Psychiatric Diagnoses in Adolescents Seropositive for the Human Immunodeficiency Virus

Maryland Pao, MD; Maureen Lyon, PhD; Lawrence J. D’Angelo, MD; Wendy B. Schuman, PhD; Tisha Tipnis, BA; David A. Mrazek, MD

Objective: To provide a descriptive analysis of the prevalence of past and current psychiatric disorders in adolescents positive for the human immunodeficiency virus (HIV).

Design: Structured interview in a convenience sample in a primary care urban adolescent clinic in Washington, DC.

Participants: Thirty-four HIV-seropositive adolescents ranging in age from 16 to 21 years.

Main Outcome Measures: The Structured Clinical Interview for DSM-IV Axis I Disorders–Patient Edition (SCID-P) was administered by a child psychiatrist or a clinical child psychologist. Extensive review of medical records was also conducted.

Results: A majority of the HIV-infected adolescents in our sample had received psychiatric diagnoses prior to their treatment at the clinic (53%), had a documented history of sexual abuse (50%), and had a history of substance use (82%). Psychiatric diagnoses determined by the SCID-P indicated that 85% of the sample had a current Axis I disorder, with 44% reporting ongoing depressive disorders.

Conclusions: The majority of subjects in this sample had had a previous psychiatric diagnosis, and almost half had a current affective disorder. Psychiatric disorders, especially affective disorders, may be a risk factor for high-risk sexual behaviors and substance use that increases the risk for HIV infection in adolescent populations.

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Editor's Note: This pilot study provides a fertile acorn for future research in the area of psychiatric risk factors and HIV infections—a deadly duo if there ever was one (or is it two?)

Catherine D. DeAngelis, MD

In this second decade of the human immunodeficiency virus (HIV) pandemic, epidemiologic data indicate that HIV is becoming more prevalent in younger populations and in minority women. The primary mode of HIV infection is now through heterosexual contact. To appropriately respond to this epidemic, health care providers must understand the risk factors that increase the likelihood of HIV transmission in specific populations. Sexually experienced minority adolescents should be a high-priority target population for interventions. In particular, child and adolescent mental health providers should address strategies to prevent, assess, and modify dangerous adolescent risk-taking behaviors in healthy as well as mentally ill adolescents.

Human immunodeficiency virus infection is the seventh leading cause of death in the United States among 15- to 24-year-olds. While adolescents aged 13 to 19 years account for less than 0.5% of all reported cases of acquired immunodeficiency syndrome (AIDS), there is growing evidence that simply counting the cases of AIDS rather than considering seropositive status underestimates the impact of HIV infection in adolescents. In addition, the average age of acquisition of HIV infection has been decreasing every year since 1977, with an estimated one quarter of new infections occurring in those younger than 22 years.

Traditional HIV risk groups used for screening adolescents have included males who gave a history of ever having had sex with other males, males or females who had ever used injection drugs, having a sexual partner from either of the above 2 groups, males or females with a history of syphilis, females with a history of pelvic inflammatory disease, and males or fe-
PARTICIPANTS AND METHODS

Fifty HIV-seropositive adolescents treated at an urban clinic in Washington, DC, that provides comprehensive medical, psychological, social, and case management services to high-risk and HIV-seropositive adolescents were identified for the study. Eligible participants were aged 16 through 21 years and met the diagnostic criteria for HIV infection of a positive enzyme immunoassay and a positive Western blot in 2 samples. One eligible subject declined to participate. Subjects younger than 16 years were excluded, as parental consent, which was not generally available, would be required. A total of 34 subjects were enrolled. A minimum period of 6 months from diagnosis before participation was required to decrease overdiagnosis of acute adjustment reactions, which have been reported in more than 50% of asymptomatic HIV-infected adults.

Study subjects were recruited by case managers and were assured of confidentiality. Written informed consent was obtained from participants to conduct the interview and to review the medical records. Participants received a stipend for completing the interview. Approval for the study was granted by the Children’s National Medical Center (Washington, DC) institutional review board.

was administered by either a child psychiatrist (M.P.) or a clinical child psychologist (W.B.S.) to determine the current and lifetime rates of psychiatric disorders. The SCID-P is generally used for subjects aged 18 years and older and does not include conduct disorder, gender identity disorder, or attention-deficit/hyperactivity disorder. However, most structured interviews for children do not adequately assess older adolescents and young adults. Therefore, despite the limitations of the SCID-P, it was chosen for its strengths in diagnosing mood and substance abuse disorders in young adults. Information concerning demographics, medical history, and psychiatric risk factors (premorbid history of psychiatric illness and hospitalization, history of substance use/abuse, history of physical and/or sexual abuse, and other problem behaviors) was obtained through extensive medical record review.

Engaged in anal sex and sex for money, to have practiced unprotected sex with casual partners, to have had sex under the influence of drugs, to have had a sexually transmitted disease (STD), to have used multiple drugs, or to have engaged in multiple problem behaviors. Multiple problem behaviors were defined by Hein et al as incarceration, hospitalization for psychiatric care, dropping out of school, and living out of the home. Hence, these results suggest that traditional HIV risk characteristics overlook a major portion of infected adolescents. The strongest predictors of seropositive status were substance abuse, living out of the home, knowing a person with AIDS, and female sex. Hein et al suggested that housing and stable sources of support were necessary to reduce high-risk sexual risk behavior and, therefore, were important in containing HIV. Both substance abuse and the inability to maintain housing and stable support systems are often indicative of underlying, undiagnosed, or difficult-to-manage psychiatric illnesses. Therefore, we have hypothesized that some of these adolescents with multiple problem behaviors suffer from a mental disorder and are particularly vulnerable to HIV infection as a result of their behaviors. We investigated the prevalence of psychiatric disorders in adolescents with HIV infection.

RESULTS

DEMOGRAPHIC AND HIV TRANSMISSION FACTORS

Table 1 shows the demographic information of our sample. The sample was 79% female (27/34). All but one subject was African American. The mean age was 18.5 years (age range, 16-21 years). Only 5 (21%) of the 34 eligible subjects had completed high school or obtained a general education diploma (mean age, 18.5 years). The average time from HIV diagnosis was 41.9 months (range, 6-192 months).

Six of the subjects met Centers for Disease Control and Prevention criteria for AIDS. Self-reports of lifetime sexual contacts from 29 subjects found that 16 (55%) reported fewer than 10 sexual contacts, with only 1 subject reporting no sexual contacts ever. Six subjects (21%) reported between 10 and 20 partners, while 7 (24%) reported more than 20 partners. Five subjects reported an unknown number of partners. Thirty-two (94%) of the 34 subjects had a history of previous STDs other than HIV. Nineteen (70%) of the 27 females had been pregnant, resulting in 20 live births. Twenty-four (70%) of all subjects reported HIV transmission through heterosexual contact, 4 (12%) through homosexual contact (all males), 1 (2%) from contaminated blood products, and 1 (2%) as a result of neonatal transmission. Four subjects (12%) had no known transmission risk. Seventeen subjects (50%) had a documented history of sexual abuse, and 13 (38%) had a history of physical abuse or neglect. Sixteen (47%) had had an out-of-home placement (foster home, Job Corps, or group home) at some time in their lives.

PREVIOUS PSYCHIATRIC INFORMATION

Twenty-one subjects (62%) reported at least 1 parent with a history of 1 of the following: psychiatric illness, psy-
chiatric hospitalization, substance abuse, or incarceration. Twenty-eight subjects (82%) had a history of substance use/experimentation (defined as use of alcohol or other illicit substances on 1 or more occasions), 10 (29%) reported having attempted suicide, and the same percentage required psychotropic hospitalization at least once. Eighteen (53%) had received a previous psychiatric diagnosis prior to entry into the clinic, with 8 (24%) having been prescribed a psychotropic medication at some time. After clinical evaluation in the clinic, but prior to the SCID-P, 9 subjects (26%) had a history of conduct disorder, and 20 (59%) had a history of mood, dysthymia, or adjustment disorders. Only 4 (12%) of the subjects were identified at entry to the clinic as having a clinical diagnosis of substance abuse disorder. Twelve subjects (35%) reported having been arrested, incarcerated, or on probation.

**CURRENT DSM-IV PSYCHIATRIC DIAGNOSES**

According to the SCID-P, 29 (85%) of the sample had a current Axis I disorder (excluding conduct disorder, gender identity disorder, and attention-deficit/hyperactivity disorder). Fifteen (44%) met criteria for current mood disorder, and 23 (68%) reported a lifetime diagnosis of an affective disorder. Other diagnoses included specific phobias, social phobia, and other anxiety disorders. No psychotic disorders were identified. Twenty subjects (59%) met criteria for lifetime substance abuse or dependence. Of the 15 subjects who reported current major depression, 6 were currently using illicit drugs or alcohol. Five patients met none of the SCID-P diagnostic criteria. **Table 2** shows the distribution of subjects with previous and current psychiatric diagnoses.

Our results indicate that (1) HIV-positive adolescents seen in an ambulatory clinic have a very high lifetime prevalence of major psychiatric disorders, including depression (68%), substance abuse (59%), and conduct disorder (29%); (2) the majority (53%) of these adolescents had a psychiatric diagnosis that preceded their diagnosis of HIV seropositivity, according to retrospective report and medical record review; and (3) almost half of these patients had a current affective disorder. Similar findings have already been described in some adult populations with HIV infection.12,13

The demographic distribution of our sample reflects an urban setting and is consistent with the epide-
miologic data regarding HIV infection rates in young, urban African American women. The sexual activity of this sample as measured by the number of subjects infected with STDs, number of partners, and pregnancy is consistent with the Youth Risk Behavior Survey data. In 1997, 61% of 12th graders reported having ever had sexual intercourse, with 21% reporting 4 or more sex partners and 50% currently sexually active at the time of the survey. For non-Hispanic blacks surveyed that year, the rates were 73%, 39%, and 54%, respectively. The survey noted that adolescents not enrolled in school were more likely

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**Table 1. Comparison of Female and Male Sexually Active Adolescents on Demographic and HIV Transmission Factors**

<table>
<thead>
<tr>
<th></th>
<th>Female (n = 27)</th>
<th>Male (n = 7)</th>
<th>All Subjects (N = 34)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>27</td>
<td>7</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Mean age, y (range)</td>
<td>18.4 (15-21)</td>
<td>18.7 (16-21)</td>
<td>18.5 (15-21)</td>
<td>...</td>
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<tr>
<td>Ethnicity</td>
<td>Black 26/7</td>
<td>33/9</td>
<td>Black/Asian 1/0</td>
<td>3/3</td>
</tr>
<tr>
<td>Education†</td>
<td>High school graduate or GED 5/0</td>
<td>5/21</td>
<td>High school graduate or GED 5/0</td>
<td>5/21</td>
</tr>
<tr>
<td>STD ever</td>
<td>27/5</td>
<td>32/9</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Pregnancy ever</td>
<td>19/...</td>
<td>19/70</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>History of sexual abuse</td>
<td>15/2</td>
<td>17/50</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>History of physical abuse</td>
<td>12/1</td>
<td>13/38</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>HIV transmission</td>
<td>Heterosexual 23/1</td>
<td>24/70</td>
<td>Heterosexual 23/1</td>
<td>24/70</td>
</tr>
<tr>
<td>Homosexual</td>
<td>0/4</td>
<td>4/12</td>
<td>0/4</td>
<td>4/12</td>
</tr>
<tr>
<td>Blood product</td>
<td>0/1</td>
<td>1/3</td>
<td>0/1</td>
<td>1/3</td>
</tr>
<tr>
<td>Vertical</td>
<td>1/0</td>
<td>1/3</td>
<td>1/0</td>
<td>1/3</td>
</tr>
<tr>
<td>Unknown</td>
<td>3/1</td>
<td>4/12</td>
<td>3/1</td>
<td>4/12</td>
</tr>
<tr>
<td>Average time from diagnosis, mo (range)</td>
<td>...</td>
<td>41.9 (6-192)</td>
<td>...</td>
<td></td>
</tr>
<tr>
<td>AIDS diagnosis</td>
<td>3/3</td>
<td>6/18</td>
<td>3/3</td>
<td>6/18</td>
</tr>
</tbody>
</table>

*Data are presented as number of subjects unless otherwise indicated. HIV indicates human immunodeficiency virus; ellipses, not applicable; GED, general education diploma; STD, sexually transmitted disease; and AIDS, acquired immunodeficiency syndrome.
†Sample sizes vary because not all subjects were of graduation age: n = 19 for females and n = 5 for males.

**Table 2. Previous and Current Psychiatric Diagnoses**

<table>
<thead>
<tr>
<th>Previous Psychiatric Information</th>
<th>No. (%) of Subjects (N = 34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of psychiatric referral</td>
<td>24 (71)</td>
</tr>
<tr>
<td>History of psychiatric hospitalization</td>
<td>10 (29)</td>
</tr>
<tr>
<td>History of psychotropic medication</td>
<td>8 (24)</td>
</tr>
<tr>
<td>History of documented psychiatric diagnosis</td>
<td>18 (53)</td>
</tr>
<tr>
<td>Conduct disorder</td>
<td>9 (26)</td>
</tr>
<tr>
<td>Mood disorder (depression, dysthymia)</td>
<td>9 (26)</td>
</tr>
<tr>
<td>Adjustment disorder</td>
<td>10 (29)</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>4 (12)</td>
</tr>
</tbody>
</table>

**SCID-P Diagnosis**

<table>
<thead>
<tr>
<th>SCID-P Diagnosis*</th>
<th>No. (%) of Subjects (N = 34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No diagnosis</td>
<td>5 (15)</td>
</tr>
<tr>
<td>Mood disorder ever</td>
<td>23 (68)</td>
</tr>
<tr>
<td>Substance abuse/dependence ever</td>
<td>20 (59)</td>
</tr>
<tr>
<td>Current major depression</td>
<td>15 (44)</td>
</tr>
<tr>
<td>Concurrently using substances</td>
<td>6 (40)‡</td>
</tr>
<tr>
<td>Concurrently not using substances</td>
<td>9 (60)‡</td>
</tr>
</tbody>
</table>

*Does not include attention-deficit/hyperactivity disorder, conduct disorder, or gender identity disorder. SCID-P indicates Structured Clinical Interview for DSM-IV Axis I Disorders—Patient Edition.
‡Refers only to those with current major depression.
to be sexually experienced and to have had multiple sex partners than those adolescents who were still enrolled.26 This sample had a low rate of school completion, which may have contributed to the even higher rates of sexual activity in this group. While self-report by adolescents may be inflated, the high rates of documented STDs and pregnancy in our sample suggest validity of these self-reports. These youth illustrated an increase in heterosexual HIV transmission consistent with trends reported by the Centers for Disease Control and Prevention. Additionally, the rate of sexual abuse reported in this sample parallels the high rates of sexual abuse in HIV-positive youth that have been reported elsewhere.16-18 A history of physical abuse may also be a significant risk factor for HIV infection.

The prevalence of conduct disorder, substance abuse, and depression in our sample of HIV-infected adolescents was higher than found in general adolescent populations, in which prevalence rates of psychiatric disorders range between 9.6% and 22%.19,20 The National Institute on Drug Abuse21 reported that in 1996, 50.8% of students reported any illicit drug use, 44.9% of high school seniors reported lifetime marijuana abuse, and 79.2% of high school seniors reported lifetime alcohol abuse. Alcohol and marijuana were the most frequent drugs of abuse in our sample as well. Our HIV-infected sample had dependency rates for these substances comparable to the national sample.

Affective disorders, particularly depression, were common in our sample of HIV-infected adolescents. Two thirds reported having experienced an affective disorder at some time in their lives, and almost half of this sample reported ongoing depressive symptoms. The reported incidence of depression in adolescents ranges from 2.7% to 9.4% in the general population.22,23 The rate of depression in this sample of HIV-infected adolescents is more than 4 times higher than the reported level in the general adolescent population. Our rate is also higher than that reported in young adults with insulin-dependent diabetes mellitus was 47.6%, with 27.5% reporting depression.24 The rate of depression seen in one study of oncology outpatients was 17%.25 Living with a chronic, life-threatening illness may account for a portion of the elevated rate of depression seen in our population. Problem behaviors that are present in this sample, such as unsafe sexual behaviors and noninjection drug use, may be behavioral manifestations of undiagnosed psychiatric disorders, such as depression. Psychiatrically hospitalized adolescents show elevated rates of sexual risk behaviors as compared with school-based adolescents,26 suggesting that high-risk sexual behaviors correlate with psychiatric disorders.

Experimentation with illicit substances was reported by 82% of our sample, and almost two thirds met the criteria for substance abuse or dependence. Fewer subjects were diagnosed with a substance abuse disorder in conjunction with depression, but 40% of the subjects who were currently depressed reported concurrent use of substances. While substance abuse may not directly lead to depression, substance use before sexual intercourse may interfere with judgment and result in high-risk sexual experimentation.27 Self-medicating use of drugs and alcohol may also be a behavioral manifestation of depression and may subsequently increase sexual risk behaviors.28,29 In adults, untreated depression has been found to be associated with increased risk behaviors, such as injection drug use and unsafe sexual practices, in at-risk and HIV-positive persons.30

This study suggests that there is an elevated rate of psychiatric disorders among adolescents infected with HIV.

LIMITATIONS

This cohort is predominantly African American and of lower socioeconomic status, so generalization of these findings to other populations may not be applicable. In addition, a sample that voluntarily participates may be more self-concerned, more likely to seek health care, and less psychiatrically disturbed than the larger population of HIV patients. This sample bias would result in an underestimate of the true rate of psychopathology in the HIV-infected urban minority population. In addition, the SCID-P does not identify childhood psychiatric diagnoses, such as conduct disorder, gender identity disorder, and attention-deficit/hyperactivity disorder. Therefore, future research should use a comprehensive instrument that includes all childhood disorders while maintaining the strengths of the SCID-P in the diagnosis of affective disorders and substance abuse. However, in reviewing the retrospective data, a high rate of reported history of attention-deficit/hyperactivity disorder was not found in this sample. Since almost 30% of our sample had previously received a clinical diagnosis of conduct disorder, this set of problems warrants further study. Only 2 of the patients with a diagnosis of current affective disorder met criteria for bipolar I disorder, although 2 additional subjects met criteria for bipolar II disorder. None of these subjects had had a diagnosis of any type of bipolar disorder prior to the SCID-P, despite some having extensive psychiatric histories. The possibility of preexisting undiagnosed bipolar disorder needs to be investigated further.

CLINICAL IMPLICATIONS

These findings could suggest possible HIV prevention strategies in urban adolescents. Diagnosing psychiatric disorders and providing early psychiatric intervention in children and adolescents is clearly indicated. Because children and youth with psychiatric disorders are vulnerable to high-risk behaviors, increased efforts toward early treatment of psychiatric disorders and AIDS education targeted to this population could be beneficial.

Retrospective analyses of these behaviors makes it impossible to conclude that there is a causal relationship between past psychiatric diagnoses and past risk behaviors. Although many of these diagnoses were clearly present prior to the acquisition of the HIV infection, we
cannot conclude from this small sample whether the diagnosis of HIV causes additional psychiatric disturbance as a consequence of contracting the infection or as a neuropsychiatric manifestation of the infection. In younger children, neuropsychiatric progression of HIV infection has been reported to be more aggressive. In adults, there is growing evidence that as AIDS progresses, a sustained rise in depressive symptoms occurs. Identification of ongoing depression in HIV-infected adolescents is also important and may affect their ability to adhere to future treatments. Continued study of these HIV-infected adolescents is necessary to follow their psychiatric manifestations. Only further definition of what is unique to HIV-infected and at-risk adolescents will allow us to target interventions appropriately. Future research should focus on prospective collection of longitudinal data in controlled, matched cohorts to further define the relationship of these possible psychiatric risk factors to HIV infection in adolescents.

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Reprints: Maryland Pao, MD, Department of Psychiatry and Behavioral Sciences, Children’s National Medical Center, Washington, DC 20010.

REFERENCES