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HIV-positive in the darkness of a correctional facility: more vulnerable and less treated

Florence Huber^{1,2,3} , Stephanie Vandentorren^{4,5},
Alice Merceron¹, Amandine Chaponnay², Gueda Gadio^{1,3},
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Abstract

In French Guiana, 4.5–5.0% of HIV-infected persons experienced an incarceration between 2007 and 2013. A cross-sectional survey was performed to describe the epidemiology and treatment outcomes of a population of HIV-infected inmates in French Guiana. The study population was patients released between 1/2007 and 12/2013, after >30 days of incarceration (n = 147). A secondary objective aimed to identify its main specificities, relative to both the general inmate population and the nonincarcerated HIV population. The socioeconomic situation of HIV-infected inmates was particularly precarious, relative to other detainees: 58.1% had never attended school (versus 5.5%, $p < 0.01$), 31.0% were homeless (versus 8.5%, $p < 0.01$), 63.9% were repeat offenders (versus 46.6%, $p < 0.01$), 33.3% were crack cocaine users (versus 9.8–12%, $p < 0.01$). The frequency of hypertension and chronic B hepatitis was also higher. Only 50.3% of inmates were on antiretroviral therapy (ART) versus 92.6% in the hospital HIV population ($p < 0.001$). Among untreated patients, 15.1% refused ART. Among those treated, 81.3% were virologically suppressed. Although comparisons were biased, HIV-positive inmates had more psychosocial vulnerabilities than the general inmate population. Despite ART availability and excellent treatment outcomes, undertreatment was a fact not completely explained by patient refusal. HIV-infected inmates should benefit from increased attention by health care and social workers.

Keywords

AIDS, prison, antiretroviral therapy, psychosocial deprivation, substance-related disorders

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Introduction

The inmate population concentrates vulnerable populations, regarding socioeconomic and life trajectory indicators. Thus, most inmates are young men, with an overrepresentation of low educational levels, low-skilled occupations, and foreigners.^{1,2} This social vulnerability is linked with a high prevalence of infectious diseases and mental health disorders.^{3–5} In some regions, HIV prevalence may be 6–50 times higher in correctional facilities than in the general adult population.⁶ Among inmates, HIV prevalence of up to 10% have been reported in 20 countries in Central Asia, Africa, Eastern Europe (Estonia, Romania, Slovakia, Lithuania, Ukraine), South America (12.5–17% in Brazil), or in the Caribbean (8–25% in Cuba).⁶ In France, the PREVACAR survey (2010) estimated

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that 2.0% of inmates were infected with HIV (CI: 0.9–4.2), which was about six times the national prevalence.⁷

Although HIV-infected inmates have been described as a vulnerable population,⁸ only a few studies specifically focused on the vulnerability profile of HIV-positive inmates.^{9–11}

French Guiana, a territory of 250,000 inhabitants located in South America, is the French territory with the highest HIV prevalence. With approximately 4% of HIV infection among detainees, it can be estimated that the prevalence is 3–4 times that of the general adult population in the region.¹² The French Guiana penitentiary center includes a prison for men (sentenced for longer than two years), a jail for men (awaiting trial or sentenced for a duration shorter than two years), and another jail for women. Medical care is provided on site, at the outpatient care department, by general practitioners. Between 2007 and 2013, an infectious disease specialist was offering consultations for HIV care three half-days a month. [AQ2] After release, people living with HIV (PLHIV) are referred to one of the public sector specialized outpatient unit or more rarely to a general practitioner. The professionals in charge of HIV follow-up have access to an electronic medical record (NADIS), which is shared across French Guiana.

We have recently shown the great vulnerability of detainees in French Guiana in terms of mental health^{13,14} and the high mortality of HIV-infected inmates after release from incarceration.¹⁵

In this context, the aim of this study was to describe the population of PLHIV incarcerated in French Guiana, notably its psychosocial vulnerability factors, access to antiretroviral therapy (ART), and treatment outcomes. A secondary objective aimed to identify its main specificities, relative to both the general inmate population of the same correctional facility and the nonincarcerated HIV-infected population of the closest hospital.

Methods

Study population

We conducted a cross-sectional study. The study population was the participants of the DAI-HIV retrospective cohort.¹⁶ The primary objective of the DAI-HIV study was to determine the prognosis and the medical follow-up of PLHIV released from the French Guiana correctional facility between 2007 and 2013. All adult patients (≥ 18 years) released from the French Guiana correctional facility between 1 January 2007 and 31 December 2013, after incarcerations of more than 30 days, were included in the DAI-HIV study ($n = 147$).

The main source of data was the electronic medical record NADIS, used for HIV follow-up at the regional level. Patients were asked to sign a consent form before their data were included in NADIS. Additional data were collected from paper medical files used for routine medical care in the correctional facility and the registries of the three hospitals of French Guiana. Data were recorded manually, by a medical doctor, with respect of confidentiality. The study protocol was approved by the Ethics Committee of Cayenne Hospital and declared to the Commission Nationale de l'Informatique et des Libertés, under the number 1975083v0.

The variables of interest were factors associated with vulnerability of PLHIV in previous publications:^{8,17–24} sociodemographic data (gender, age, migration, educational level), recidivism, homelessness, addictions, notably crack cocaine, a suspected driver of the HIV infection that is very frequent in French Guiana and leads to psychosocial isolation.^{25–27} Other health problems were also reported. Regarding HIV infection, the CDC stage, previous ART prescriptions, and immunovirological results (CD4 cell count, HIV viral load, which are usually used for the evaluation of HIV treatment²⁸) were collected. HIV sexual risks and health insurance coverage on admission, which are often reported in studies on HIV among inmates, were not recorded in the DAI-VIH study.

Other data mobilized

To contrast the result of this specific population, comparisons were made with the general inmate population, and with the population of HIV-infected patients followed in the closest outpatient unit, in Cayenne hospital. The sources of data mobilized for comparative analyses were as follows:

- For the population of PLHIV followed in hospital: the VESPA2 population (2011), restricted to patients of French Guiana.^{29,30}
- For the population of inmates: the correctional facility medical unit activity report¹² and the KAP survey performed among detainees, in 2015.³¹

The VESPA2 study is a cross-sectional survey, designed to describe the characteristics of PLHIV followed in the French territories. Eligible patients were at least 18 years old and HIV1 infected. For the French Guiana substudy, they were followed in the territory for at least six months. Only patients from the main hospital (Cayenne Hospital) were included in the French Guiana VESPA2 substudy, which accounted for about 60–65% of the PLHIV followed in the territory. After randomization, patients were interviewed face to face, using standardized questionnaires.²⁹

The KAP survey ‘Knowledge, attitudes and practices towards HIV and STDs among the prisoners, in French Guiana’ is a cross-sectional survey, performed in the French Guiana Correctional facility. It documented the socioeconomic profile of inmates and identified the level of knowledge and risks of HIV transmission. After randomization, 236 detainees were interviewed (78.7% of the randomized sample), by standardized questionnaires administered face to face, available in five languages.³¹

We performed descriptive analysis, with Stata Software. Pearson’s Chi square test was used for statistical analyses, to compare the proportions between the different subpopulation, after verifying that the test conditions were met. **AQ3**

Results

The DAI-VIH population

Most inmates of the DAI-HIV study were newly diagnosed with HIV while incarcerated (56.5%). The difference was significant between inmates born in France (43.5%) and migrants (62.4%), $p = 0.03$.

At the time of index incarceration (the last of the inclusion period), most patients had an early stage HIV infection: 78.1% CDC-A, 4.8% B-stage, and 17.1% C-stage. On admission, the median CD4 cell count result was 397 CD4/mm³, and 78.2% had a CD4 nadir <500/mm among the documented observations ($n = 133$).

On discharge 50.3% of the patients were on ART, compared to 29.9% on admission ($p < 0.01$). Among those not on ART, 15.1% ($n = 11$) had refused to take treatment, accounting for 7.5% of the total study population.

Comparison of populations

As shown in Table 1, the characteristics of the DAI-VIH population seemed to differ from the PLHIV met in Cayenne hospital (VESPA2) and from the global population of detainees (KAP survey and UCSA activity report).

Indeed, the frequency of psychosocial vulnerability indicators was high among HIV-infected inmates, compared to the global population of detainees: a higher proportion were migrants (69.4% versus 58.9%, $p = 0.04$), never attended school (58.1% versus 5.5%, $p < 0.01$), were homeless or living in squats (31.0% versus 8.5%, $p < 0.01$), were repeat offenders (63.9% versus 46.6%, $p < 0.01$), were addicted to crack (33.3% versus 9.8–12.0%, $p < 0.01$).

Besides that, 25.8% of the DAI-VIH population had a history of psychiatric disease, and 8.8% were

diagnosed as psychotic. None were intravenous drug users, an unusual behavior in French Guiana.

Except for asthma, the prevalence of comorbidities seemed to be higher among HIV-positive inmates than in the general inmate population. Nevertheless, compared with the HIV-positive population followed in hospital care, the prevalence of B and C hepatitis, diabetes mellitus, and hypertension seemed to be similar.

Discussion

Between 4.5 and 5.0% of the PLHIV living in French Guiana experienced one or more incarceration during the period 2007–2013 (according to regional surveillance agency, approximately 3500 HIV-positive people lived in French Guiana at the end of 2014). In the USA, about 20% of PLHIV had been incarcerated in 1997 and 14% in 2009.³²

Indeed, the doctrine ‘zero tolerance’ has spread in Europe from the United States since the 1990s. The expansion of this punitive trend has led to an increase in the detainee population, affecting mainly the poorest and marginalized populations. In France, the inmate population increased by 39% between 1983 and 1997.³³ Risk factors for incarceration¹ are overrepresented among PLHIV: drug addiction, homelessness,³⁴ unemployment,³⁵ and poverty.³⁶

Although the comparison of different proportions from different datasets must be taken with caution, they are useful to look for major patterns in the data. Our results (Table 1) suggest that HIV-positive inmates incarcerated in French Guiana have the same frequency of comorbidities than those observed among the PLHIV followed in the main hospital, with more frequent psychosocial vulnerability factors than those observed among the general inmate population: lack of education, history of migration, multiple incarcerations, homelessness, crack cocaine addiction.

Nevertheless, incarceration was an opportunity to screen and initiate ART, particularly for migrants and other disenfranchised populations with limited access to care. Most of the latter discover their HIV-positive status during incarceration, unlike their French-born counterpart.

As reported in the United States, routine HIV testing in correctional facility is a key intervention to diagnose HIV infections at early stages.³⁷

Unlike in North American studies, we were not able to report race, or ethnicity, which is forbidden by French law. Nevertheless, our study highlighted that most HIV-positive inmates belonged to a minority, as this was reported in a large North American survey.⁸ The proportion of migrants (69.4%) seemed higher than in the general inmate population. Surprisingly, some geographical origins were disproportionately

Table 1. Comparison of the DAI-HIV population, with the French Guiana inmate population, and with the HIV-positive population followed in Cayenne hospital.

	PLHIV inmates DAI-VIH (2007–2013) N=147	Inmates KAP survey (2015) N=236		Inmates UCSA report (2014) N=1548		PLHIV, hospital care VESPA 2 (2011) N=136	
Gender (%)							
Male	82.3	93.6				39.6	
Female	17.7	6.4	p < 0.01			60.4	p < 0.01
Median age (IQR)	37 (31–44)	29 (24–39)				43 (35–54)	
Never attended school (%)	58.1	5.5	p < 0.01				
Homeless (%)	31.0	8.5	p < 0.01				
Repeat offenders (%)	63.9	46.6	p < 0.01				
Country of birth (%)							
France	30.6	41.1	p = 0.04				
Guyana	39.5	17.0	p < 0.01				
Brazil	10.2	13.1	NS				
Suriname	14.9	19.9	NS				
Haiti	1.4	4.2	NS				
Other	3.5	4.7	NS				
Addiction (%)							
Crack	33.3	12.0	p < 0.01	9.8	p < 0.01	6.2	p < 0.01
Cannabis	44.2	59.4	p < 0.01	38.9	NS	8.3	p < 0.01
Comorbidity (%)							
HBs Ag +	8.1			4.1	p = 0.02	10.1	NS
HTLVI	4.7			1.0	p < 0.01		
HCV	4.1					2.9	NS
Hypertension	10.9			4.3	p < 0.01	14.7	NS
Diabetes	4.8			1.2	p < 0.01	5.3	NS
Asthma	3.4			2.4	NS		
Epilepsy	2.7			0.7	p = 0.01		
CD4 cell count < 200/mm ³ , all patients	14.3 ^a					13.9	NS
On ART, all patients	50.3 ^a					92.5	p < 0.01
VL < 50 cp/ml, on ART	83.1 ^a					56.6	p < 0.01
VL < 50 cp/ml, all patients	41.5 ^a					52.3	NS

ART: antiretroviral therapy; DAI-HIV: ■; HCV: hepatitis C virus; HTLVI: ■; IQR: interquartile range; NS: not significant, p > 0.05; PLHIV: people living with HIV; VL: viral load. **AQ111**

^aLast measure before release from incarceration.

represented among HIV-positive migrant detainees, compared to the general inmate population and to the HIV-positive patients followed in the hospital. Most HIV-positive inmates were born in Guyana (formerly known as British Guiana), while this subgroup was underrepresented among the general population of inmates and among PLHIV followed in the hospital. Conversely, patients born in Haiti were a minority among the HIV-positive inmates, but were overrepresented among HIV-positive patients followed in the hospital (37.7% of cohort in the Cayenne Hospital Day Care Unit, where the majority of PLHIV is followed in French Guyana³⁸).

As reported elsewhere,³⁹ the virological outcomes of the HIV-positive inmates on ART were excellent, even surpassing those in the hospital-based population.

Nevertheless, the proportion of inmates on ART in the DAI-VIH population remains low: only 50.3% were treated versus 92.6% in the hospital cohort (p < 0.001). Before the release of the September 2013 French National recommendations, patients were eligible for ART if CD4 cell count was below 500/mm³.²⁸ Considering the CD4 cell count nadir, at least 70% of the HIV-positive inmates should have been treated, which is far below the observed proportion. Unmet needs for ART in correctional facilities have been previously reported in the U.S., despite the legal obligation to provide ART to any eligible inmates.⁴⁰ The situation may be even worse in U.S. jails, where the length of stay is shorter than in prison.⁴¹ In a North American survey published in 2012, only 21% (12/58) of the newly diagnosed patients started ART before release,

presumably because most of the newly diagnosed inmates were released before a pretreatment evaluation could be completed (approximately 50% of the jail detainees were released within two days).³⁷ In our survey, HIV-positive inmates incarcerated for less than one month were excluded, therefore the above explanation does not explain low rates of treatment.

We suspect that our unmet needs may be related to the reluctance of the physician to start ART in correctional facility, assuming that the most psychosocially vulnerable patients would quickly stop the treatment after release. In addition, a significant proportion of patients refused to start ART while incarcerated: around 15% of the untreated patients in the DAI-VIH population. In our experience, this was often correlated with severe psychiatric disorders or with concerns that their HIV status would be revealed. ART refusal among inmates has been already reported in an Italian survey, where it was the main explanation for the unmet need of ART.⁴² Nevertheless, to our knowledge, this phenomenon was not documented in other quantitative surveys and may justify further research, as this may partly explain the suboptimal prescription of ART in correctional facilities.

Our study has important limitations, and the results should be taken with caution. Comparisons with the general inmate population and with nonincarcerated HIV patients were useful to contrast the different profiles. However, these comparisons are weakened by biases: the dates of the studies, inclusion process, and data collection were different between the compared populations. Moreover, the VESPA2 population included only patients in Cayenne hospital (accounting for 60–65% of the PLHIV followed in French Guiana), which may not reflect the whole PLHIV population living in the territory. Hospital-based population was more likely to have symptomatic disease, compared to HIV-positive inmates, generally asymptomatic and diagnosed with good CD4 cell count. Due to the retrospective data collection of the DAI-VIH study, we were not able to report data such as HIV acquisition risk, health insurance coverage, marital status, income, which have been reported in other surveys.^{8,18,21,23,24}

Despite these caveats, our study is original. We show the very precarious psychosocial profile of HIV-infected inmates, which is strikingly different from other comparison groups. These observations are in line with our clinical impression: hospital-based and incarcerated population of PLHIV significantly differ in psychosocial determinants and comorbidities; in addition, HIV-positive inmates seemed more vulnerable than the other inmates, which would justify special attention.

Considering these vulnerabilities, HIV-positive inmates face major challenges beyond detention: to maintain ART, avoid reincarceration, and stay alive.

Indeed, we have recently described a very high post-incarceration mortality rate among males released from the French Guiana correctional facility, almost 15 times that of the general male population of the region.¹⁵

This study is an addition to the study of health problems in prison in French Guiana,^{13–15} a territory that has one of the highest incarceration rates in South America and a high HIV prevalence.²⁶ It emphasizes the particularly great psychosocial vulnerability of HIV-infected persons in this context, information that may be useful for neighboring countries, and for advocating for funds to alleviate this vulnerability.

Conclusion

A significant proportion of the HIV-infected persons living in French Guiana experiences incarceration. HIV-positive inmates may share the comorbidities of the other PLHIV, with the addition of more frequent psychosocial vulnerabilities than among the general inmate population.

Despite ART availability, and excellent virological outcomes while incarcerated, unmet needs for ART were a relevant phenomenon, not completely explained by patient refusal.

Nevertheless, incarceration should be considered as an opportunity to reach minorities and high-risk population with poor access to health care.

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