored greater than 40 on the CPTS-RI and met criteria for PTSD based on the DICA-R and/or the clinical diagnosis. For subjects who did not complete the CPTS-RI, a diagnosis of PTSD was made on the basis of the DICA-R and a positive clinical diagnosis.

Psychopathological Assessment

Suicide attempts, defined as "self-injury with the intent to die," were recorded from questions on the TEQ-A and corroborated by clinician interview and chart review. The TEQ-A provides information about the age at each attempt, the method used, and the precipitant(s).

Current suicidal ideation was obtained with the Junior version of the Suicidal Ideation Questionnaire (SIQ-JR) (Reynolds, 1987), a 15-item, self-report measure of suicidal ideation in the past month. Responses to items are graded 0 to 6 using a Likert scale format. The SIQ shows excellent internal consistency with an α coefficient value of .97, and norms have been established on more than 2,000 adolescents. A cutoff score of 31 indicates significant suicidal ideation.

Dissociative symptoms were assessed with the Dissociative Experiences Scale (Bernstein and Putnam, 1986), a 28-item, self-report scale that measures lifetime or trait dissociative symptoms. It has a test-retest reliability of 0.84 at 4 to 8 weeks, good split-half reliability, and adequate clinical validity.

Depressive symptoms were assessed with the Beck Depression Inventory (Beck et al., 1961), a well-established, 21-item, self-report scale that assesses current depressive symptoms. Internal consistency coefficients range from 0.79 for adolescent inpatients to 0.87 for high school students.

Statistical Analyses

Chi-square analyses were performed to detect group differences between subjects with and without PTSD for categorical variables such as comorbid diagnoses, ethnicity, parental marital status, and family composition. In cases in which cell sizes were less than 5, Fisher exact tests were used. The t statistic was used to assess group differences for continuous variables (age, grade, suicidal ideation, depressive and dissociative symptoms). When there were gender differences in the dependent variable, an analysis of covariance (ANCOVA) with gender as a covariate was used to assess group differences for the continuous measures and a Fisher exact test for the categorical variables. Finally, we performed a stepwise discriminant analysis with current PTSD as the grouping variable and entered into the regression model the sociodemographic, trauma-related, and diagnostic variables that were significantly different in the univariate analyses of youngsters with and without PTSD. All tests were 2-tailed with significance set at $p < .05$.

RESULTS

Prevalence of Traumatic Events and Rates of PTSD

Ninety-three percent ($n = 69$) of youngsters reported exposure to at least one type of traumatic event. Fifty-six (76%) youngsters had experienced 2 types of traumas, 17 (23%) had experienced 3 types, and 12 (16%) had experienced 4 or more types of traumatic events. The mean number of types of traumatic events witnessed or experienced was 2.5 (SD = 1.4). Table 1 lists the rates of exposure to different types of traumas, the percentage of subjects who identified each type of trauma as "their most stressful," and the number and percentage of youngsters who developed PTSD in response to the type of trauma that they endorsed as their "most stressful" traumatic experience.

Of the 56 subjects who completed the CPTS-RI, 5.4% endorsed mild posttraumatic symptoms, 17.6% reported moderate posttraumatic symptoms, and 32.8% reported severe to very severe symptoms in response to their identified traumatic stressor. Clinicians gave 16 (21.6%) youngsters a discharge diagnosis of PTSD, and 14 (19%) youngsters received a diagnosis of PTSD based on the DICA-R interview. On the basis of our consensus assessment, 24 subjects (32.4%) met diagnostic criteria for current PTSD.

There were gender differences in rates of trauma exposure, with girls significantly more likely to have been more exposed to sexual abuse (77% girls versus

TABLE 1
Prevalence of Traumatic Events and Rates of PTSD in Adolescent Psychiatric Inpatients (N = 74)

Traumatic Event	Rate of Exposure n (%)	Rated the Most Stressful Event[a] n (%)	PTSD Diagnosis[b] n (%)[c]
Witness of community violence[d]	40 (54.1)	5 (12.5)	2 (40)
Victim of community violence	19 (25.7)	3 (15.8)	1 (33.3)
Witness of family violence	34 (47.9)	2 (5.8)	1 (50)
Physical abuse	33 (44.6)	14 (42.4)	4 (28.5)
Sexual abuse	37 (50.0)	23 (62.1)	16 (69.5)

Note: PTSD = posttraumatic stress disorder.

[a] Number and percentage of subjects who rated the qualifying trauma as their "most stressful" event. Eighteen subjects did not identify or rate any of the above events as a traumatic experience. Data were missing for 7 subjects. None of these 25 subjects had a diagnosis of PTSD.

[b] A diagnosis of PTSD was a "consensus" diagnosis based on (1) results of the revised version of the Diagnostic Interview for Children and Adolescents, (2) the clinical team's discharge diagnosis, and (3) a score of >40 on the Child Posttraumatic Stress Reaction Index (indicative of severe posttraumatic stress symptoms).

[c] The percentage of subjects who developed PTSD who rated the trauma as their "most stressful" event.

[d] Community violence includes robberies, shootouts, stabbings, and a peer assault.

33% boys; $\chi^2 = 15.4$, $df = 1$, $p < .001$) and witnessing family violence (67% girls versus 32% boys; $\chi^2 = 5.23$, $df = 1$, $p < .02$). There were no other significant gender differences for the other forms of traumas listed, including the total number of types of trauma experienced (boys: mean = 2.26, SD = 1.4 types of trauma; girls: mean = 2.64, SD = 1.4 types of trauma; $t_{1,73} = 1.17$, p = not significant [NS]). Youngsters with PTSD had experienced significantly more trauma, with a mean number of 3.2 (SD = 1.4) types of trauma compared with a mean number of 2.1 (SD = 1.3) types of trauma in the PTSD-negative group ($t_{1,73} = 3.37$, $p = .001$). Youngsters with PTSD were significantly more likely to be female (43.6% girls versus 20% boys; $\chi^2 = 4.48$, $df = 1$, $p < .03$), but they did not differ significantly on other sociodemographic measures such as age, ethnicity, religion, parental marital status, family income, or household composition.

PTSD and Sexual Abuse

Ninety-one percent of youngsters with PTSD reported histories of sexual abuse compared with 32% of the controls ($\chi^2 = 21.8$, $df = 1$, $p < .001$). A history of sexual abuse was more common in both boys with PTSD (83% versus 14.3%; $\chi^2 = 12.1$, $df = 1$, $p = .002$) and girls with PTSD (94% versus 58%; $\chi^2 = 6.25$, $df = 1$, $p = .02$). The type of sexual abuse experienced by youngsters with PTSD was more severe. For 80% of PTSD subjects the abuse was recurrent, compared with a single episode that occurred in 46.6% of the PTSD-negative subjects ($\chi^2 = 2.82$, $df = 1$, $p = .09$); 89% of subjects with PTSD experienced penetration or oral sex, compared with 56% of the controls ($\chi^2 = 6.43$, $df = 1$, $p = .02$). There was no significant difference in the age at onset of sexual abuse (mean = 8.8, SD = 3.9 years in the PTSD cases versus mean = 8.3, SD = 3.7 years in the non-PTSD cases; $t = 0.38$, $df = 34$, p = NS). Thirty-five percent of youngsters with PTSD had intrafamilial perpetrators compared with 34% of youngsters without PTSD ($\chi^2 = 0.005$, $df = 1$, p = NS).

PTSD, Gender, and Psychiatric Comorbidity

Chi-square analyses revealed that the PTSD group had significantly higher frequencies of diagnoses of other anxiety disorders ($p = .001$), eating disorders ($p = .03$), and somatization disorder ($p = .02$) than did the non-PTSD comparison subject group (Table 2). PTSD

TABLE 2
Comorbidity of *DSM-III-R* Psychiatric Diagnoses in Adolescent Inpatients With PTSD and Psychiatric Controls

	PTSD Diagnosis (n = 24)	Non-PTSD Diagnosis (n = 50)	χ^2
Any disruptive disorder	70.8	58.0	1.25
ADHD	33.3	29.2	0.13
ODD	62.5	48.3	1.77
Conduct disorder	37.5	27.1	0.82
Any depressive disorder	66.7	58.0	0.51
Major depression (C)	41.7	29.2	1.13
Major depression (P)	20.8	14.3	0.85
Dysthymia	29.2	16.7	1.51
Psychotic disorders[a]	30.4	22.5	0.48
Alcohol abuse	25.0	14.9	1.08
Anxiety disorders[b]	83.3	56.2	5.03*
Eating disorders[c]	25.0	6.0	5.47*
Somatization disorder	34.8	4.3	9.39***

Note: Values are expressed in percentages. PTSD = posttraumatic stress disorder; ADHD = attention-deficit hyperactivity disorder; ODD = oppositional defiant disorder; C = current episode; P = past episode.

[a] Schizophrenia, schizoaffective disorder, and psychosis not otherwise specified.

[b] Separation anxiety disorder, overanxious disorder, obsessive-compulsive disorder, and simple phobias.

[c] Anorexia nervosa and bulimia nervosa.

* $p < .05$; *** $p < .001$.

subjects had a significantly higher number of additional co-occurring psychiatric disorders than did the non-PTSD subjects (mean = 4.4, SD = 2.3 versus mean = 2.6, SD = 1.7; $t_{1,73} = 3.78$, $p = .002$).

Because the 2 study groups differed significantly in the proportion of male and female subjects, we tested whether the observed group differences in diagnostic comorbidity might be due partly to such gender effects. Separate Fisher exact tests were performed for male and female subjects. For boys, anxiety disorders were diagnosed significantly more often in the PTSD group (85.7%, $n = 6$) than in the non-PTSD group (38.5%, $n = 10$) (Fisher exact test = 4.93, $df = 1$, $p = .03$). Eating disorders were diagnosed significantly more commonly in boys with PTSD than in boys without PTSD (42.8%, $n = 3$ versus 3.6%, $n = 1$; Fisher exact test = 8.53, $df = 1$, $p = .02$) as was a somatization disorder (57.1%, $n = 4$ versus 3.8%, $n = 1$; Fisher exact test = 12.1, $df = 1$, $p = .004$) and a psychotic disorder (71.4%, $n = 5$ versus 17.8%, $n = 5$; Fisher exact test = 6.94, $df = 1$, $p = .02$). There was a trend for girls with PTSD to have comorbid diagnoses of other anxiety disorders compared with female psychiatric controls (37.5%, $n = 6$ versus 4.7%, $n = 1$; $\chi^2 = 3.18$, $df = 1$, $p = .08$).

PTSD, Suicidal Behavior, Depressive and Dissociative Symptoms

No gender effects were noted for dissociation or current depression; therefore, group differences in these variables were analyzed with t tests (Table 3).

TABLE 3
Psychopathological Measures in Hospitalized Adolescents With PTSD and Psychiatric Controls

	PTSD Diagnosis ($n = 24$)	No PTSD Diagnosis ($n = 50$)	
	Mean (SD)	Mean (SD)	t Statistic
No. of suicide attempts	2.7 (2.4)	1.1 (1.6)	2.85**
Suicidal ideation (SIQ-JR score)	49.9 (38.1)	19.7 (22.8)	4.05***
Dissociation (DES score)	33.4 (23.3)	19.1 (17.8)	2.82**
Depression (BDI score)	19.7 (12.2)	13.4 (10.8)	2.17*
Total no. of traumas[a]	3.2 (1.4)	2.1 (1.3)	3.37***

Note: PTSD = posttraumatic stress disorder; SIQ-JR = Junior version of Suicidal Ideation Questionnaire; DES = Dissociative Experiences Scale; BDI = Beck Depression Inventory.

[a] Types of traumatic events: witness of community violence, victim of community violence, witness of family violence, physical abuse, and sexual abuse.

* $p < .05$; ** $p < .01$; *** $p < .001$.

There were significant gender differences in suicidal behavior. Seventy-two percent of girls had made a suicide attempt compared with 23% of boys ($\chi^2 = 19.3$, $df = 1$, $p < .001$). To test whether the observed group differences in suicidal behavior between PTSD-positive and PTSD-negative subjects might be due partly to such gender effects, 2 ANCOVAs with gender as the covariate were performed for the dependent variables of suicidal ideation (SIQ-JR score) and number of suicide attempts. The number of suicide attempts continued to show a significant group effect ($F = 2.25$, $df = 1,69$, $p = .05$), and suicidal ideation showed a trend for a group effect ($F = 1.75$, $df = 1,63$, $p = .08$).

Multivariate Analyses

A stepwise procedure was used to select the variables that best discriminated between youngsters with and without PTSD. The following factors were entered into a stepwise discriminant analysis: gender, childhood sexual abuse, number of types of trauma, a diagnosis of an anxiety disorder, a diagnosis of an eating disorder, a diagnosis of somatization disorder, number of suicide attempts, dissociative symptoms, and current depressive symptoms. Two factors, childhood sexual abuse and somatization disorder, significantly distinguished youngsters with PTSD from psychiatric controls (Wilks λ $F_{2,56} = 18.8$, $p < .0001$). Together these 2 variables had a multiple R of 0.63, accounting for approximately 40% of the variance in designating group membership.

DISCUSSION

In this population of adolescent psychiatric inpatients, the prevalence of exposure to traumatic events was extremely high, 93%. The majority of these exposures were to multiple types of both family- and community-based trauma and to recurrent and chronic forms of trauma. Seventeen percent of youngsters reported at least moderate symptoms of posttraumatic stress, and 34% reported severe symptoms in response to these events. Thirty-two percent of these inpatients met *DSM-III-R* diagnostic criteria for current PTSD. These rates are slightly lower than rates in an outpatient study of sexually abused children (McLeer et al., 1994), lower than in Cambodian young adults exposed to the Pol Pot regime (Hubbard et al., 1995), but higher than rates reported in a population of incarcerated male juvenile delinquents (Steiner at al., 1997) and in chemically dependent adoles-

cents (Deykin and Buka, 1997). They are also 6 times as high as rates reported for a community sample of adolescents (Giaconia et al., 1995). Sample characteristics such as the inpatient psychiatric status and the demographic and ethnic composition of our sample (mainly children from minority, single-parent households, living in an urban, inner-city setting) could contribute both to the very high rates of general trauma exposure and posttraumatic symptomatology and diagnoses.

Our findings are in keeping with current literature emphasizing the role of childhood sexual abuse as a risk factor for subsequent development of PTSD in adult women (Rodriguez et al., 1997). Wolfe and colleagues (1994) noted that child sexual abuse victims who developed PTSD were more likely to have experienced abuse of a longer duration and abuse with physical coercion. We found that adolescents with childhood histories of a more severe form of sexual abuse, such as penetration or oral sex or abuse that occurred over a period of time, were significantly more likely to develop PTSD, in response either to the sexual abuse per se or to another subsequent stressor.

The interpretation of differences in diagnostic comorbidity in severely ill inpatient samples is difficult because there are high base rates of all psychiatric diagnoses in these populations (Allison, 1993). In this study the control group of adolescent psychiatric inpatients had high rates of trauma and several comorbid psychiatric diagnoses. When we controlled for gender differences in PTSD, youngsters with PTSD had almost twice as many comorbid psychiatric diagnoses and scored higher on psychopathological measures of depression, suicidal behavior, and dissociation than did the hospitalized controls. Boys with PTSD were significantly more likely to have additional *DSM-III-R* diagnoses of other anxiety disorders, somatization disorder, and eating disorders. From our present cross-sectional study design we cannot distinguish whether traumatized youngsters who develop PTSD are vulnerable to subsequently develop a host of other psychiatric disorders, whether this high rate of comorbidity reflects symptom overlap and not true comorbidity, whether a preexisting psychiatric condition such as a childhood anxiety disorder predisposes the youngster to develop PTSD following a traumatic stressor, or, alternatively, whether the group with PTSD are a more severely affected subgroup of patients and these diagnostic characteristics are not uniquely correlated with PTSD. We need longitudinal studies of traumatized children as they mature into adolescence and young adulthood in order to settle this question.

In our opinion, eating disorders and somatic and dissociative symptoms are often overlooked in routine clinical assessments, especially in youngsters of ethnic minorities from urban, inner-city settings. Treating clinicians in this study were unaware and surprised to learn that eating disorders and somatization disorders were diagnosed in 25% and 34% of patients with PTSD, respectively. In a discriminant function analysis, somatization disorder retained its significance in distinguishing youngsters with PTSD from psychiatric controls. Approximately one third of youngsters with PTSD had a psychotic disorder, most commonly psychosis NOS. One third of these youngsters were treated with neuroleptic medications for their psychotic symptoms, mainly auditory hallucinations, and generally with poor effect. Studies with adults suggest that trauma-related hallucinations are generally refractory to standard neuroleptic treatments (Davidson, 1992). Further study of the characteristics and treatment responses of hallucinations in traumatized children and adolescents is needed.

In contrast to PTSD comorbidity findings in samples of adults exposed to natural disasters (McFarlane and Papay, 1992) and Vietnam war veterans (Kulka et al., 1990), youngsters with PTSD did not display significantly higher rates of comorbid depression than did controls. One possible reason is that our non-PTSD control group had a very high base rate, 58%, for a depressive disorder. Also, we did not find significantly higher rates of comorbid ADHD in youngsters with PTSD (Famularo et al., 1996; McLeer et al., 1994). Their samples included latency-age children, in whom the diagnosis of ADHD tends to be more common. In keeping with other clinical studies of adolescents (Brand et al., 1996; Brent et al., 1995), youngsters with PTSD were significantly more likely to report increased suicidal ideation and a greater number of suicide attempts than psychiatric controls. Suicidal behavior, including suicide attempts, suicidal gestures, and suicidal ideation, is one of the most common reasons for hospitalizing adolescents. There are multiple risk factors for adolescent suicide attempts, yet the role of trauma and in particular the presence of current PTSD symptoms as precipitant stressors are often inadequately addressed. We recommend that all adolescent suicide attempters in treatment settings routinely be assessed for traumatic exposure and posttraumatic stress symptomatology.

Limitations

This study has several limitations. First, the study was conducted in an urban, inner-city hospital with adolescent psychiatric inpatients. The majority of our sample was Latino and/or African-American. The family composition included many children living in single-parent households whose parents received public entitlements. The sociodemographic composition of our study sample limits the generalizability of our findings to other groups of hospitalized and nonhospitalized adolescents. Second, there were significant gender differences in the PTSD-positive and PTSD-negative groups that complicated the comparison of diagnostic comorbidity. We attempted to correct for this limitation by examining diagnostic comorbidity separately in boys and girls. However, the number of males with PTSD was very small and this limited our analyses. In future studies it would be important to match diagnostic groups by gender. A third limitation of this study is that we relied on adolescents as our main informants about their psychiatric symptoms. As a second source of information we used medical records and clinician reports to verify some of the trauma exposure, and we used clinician-formulated discharge diagnoses as additional sources of diagnostic information. Because of their unavailability, we did not formally interview parents about their children's trauma exposure or psychiatric symptoms or obtain a family history of psychiatric disorders and trauma exposure. Parents' reports about their children's behavior are especially important for diagnosing externalizing disorders, but adolescents are more accurate reporters of internalizing symptoms than parents (Cantwell et al., 1997). A fourth limitation is that the majority of our assessment consisted of standardized self-report measures as opposed to structured or semi-structured interview measures. Finally, our assessments were not blind to the youngsters' trauma histories.

Clinical Implications

Within a population of severely disturbed adolescents requiring psychiatric hospitalization, the prevalence of exposure to traumatic events and the rate of current PTSD is extremely high. As a group, youngsters with current PTSD have twice as many comorbid psychiatric diagnoses and they score higher on psychopathological measures of depression, dissociation, and suicidal behavior compared with psychiatric controls. The majority of adolescents with PTSD in an inpatient treatment setting have childhood histories of sexual abuse. The treatment of adolescents with PTSD secondary to multiple and/or chronic, enduring trauma requires a therapeutic and psychopharmacological approach that takes into account the core symptoms of PTSD as well as comorbid psychiatric diagnoses.

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