Survival, plasma HIV-1 RNA concentrations and drug resistance in HIV-1-infected Haitian adolescents and young adults on antiretrovirals

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Objective To assess outcomes after antiretroviral therapy (ART) in adolescents and youth in Haiti, a country with a generalized epidemic of infection with HIV-1.

Methods An assessment was made of survival, plasma HIV-1 ribonucleic acid (RNA) concentrations and HIV-1 drug resistance patterns after 12 months of ART in patients aged 13–25 years who presented to a clinic in Port-au-Prince, Haiti, with AIDS between 1 March 2003 and 31 December 2005. Participants received ART in accordance with WHO guidelines. Kaplan–Meier analysis was used to estimate survival probabilities and their 95% confidence intervals (CI) for the period from ART initiation to death.

Findings Of a total of 146 patients, 96 (66%) were female; the median CD4+ T-cell count at baseline was 129 cells/ml. By Kaplan–Meier analysis, 13% of the patients had died at 12 months, 17% at 24 months and 20% at 36 months. A plasma HIV-1 RNA concentration ≥ 50 copies/ml was seen in 40 (51%) of 79 patients 12 months after treatment initiation and was associated with poor ART adherence. Among 29 patients with > 1000 copies/ml at 12 months, resistance mutations to non-nucleoside reverse transcriptase inhibitors (NNRTIs) were detected in 23 cases (79%); to both NNRTIs and lamivudine in 21 (72%) cases; and to NNRTIs, lamivudine and other nucleoside reverse transcriptase inhibitors in 10 (35%) cases. One hundred and six participants (73%) reported sexual intercourse without condoms, and 35 of the 96 women (36%) were pregnant during follow-up.

Conclusion Adolescents and youth with AIDS receiving ART are at risk of virologic failure and disease progression and can therefore transmit HIV-1 to sexual partners and infants. Strategies to target the special needs of this age group are urgently needed.

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Une traduction en français de ce résumé figure à la fin de l'article. *Al final del artículo se facilita una traducción al español.* **الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.**

Introduction

AIDS is the leading cause of death in adolescents and youth aged 13–25 years in sub-Saharan Africa and Caribbean countries that have generalized epidemics of infection with HIV-1.[1–3] Antiretroviral therapy (ART) can dramatically decrease AIDS mortality.[4–6] However, about 50% of HIV-1-infected adolescents on ART in the United States of America (USA) have detectable plasma HIV-1 ribonucleic acid (RNA) after 12 months of treatment,[7,8] a virologic failure rate significantly higher than the 20% rate reported for adults in both high-income and resource-poor settings.[9–12] Such a low rate of success in adolescents in the USA is associated with poor adherence to treatment. There are limited data on outcomes after ART in HIV-1-infected adolescents and youth in developing countries, and no country has published data on HIV-1 drug resistance. The authors report survival, plasma HIV-1 RNA concentrations and HIV-1 drug resistance patterns in 146 adolescents and youth aged 13–25 years who were infected with HIV-1 and fulfilled the clinical criteria for AIDS and were consecutively treated with ART in Port-au-Prince, Haiti, beginning in March 2003.

Methods

Patients and treatment

Patients included in this study were treatment-naïve adolescents and youth aged 13–25 years who presented with symptoms of HIV infection to the clinic of the Haitian Study Group for Kaposi's Sarcoma and Opportunistic Infections (GHESKIO) between 1 March 2003 and 31 December 2005. GHESKIO provides free HIV-related counselling, testing, prevention advice and AIDS care for the population of Port-au-Prince.[13] After measurement of plasma CD4+ T-cell (CD4) concentrations, patients with < 200 cells/ml or an AIDS-related illness as defined by WHO and thus diagnosed as having AIDS were given ART in accordance with WHO guidelines.[14–16]

The diagnosis of tuberculosis at GHESKIO is based upon clinical and microbiological criteria, as previously reported.[17] It requires either microbiologic confirmation of tuberculosis, or

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symptoms of tuberculosis, a chest radiograph suggestive of tuberculosis and a response to tuberculosis therapy.

Participants aged 13–15 years were treated in the paediatric clinic; those 16 years or older were treated in the adult clinic, and pregnant patients of any age received treatment in the obstetric clinic. Patients were seen by a physician every 2 weeks during the first 3 months of therapy and by a nurse every month thereafter. Patients with symptoms or signs of sexually transmitted infections were provided with treatment, and free condoms were offered at every visit.

Treatment adherence was encouraged through counselling, home visits, pill counts and social support. All patients were seen by a social worker for three adherence counselling sessions before starting therapy and again every month after treatment had commenced. If during therapy a patient came late for a visit or reported poor adherence, additional counselling was provided. Social workers attempted to identify barriers to adherence and to work with each patient in developing an individualized plan to improve it. At every clinic visit patients were given money to cover the cost of a round trip taxi fare. Social services, including nutritional support and specialized counselling (such as for pregnant women or rape victims), were provided. Pharmacists also provided counselling every time pills were dispensed. Field workers made home visits weekly in the first two months of therapy and then monthly to remind patients to take their medicine and attend follow-up appointments.

Demographic, clinical and laboratory measurements

At patients' first visit to GHESKIO, demographic characteristics (age, sex, economic status, education, etc.) were recorded via a structured questionnaire and entered into an electronic medical database. Adherence to ART was quantified by examining pharmacy refill records and comparing the actual number of medication refill days in the first year of treatment with the expected number of 365. An "adherent" patient was defined as one whose refill days of antiretroviral medication were more than 346 (at least 95% of the expected 365). It has been shown that this method of measuring adherence has predictive value for virologic outcomes and death.[18,19]

Table 1. **Baseline characteristics of patients aged 13–25 years receiving ART in a clinic in Haiti, 2003–2005**

Characteristic	Age			
	13–15 years (*n* = 30)	16–19 years (*n* = 30)	20–25 years (*n* = 86)	All (*n* = 146)
Female[a]	12 (40)	21 (70)	63 (73)	96 (66)
Housing status[a]				
With parents or family	14 (47)	19 (68)	40 (48)	73 (50)
With spouse/sexual partner	0 (0)	4 (14)	31 (37)	35 (24)
With non-family member	10 (33)	2 (7)	2 (2)	14 (10)
Orphanage	2 (7)	2 (7)	0 (0)	4 (3)
Other	4 (13)	3 (10)	13 (15)	20 (14)
Family situation[a]				
Mother deceased	21 (70)	14 (47)	12 (14)	47 (32)
Father deceased	19 (63)	6 (20)	8 (9)	33 (23)
Both parents deceased	16 (53)	5 (17)	7 (8)	28 (19)
Mother known to be HIV-infected	8 (27)	5 (17)	3 (3)	16 (11)
Reports being sexually active[a]	5 (17)	25 (83)	83 (97)	113 (77)
Sexually transmitted infection[a]				
Vaginal/penile discharge	2 (7)	8 (27)	29 (34)	39 (27)
Genital ulcers	0	4 (14)	15 (17)	19 (13)
Latent syphilis by serology	0	2 (7)	15 (17)	17 (12)
At least one of the above	2 (7)	12 (40)	45 (52)	59 (40)
WHO clinical stage[a]				
Stage 1	0	5 (17)	12 (14)	17 (12)
Stage 2 and 3	10 (33)	9 (30)	39 (45)	58 (40)
Stage 4	20 (67)	16 (53)	35 (41)	71 (49)
Body weight (kg)[b]				
Males	26.9 (23.6–30)	51.1 (40.7–54.5)	50.0 (43.6–55.9)	43.2 (29.1–52.7)
Females	30.1 (26.3–37.3)	43.0 (37.7–53.0)	50.0 (42.3–55.9)	46.6 (38.6–55.2)
CD4+ T-cell count per ml[b]	222 (16–399)	135 (33–228)	119 (35–178)	129 (30–216)
Haemoglobin (mmol/l)[b]	5.90 (5.59–6.21)	6.21 (4.96–6.83)	6.21 (5.59–6.83)	6.08 (5.34–6.70)
Initial ART regimen[b]				
ZDV, 3TC, EFV	22 (73)	12 (40)	21 (24)	55 (38)
ZDV, 3TC, NVP	1 (3)	12 (40)	46 (53)	59 (40)
Other	7 (23)	6 (20)	19 (22)	32 (22)

ART, antiretroviral therapy; EFV, efavirenz; 3TC, lamivudine; NVP, nevirapine; ZDV, zidovudine.
[a] Expressed as the number followed by the percent (in parentheses).
[b] Expressed as the median value followed by the interquartile range (in parentheses).

Haemoglobin and CD4 concentrations were measured (FACScount, Becton, Dickinson and Company, Franklin Lakes, NJ, USA) every 6 months, and HIV-1 RNA concentrations were measured in all patients available at 48–56 weeks' follow-up. The EasyQ HIV-1 RNA assay (bioMérieux, Lyon, France) with a lower limit of detection of 50 copies/ml was used, and all plasma specimens with > 1000 copies/ml of HIV-1 RNA at 12 months of treatment were subjected to HIV-1 protease and reverse transcriptase gene sequencing (Bayer, TRUGENE, Leverkusen, Germany). The clade of

HIV-1 was determined by analysing sequences with the Phylogeny Inference Package (version 3.6, by J Felsenstein, University of Washington, Seattle, WA, USA). Sequences for drug resistance were interpreted using the International AIDS Society-USA guidelines.[20]

Psychological and social information

Information on depression was collected by reviewing GHESKIO primary care notes using the WHO definition of depression.[21] Social questions of a sensitive nature, such as those surrounding physical or sexual abuse and child labour, were not posed by means of a standardized instrument. Instead, the information was gathered via interviews with clinic doctors, psychologists, social workers and nurses.

Data analysis

Follow-up continued through 1 July 2006. Data analysis was performed using SAS 9.1 (Carey, NC, USA). For categorical variables, frequency and proportions were calculated, while for continuous variables, the median and interquartile ranges (IQRs) were determined. Kaplan–Meier analysis was used to estimate survival probabilities and their 95% confidence intervals (CI) for the period from ART initiation to death. For patients who did not reach the study endpoint, data were censored at the date of their last clinic visit. A Cox proportional hazards regression was used to analyse mortality, and logistic regression was used to analyse the data on plasma HIV-1 RNA concentrations. In regression models, a backward elimination procedure was used to remove variables from the model sequentially if α was greater than 0.05.

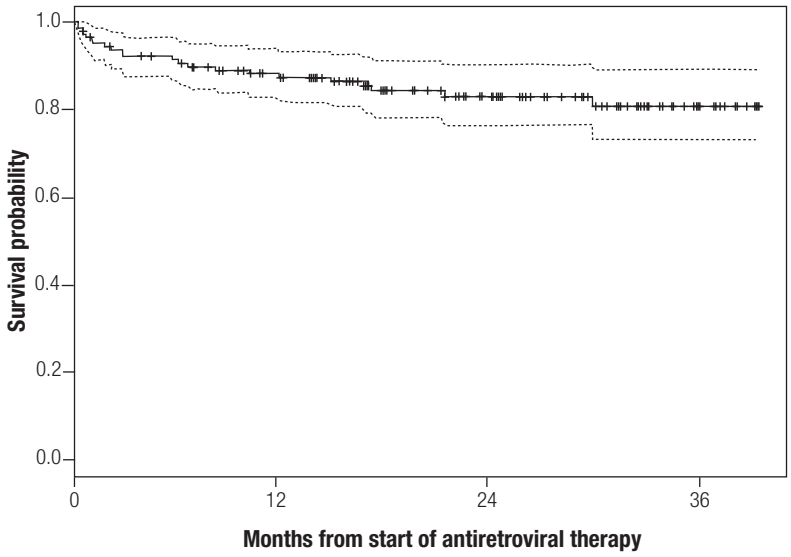
Consent for HIV testing and treatment was obtained from the parents or guardians of patients aged 13–17 years and from patients aged 18–25 years. Institutional review boards at GHESKIO and at Vanderbilt and Cornell Universities approved this study.

Results

Enrolment and status at the time of analysis

Between 1 March 2003 and 31 December 2005, GHESKIO provided HIV counselling and testing to 21 817 adolescents and young adults aged 13–25 years, of whom 1772 (8%) were seropositive for HIV. Among these seropositive adolescents and young adults, 146 treatment-naïve patients met AIDS criteria and were started on ART; 1610 had early-stage HIV infection and did not require ART; 10 had received ART previously; and 10 died a median of 4 weeks after HIV testing but before starting ART. Table 1 shows baseline characteristics, by age, for the 146 adolescents and young adults who received ART and were included in the study. At the time of the analysis, the median follow-up time for the 146 patients was 18 months. Of the 146 patients, 96 (66%) remained under follow-up until the end date, 28 (19%) were lost to follow-up, and 22 (15%) died during follow-up. No baseline characteristic was found to be associated with loss to follow-up.

Fig. 1. **Kaplan–Meier survival estimate of HIV-1-infected patients aged 13–25 years receiving ART in a clinic in Haiti, 2003–2005**[a]



ART, antiretroviral therapy.
[a] Number of patients at risk: 146 at 0 months, 100 at 12 months, 54 at 24 months and 20 at 36 months.

Survival

According to the Kaplan–Meier survival analysis, 87% of the patients were alive at 12 months, 83% at 24 months, and 80% at 36 months (Fig. 1). Predictors of mortality at the time of ART initiation were an AIDS-defining illness (hazard ratio, HR: 9.1; 95% CI: 2.0–40.8, P = 0.004) and haemoglobin < 5.28 mmol/l (HR: 3.1; 95% CI: 1.1–8.2, P = 0.025). Of note, there was no difference in survival between age groups in the cohort (13–15 years, 16–19 years and 20–25 years).

Measures of treatment response

Adherence

Of the 106 patients in care at the end of 12 months of follow-up, only 48 (45%) had received more than 95% of the doses of medication prescribed for them and were thus considered adherent.

CD4 response

The median increase in plasma CD4 concentration from baseline to 12 months was 172 cells/ml (IQR: 72–296 cells/ml). Of the 96 patients whose CD4 concentration was recorded at baseline and at 12 months, 5 (5%) had a decrease of more than 30%, 14 (15%) had no change (less than 30% deviation from baseline) and 77 (80%) had an increase of more than 30%.

Plasma HIV-1 RNA concentration

HIV-1 RNA at 12 months was measured in 79 (75%) of the 106 patients with at least 12 months of follow-up. Plasma HIV-1 RNA concentration was ≥ 50 copies/ml in 40 (51%) and < 50 copies/ml in 39 (49%) of the 79 patients tested. Predictors for having a plasma HIV-1 RNA concentration < 50 copies/ml at 12 months were 95% adherence to treatment (OR: 13.5; 95% CI: 3.6–50.6, P = 0.0001) and an increase of > 30% in CD4 concentration at 12 months (OR: 11.9; 95% CI: 1.7–81.0, P = 0.01).

HIV-1 drug resistance mutations

At 12 months of follow-up, 32 participants had > 1000 copies/ml of plasma HIV-1 RNA, and 29 patients' plasma samples could be amplified to yield a sequence. All clustered with clade B HIV-1. Table 2 summarizes the HIV-1 drug resistance mutations.

Table 2. **Resistance mutations in Haitian patients 13–25 years of age with plasma HIV-1 RNA concentrations > 1000 copies/ml 12 months after initiation of ART, 2003–2005**

HIV-1 mutation[a]	Patients (*n* = 29) No. (%)
Any mutation conferring drug resistance	25 (86)
Mutation conferring resistance to NNRTI[b]	23 (79)
Reverse transcriptase M184V mutation conferring resistance to lamivudine	21 (72)
Mutations conferring resistance to both NNRTI and lamivudine	21 (72)
Mutations other than M184V conferring resistance to NRTIs	11 (38)
Any thymidine analogue mutation[c]	9 (31)
Two or more thymidine analogue mutations	7 (24)
Mutations conferring resistance to lamivudine, other NRTIs and NNRTIs	10 (35)

ART, antiretroviral therapy; NNRTIs, non-nucleoside reverse transcriptase inhibitors; NRTIs, nucleoside reverse transcriptase inhibitors; RNA, ribonucleic acid.

[a] Based on International AIDS Society-USA guidelines.[20]

[b] The most common NNRTI mutations were located in reverse transcriptase codons 103 and 181.

[c] Thymidine analogue mutations were located in reverse transcriptase codons 41, 67, 70, 210, 215 and 219.

Tuberculosis

Of the 146 patients starting ART, 27 (18%) received concurrent treatment for tuberculosis. Of these 27 patients, 15 (56%) successfully completed antituberculosis therapy, 6 (22%) had therapeutic failure, 2 (7%) were lost to follow-up, 3 (11%) died, and 1 (4%) completed therapy but had recurrent tuberculosis later.

Sexual activity

Sexual activity was reported by 113 participants (77%) during the follow-up period. Of these, 51 (45%) never used condoms, 55 (49%) used them sometimes and four (4%) always used them. Data were missing for three participants. Of the 96 young women in the cohort, 19 (20%) were pregnant at the start of ART and another 16 (17%) became pregnant during the study period.

Psychosocial complications

Twenty participants (14%) had been diagnosed with depression while in primary care, and 16 (11%) had suffered physical abuse at home. Five participants (3%) had been raped, and 2 (1%) were arrested and imprisoned for street crimes during the study. Of the 30 adolescents younger than 16 years, 8 (27%) were *restaveks*, that is, children who work without pay as live-in domestic servants in exchange for food and shelter.[22,23]

Discussion

More than half (51%) of the patients aged 13–25 years who received ART in the study cohort in Haiti had an HIV-1 RNA concentration ≥ 50 copies/ml in plasma 12 months after treatment initiation, and many had a drug-resistant virus. Virologic failure was strongly associated with poor adherence to treatment. The 51% virologic failure rate found in this study surpasses the approximate rate of 20% for adults with AIDS who were treated at the same clinic in Haiti.[15] Three-quarters of adolescents and youth in Haiti engage in unprotected sexual intercourse and therefore can transmit HIV-1, including the drug-resistant virus, to their infants and sexual partners.

Among patients aged 13–15 years, the high number having HIV-infected mothers suggests that some may have been infected with HIV perinatally. Among patients 16 years of age or older there were a disproportionate number of women and high rates of sexual activity, pregnancy and sexually transmitted diseases other than HIV infection, suggesting that most of the patients in this age group were infected through sexual activity. According to the Joint United Nations Programme on HIV/AIDS, more than half of all new HIV infections in the world now occur in adolescents and young adults and are acquired through sexual contact. In Africa and the Caribbean, the regions of the world most severely affected by HIV infection, two-thirds of HIV-1-infected adolescents and young adults are women.[3]

Once infected with HIV-1, some adolescents and youth will progress rapidly to AIDS before reaching adulthood. In sub-Saharan Africa and Haiti, AIDS is the leading cause of death in people aged 13–25 years.[1,2] High underlying rates of anaemia and tuberculosis may contribute to this rapid progression to AIDS in HIV-1-infected adolescents in developing countries. Adolescent females in resource-poor countries have very high rates of anaemia due to malnutrition, menstrual iron losses and early pregnancies.[24–28] In studies from Haiti and other developing countries, anaemia is strongly associated with rapid HIV-1 disease progression and mortality.[29–32] In this study cohort, patients with severe anaemia (haemoglobin < 5.28 mmol/l) were three times more likely to die during the course of the study than other patients.

Active tuberculosis is also associated with accelerated progression of HIV disease.[33–35] In countries with high rates of tuberculosis, the incidence of active tuberculosis peaks during adolescence and young adulthood.[36–41] Tuberculosis was prevalent in the study cohort, and unfortunately, tuberculosis treatment adherence in these young patients was poor, with only 56% of them successfully completing therapy.

The rate of detectable HIV-1 viraemia in the young study cohort was higher than among Haitian adults receiving ART[15] but similar to rates described in HIV-infected adolescents receiving treatment in the USA.[7,42] Poor adherence was strongly associated with detectable viraemia in this cohort in Haiti and in USA cohorts.[43] Detectable viraemia at 12 months from treatment initiation is associated with HIV disease progression and death.[44–46] In this cohort, there was continued mortality throughout the follow-up period.

The high number of drug resistance mutations identified in the study cohort, as well as the number of thymidine analogue mutations (TAMs), suggest that many of the young patients had prolonged virologic failure.

Unfortunately, multiple mutations causing high-level resistance to first-line antiretroviral drugs lamivudine and zidovudine can lead to cross-resistance to the second-line nucleoside reverse transcriptase inhibitors (NRTI) currently recommended by WHO, including didanosine and abacavir. Therefore, many adolescents who fail therapy at a young age will not have treatment options for HIV infection available to them when they reach adulthood.

The findings of this study have important public health implications for HIV disease prevention efforts in Africa and the Caribbean. Three-quarters of the young patients in this study engaged in unprotected sexual intercourse, and one-third of the young women were pregnant. Forty percent of the cohort had other sexually transmitted infections, a factor that can increase HIV-1 transmissibility. Furthermore, other work has shown a correlation between plasma HIV-1 RNA concentrations and rates of HIV-1 transmission.[47] Therefore, sexually active adolescents and youth who receive ART and have persistent HIV-1 viraemia can transmit drug resistant HIV-1 to their infants and sexual partners.

Targeted interventions to improve care for HIV-infected adolescents and youth are needed. Most health centres assign patients in the 13–25 year age group to either adult or paediatric clinics without recognizing the special needs of this population. Based on the results of this study, an adolescent HIV clinic in Port-au-Prince was opened with the support of the United Nations Children's Fund. The clinic provides integrated primary care services, tuberculosis treatment, management of sexually transmitted infections, reproductive health services and nutritional support. Since many of the young patients are orphans and experience depression and physical and sexual abuse, psychological and social support services have been incorporated into the adolescent clinic.

Studies of treatment adherence in patients with chronic HIV disease have shown that adherence is often poorest during adolescence and young adulthood, a factor that is aggravated by a variety of psychological and social issues such as those found in this study.[48,49] Therefore, new strategies to improve adherence and safe sex counselling for HIV-1-infected adolescents and youth in Haiti have been developed by the authors. Teenage peer counsellors and social workers who specialize in adolescent health provide group and individual counselling sessions in the clinic. CD4 concentration and pharmacy records make it possible to focus extra counselling on adolescents who show signs of treatment failure. Mobile telephone communication is also used to monitor therapy;[50] patients are given phone cards so that they can call the clinic free of charge with questions, and nurses call patients to remind them to take medications and to attend appointments. With these interventions, improvements have been noted in patient retention, treatment adherence and safe sex practices; similar strategies may be useful in other resource-poor settings.

This study was limited to data from only one country; ART outcomes in adolescents and young adults in other resource-poor countries need to be assessed. However, findings in this study have direct implications for HIV/AIDS care and prevention programmes in Africa and the Caribbean. HIV-1-infected adolescents and youth on ART have poor adherence and high rates of virologic failure and drug-resistant viruses, and they are at risk for HIV disease progression and death. These young patients also engage in unprotected sex and can therefore transmit HIV-1 to their infants and sexual partners. As the number of adolescents and youth with HIV infection and AIDS increases worldwide, therapeutic strategies targeting their special needs are urgently needed. ■

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Résumé

Survie, taux d'ARN VIH-1 plasmatique et résistance aux antirétroviraux chez des adolescents et des jeunes adultes haïtiens infectés par le VIH 1

Objectif Evaluer les issues du traitement antirétroviral (ART) chez des adolescents et des jeunes vivant en Haïti, pays victime d'une épidémie généralisée de VIH-1.

Méthodes On a effectué une évaluation de la survie, du taux d'acide ribonucléique (ARN) VIH-1 plasmatique et des schémas de pharmacorésistance du VIH-1 après 12 mois de traitement ART chez des jeunes individus de 13 à 25 ans atteints de sida, accueillis dans un dispensaire de Port-au-Prince entre le 1er mars 2003 et le 31 décembre 2005. Les sujets de l'étude ont reçu des antirétroviraux conformément aux recommandations de l'OMS. On a utilisé une analyse de Kaplan-Meier pour estimer les probabilités de survie et les intervalles de confiance à 95 % (IC) correspondants pour la période allant du début du traitement ART au décès des sujets.

Résultats Sur les 146 malades, 96 (66 %) étaient des femmes ; la valeur médiane de référence pour la numération des lymphocytes CD4+ était de 129 cellules/ml. L'analyse de Kaplan-Meier a montré que 13 % des malades étaient décédés au bout de 12 mois, 17 % au bout de 24 mois et 20 % au bout de 36 mois. On a relevé une concentration d'ARN VIH-1 plasmatique ≥ 50 copies/ml chez 40 malades sur 79 (51 %), 12 mois après le début du traitement, en association avec une mauvaise observance thérapeutique. Chez 29 malades présentant plus de 1000 copies/ml au bout de 12 mois, on a détecté des mutations de résistance aux inhibiteurs

non-nucléosidiques de la transcriptase inverse (NNRTI) dans 23 cas (79 %) ; à la fois aux NNRTI et à la lamivudine dans 21 cas (72 %) ; et aux NNRTI, à la lamivudine et à des inhibiteurs nucléosidiques de la transcriptase inverse dans 10 cas (35 %). Cent six participants ont rapporté avoir eu des rapports sexuels non protégés et 35 des 96 femmes (36 %) étaient enceintes pendant le suivi.

Conclusion Les adolescents et les jeunes atteints de sida qui reçoivent un traitement ART courent un risque d'échec virologique et de progression de la maladie et peuvent donc transmettre le VIH-1 à leurs partenaires sexuels et le cas échéant à leur enfant à naître. Il est urgent de disposer de stratégies permettant de cibler les besoins spécifiques de cette tranche d'âges.

Resumen

Supervivencia, concentraciones plasmáticas de ARN de VIH-1 y farmacorresistencia en adolescentes y adultos jóvenes haitianos infectados por el VIH-1 y sometidos a antirretrovirales

Objetivo Evaluar los resultados del tratamiento antirretroviral (TAR) en adolescentes y adultos jóvenes en Haití, país que sufre una epidemia generalizada de infección por VIH-1.

Métodos Se hizo una evaluación de la supervivencia, las concentraciones plasmáticas de ácido ribonucleico (ARN) de VIH-1 y el perfil de farmacorresistencia del VIH-1 a los 12 meses de iniciada la TAR en pacientes de 13 a 25 años que acudieron a un consultorio de Puerto Príncipe, Haití, con SIDA entre el 1 de marzo de 2003 y el 31 de diciembre de 2005. Los participantes recibieron TAR con arreglo a las directrices de la OMS. Se utilizó el método de Kaplan–Meier para estimar las probabilidades de supervivencia y sus intervalos de confianza (IC) del 95% para el periodo transcurrido entre el inicio del TAR y la defunción.

Resultados De un total de 146 pacientes, 96 (66%) eran mujeres; la mediana del recuento de linfocitos T CD4+ al comienzo del estudio fue de 129 células/ml. Según el análisis de Kaplan-Meier, el 13% de los pacientes habían muerto a los 12 meses, el 17% a los 24 meses, y el 20% a los 36 meses. En 40 de 79 pacientes (51%) se detectó una concentración plasmática de ARN de VIH-1 ≥ 50 copias/ml a los 12 meses de iniciado el tratamiento, asociada a un escaso cumplimiento del TAR. Entre los 29 pacientes con más de 1000 copias/ml a los 12 meses, se detectaron mutaciones de resistencia a los inhibidores no nucleósidos de la transcriptasa inversa (NNRTI) en 23 casos (79%); tanto a los NNRTI como a la lamivudina en 21 casos (72%); y a los NNRTI, la lamivudina y otros inhibidores nucleósidos de la transcriptasa inversa en 10 casos (35%). En total, 106 participantes (73%) declararon que habían mantenido relaciones sexuales sin preservativo, y 35 de las 96 mujeres (36%) se encontraban embarazadas durante el seguimiento.

Conclusión Los adolescentes y adultos jóvenes con SIDA sometidos a TAR presentan un riesgo especial de fracaso virológico y de progresión de la enfermedad y pueden por consiguiente transmitir el VIH-1 a su pareja y a los lactantes. Se requieren urgentemente estrategias que aborden las necesidades especiales de ese grupo de edad.

ملخص

البقاء على قيد الحياة، وتركيزات حمض الرنا لفيروس الإيدز-1 في البلازما، ومقاومة الأدوية لدى المراهقين والشباب المصابين بفيروس الإيدز-1 الذين يعالجون بمضادات الفيروسات القهقرية في هايتي

الهدف: تقييم النتائج بعد المعالجة بمضادات الفيروسات القهقرية لدى المراهقين والشباب في هايتي، وهو بلد يعاني من وباء متعمم لفيروس الإيدز-1.

الطريقة: أجري تقييم لاحتمالات البقاء على قيد الحياة، ولتركيزات حمض الرنا لفيروس الإيدز-1 وأنماط المقاومة للأدوية المضادة لفيروس الإيدز-1 بعد 12 شهراً من المعالجة بمضادات الفيروسات القهقرية لدى مرضى تتراوح أعمارهم بين 13 و25 عاماً، جاءوا لتلقّي المعالجة من مرض الإيدز في عيادة في ((بورتو أو برينس))، في هايتي، وذلك خلال الفترة ما بين 1 آذار/مارس 2003 و31 كانون الأول/ديسمبر 2005. وتلقى المشاركون في الدراسة المعالجة بمضادات الفيروسات القهقرية وفقاً للدلائل الإرشادية لمنظمة الصحة العالمية. وتم استخدام تحليل كابلان – ماير لتقدير احتمالات البقاء على قيد الحياة، بفواصل ثقة مقدارها 95%، للمدة من بدء المعالجة بمضادات الفيروسات القهقرية حتى الوفاة.

الموجودات: كان 96 (66%) من المرضى الـ146 المشاركين في الدراسة، من الإناث. وبلغ العدد الوسطي لعدّ الخلايا المناعية +CD4عند الخط القاعدي، 129 خلية/مل. ووفقاً لتحليل كابلان- ماير، فقد توفي 13% من المرضى بعد 12 شهراً، و17% بعد 24 شهراً، و20% بعد 36 شهراً، وكان تركيز حمض الرنا لفيروس الإيدز-1 ≤ 50 نسخة/مل لدى 40 مريضاً (51%) من بين 79 مريضاً، بعد 12 شهراً من بدء المعالجة، وجاء مترافقاً مع ضعف الامتثال للمعالجة بمضادات الفيروسات القهقرية. ومن بين 29 مريضاً تجاوز تركيز حمض الرنا لديهم 1000 نسخة/مل بعد 12 شهراً من المعالجة، اكتُشف وجود طفرات مقاومة للمثبطات المنتسخة العكسية غير النوكليوزيدية في 23 (79%) من الحالات، ومقاومة لكل من المثبطات المنتسخة العكسية وأدوية اللاميفودين في 21 (72%) من الحالات، ومقاومة للمثبطات المنتسخة العكسية وأدوية اللاميفودين وغيرها من المثبطات المنتسخة العكسية النوكليوزيدية في 10 (35%) من الحالات. وأبلغ مئة وستة من المشاركين في الدراسة (73%) أنهم مارسوا الجنس دون استخدام الواقي الذكري، كما كانت 35 امرأة من بين النسوة الـ 96 (36%) حاملاً وقت المتابعة.

الاستنتاج: إن المراهقين والشباب المصابين بمرض الإيدز ويتلقون المعالجة بمضادات الفيروسات القهقرية معرضون لمخاطر الإخفاق الفيرولوجي وتفاقم المرض ومن ثَمّ إمكانية انتقال فيروس الإيدز-1 منهم إلى القرين في العلاقة الجنسية وإلى الرضّع. والحاجة ماسة إلى وضع استراتيجيات تستهدف الاحتياجات الخاصة لهذه الفئة العمرية.

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