ORIGINAL ARTICLE

HIV post-exposure prophylaxis provided at an urban paediatric emergency department to female adolescents after sexual assault

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Background: In 1998, the New York State Department of Health released guidelines governing the provision of HIV post-exposure prophylaxis (HIV PEP) after adolescent and adult sexual assault. This study sought to examine the extent of HIV PEP provision in a New York City paediatric emergency department (ED) after the release of these guidelines.

Methods: Using logs of the sexual assault and violence intervention advocacy programme, the authors identified patients who had been evaluated for sexual assault in the hospital's paediatric ED from January 1999 to December 2000. These patients' medical records were reviewed retrospectively for details of their sexual assault and the medical treatment they received in the paediatric ED.

Results: Of 25 patients identified from the hospital's affiliated sexual assault and violence intervention advocacy programme logs, 14 female adolescents had received HIV PEP. Each patient had suffered forced vaginal intercourse. Sixty four per cent of the survivors knew their assailant, but none knew his HIV status. No patients received HIV PEP within the optimal one hour prescription time, but no patient presented within the one hour window. Eighty six per cent presented >12 hours and 42% >24 hours after assault. HIV PEP was ordered an average of 218 minutes after the patient presented to the ED. Patients received drugs an average of 58 minutes after they were ordered. All but one patient received a three drug regimen.

Conclusions: This study advocates improved efforts to expedite HIV PEP provision in the ED, such as educating ED practitioners on its proper use, and making HIV PEP drugs available for direct dispense from the ED.

About 25% of sexual assaults reported in the United States occur in adolescents younger than age 18.[1 2] Some of these adolescents are at risk for HIV seroconversion because the assailant may have been HIV infected. Although the rate of HIV seroconversion after sexual assault in adolescents is unknown, many cases have been reported.[3 4]

A few authors have proposed that HIV post-exposure prophylaxis (HIV PEP) should be used to prevent HIV infection in adolescent sexual assault survivors.[5–7] HIV PEP, a secondary means of HIV prevention, is divided into two types, occupational and non-occupational. Occupational HIV PEP is for healthcare workers who sustain needlestick injuries and other blood and body fluid exposures while performing their job. The Centers for Disease Control and Prevention (CDC) established guidelines in 1996 that offer direction on using HIV PEP for occupational exposures.[8] The CDC considers occupational HIV PEP to be efficacious based on animal studies of chemoprophylactic regimens against HIV or Simian immunodeficiency virus, virological and immunological work, and a large, multi-national, case-control study. In the Cardo *et al* study, the authors found an 81% reduction in the odds risk of HIV seroconversion among healthcare workers who sustained a needlestick injury and subsequently took zidovudine.[9]

Non-occupational HIV PEP is prescribed for all other patients and exposures, particularly sexual assault. The efficacy of non-occupational HIV PEP is not known, but some scientists believe that it may be as useful as occupational HIV PEP.[10 11] There have been no large scale clinical trials examining the utility of non-occupational HIV PEP, but it has been prescribed to some adults after sexual exposures.[10 12 13] Unlike as for occupational HIV PEP, there are currently no national guidelines in the United States on non-occupational HIV PEP. Responding to this absence of formal guidance for practitioners, in late 1998, the New York State Department of Health released guidelines governing the provision of HIV PEP after adolescent and adult sexual assault.[14] New York was the first state to issue such guidelines. In the guidelines, the New York State Department of Health recommended that HIV PEP be provided to patients who present for care within 36 hours of suffering unprotected anal or vaginal intercourse from assailants who were known to be HIV infected or whose HIV status was unknown. Recommendations regarding dosing, drugs, other treatments, and follow up were also specified.

The impact of these guidelines on the care of sexual assault survivors in New York is not known. We sought to examine our paediatric emergency department's (ED) provision of HIV PEP after the release of the New York state guidelines. We were chiefly interested in which adolescent patients received HIV PEP, what other kinds of prophylaxis they were given, and how well the ED providers adhered to the HIV PEP state guidelines.

METHODS

The authors conducted a retrospective review of patients who presented to a New York City paediatric ED (25 000 annual patient volume) after sexual assault, January 1999-December 2000. Patients were identified through logs of the hospital's affiliated sexual assault and violence intervention advocacy programme. At the hospital's adult and paediatric EDs, a sexual assault advocate evaluates any adolescent or adult

Abbreviations: ED, emergency department; HIV PEP, HIV post-exposure prophylaxis

sexual assault survivor who suffered a recent sexual assault. Patients who had not been sexually assaulted recently (not within one week) or were suffering multiple sexual assaults (that is, ongoing sexual abuse) were not included in the study as these patients were not seen by the advocates. A single researcher reviewed the patient medical records identified from the search and selected patients who had been prescribed HIV PEP. The study data extracted by the researcher from the records of these patients included: (1) demographic profiles of the patients; (2) characteristics of the assaults; (3) time from their assault to ED presentation and treatment; and (4) the types and frequencies of emergency prophylaxis dispensed. The hospital's institutional review board approved the study.

RESULTS

Patient demographics

Of 25 patients identified through the advocacy programme logs, 14 adolescent patients received HIV PEP from the paediatric ED. An additional 15 year old was offered but declined HIV PEP, and a 13 and 14 year old were instructed to discuss HIV PEP in follow up. Only the medical records of the 14 patients who received HIV PEP were evaluated further. All 14 patients were female, ages 12–19. Eighty five per cent were 15 years old and older.

Characteristics of the sexual assaults

All of the assailants were male. Sixty four per cent of the survivors knew their assailant. None knew their assailant's HIV status. All assaults involved vaginal penetration; three had known intravaginal ejaculation. Four assaults also entailed oral sex and in two assaults anal penetration. Two assailants used a condom. The prescribing physicians did not indicate in the medical records why HIV PEP was indicated for these two patients.

Time from sexual assault to ED presentation and treatment

Assault to triage time ranged 3–72 hours. Eighty six per cent presented >12 hours after assault and 42% presented >24 hours after assault. Triage to drug ordered time ranged 115–403 minutes (mean: 218 minutes). Drug ordered to patient receipt time ranged 15–175 minutes (mean: 58 minutes).

Types and frequencies of prophylaxis dispensed

All but one patient received a three drug HIV PEP regimen; one received zidovudine alone (July 1999). All but one of the three drug regimens included zidovudine and lamivudine. One patient received stavudine and lamivudine. Nine received nelfinavir; four received indinavir. Ninety three per cent accepted prophylaxis against chlamydia and gonorrhea. Eighty six per cent accepted emergency contraception. No patient underwent HIV testing in the paediatric ED.

DISCUSSION

Our study is the largest series of adolescent patients receiving HIV PEP after sexual assault. It describes HIV PEP use immediately after the introduction of state guidelines on HIV PEP for adolescent and adult sexual assault survivors.

Although there are no clinical trials examining HIV PEP use in adolescents and children, two authors in the United States have reported prescribing HIV PEP at their paediatric EDs. Babl *et al* published a case series of 10 patients who were offered HIV PEP at the Boston Medical Center Pediatric ED and the eight who accepted it.[15] Five of these patients were sexual assault survivors and four presented to the ED within 24 hours of their assault. All were given zidovudine, lamivudine, and indinavir as HIV PEP. In their abstract, Neu *et al* of the New York Presbyterian Hospital Pediatric Emergency Department recounted providing HIV PEP to seven sexual assault survivors.[16] All were adolescents 11–19 years of age, and one was male. Only three patients in the Babl study and four in the Neu study underwent follow up HIV testing six months after assault. All were uninfected.

In this study we observed that most of the HIV PEP recipients at the paediatric ED were older adolescent females. All had suffered assaults involving sexual acts that might have exposed them to HIV. Despite this risk, the HIV status of the assailants was not known for any patient.

Although HIV PEP may be most effective if given soon after a possible HIV exposure, long delays predominated from the assault to ED presentation and from ED presentation to receipt of HIV PEP. As no patient presented within one hour of exposure, none received HIV PEP within the optimal one hour time interval. Additional delays occurred from the time the patient presented to the ED until the physician ordered HIV PEP, and from the time HIV PEP was ordered until the patient received it.

There are several possible reasons for the time delay from the patient's ED presentation to the physician's ordering of HIV PEP: (1) a belief that sexual assault requires no immediate interventions; (2) the allowance of social service, law enforcement, psychiatric consultations, and advocacy interventions to precede medical evaluations; (3) a lack of provider awareness of HIV PEP; and (4) a reliance on consultation from outside sources. The delay from HIV PEP being ordered to being received was probably because of the absence of these drugs in the ED.

Most HIV PEP regimens included three antiretroviral drugs. This was consistent with the state's guidelines.[14] All but one regimen included the standard zidovudine and lamivudine combination. One patient received a possibly less efficacious regimen (zidovudine alone) within six months of the release of the state sexual assault guidelines. It is unclear why one patient received stavudine instead of zidovudine.

There are several limitations to our study. Firstly, this study examined HIV PEP provision after sexual assault, and not its efficacy. Therefore, no follow up data were available for these patients. However, efficacy of HIV PEP after sexual assault cannot be determined from a case series, and even a prospective clinical trial would require enrolling thousands of patients, given the low rate of expected HIV seroconversion after a sexual exposure (0.1%–0.2% from penile-vaginal intercourse[17] and 0.1%–3% from penile-anal intercourse[18]). Secondly, given the uniqueness of our ED (urban, tertiary care) and the presence of state guidelines, our findings may not be readily generalised to other settings. We are hopeful that further studies on HIV PEP in paediatric EDs comprise larger and more diverse patient populations and from different geographical areas.

Based on our experience with these patients, we advocate improved efforts to expedite HIV PEP provision in the ED, such as through expanding physician awareness of HIV PEP and making HIV PEP drugs available for immediate dispense from the ED.

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