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Articoli originali

Original articles

Adherence to antiretroviral therapy among HIV-infected prisoners

Aderenza alla terapia antiretrovirale in pazienti detenuti con infezione da HIV

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INTRODUCTION

The successful management of HIV infection requires, among others, patient adherence to the dosage regimen and administration guidelines of antiretroviral agents, as well as consistent patient follow-up by the attending physicians.
Treatment adherence comprises a major prerequisite for the success of a therapeutic regimen that aims at improving the clinical and laboratory markers of HIV infection and their maintenance at a satisfactory level.
The term "adherence" signifies, according to the literature, patient compliance in receiving the pharmaceutical agents. In addition, poor compliance is usually accompanied by failure to abide by medical instructions, i.e., missed scheduled appointments for clinical and laboratory testing etc.
Treatment adherence, as a result of a holistic approach and behavior from the patient's side, is influenced by a multitude of factors which relate to the patient's demographics, socioeconomic status, cultural framework, as well as to conditions and trends effective at the time.
Consequently, treatment adherence of inmates with HIV infection is a matter of high scientific interest, since incarceration may potentially have an impact on the individual's behavior.
The aim of the study was the evaluation of treatment adherence of incarcerated patients with HIV and the identification of any possible factors that influence it.
A matter of particular interest was the study of the extent the custodial penalty influences the regular use of medications and hence the natural progress of the disease.

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PATIENTS AND METHODS

A total of 93 patients (84 males, 9 females) with HIV infection who served their sentence in prison were included in the study. The patients were either already followed-up in "A. Sygros" Hospital, (Athens, Greece) or continued their follow-up at the same hospital after their release from prison (Table 1).
The patients' mean age was 37.45±8.54 years (range 25-68 years, median=36). The incarceration period varied widely, ranging from a sentence of few months to life imprisonment. A large number of inmates (28/93, 30.1%) were recidivists, spending more than one periods in prison. The evaluation of adherence was based on data collected from patient interviews by the attending physicians, on the clinical progress of disease and the results of the laboratory tests. The latter include CD4 lymphocyte count, HIV-RNA load and the determination of the genotypic resistance. The study covers a ten year period from 2001 to 2011.

Table 1 - Sample characteristics.

N=93	*Total*	*Homosexuals*	*IDUs**	*IDUs & Homosexuals*	*Heterosexuals*	*IHPC***
Greek men	51	20	15	14	2	-
Greek women	6	-	6	-	-	-
Foreign men	33	3	8	7		15
Foreign women	3	-	1	-		2
TOTAL	93	23	30	21	2	17

*IDUs = Intravenous Drug Users. **IHPC = Inmates from High Prevalence Countries.

RESULTS

Treatment adherence during incarceration was evaluated as satisfactory (medication intake according to regimen >95%) in 41 out of 93 patients (44%) and as non satisfactory (frequent discontinuation of treatment or missed doses) in 25 patients (26.9%).

A large number of patients (27/93, 29%) showed indifference, dilatoriness or complete refusal of any short of treatment, against the attending physician's recommendations. Overall, 52 patients (56%) held a negative stance regarding treatment, signified by poor compliance or sublation.

Similar results were obtained for the periods of time the patients spent out of prison, with the exception being two patients with satisfactory adherence during incarceration, followed by bad compliance post release and one patient who was non-compliant during imprisonment and became adherent as a free person, following clinical deterioration (development of Kaposi sarcoma).

Three patients served life sentence, therefore no data were collected regarding the period spent out of prison.

The rest of patients (87/93, 93.5%) showed a uniform attitude towards treatment.

The dilatoriness in commencing therapy was expressed with repeated excuses from the patient's side, such as the expectance of their hearing at first instance or on appeal, the expectance of the five-day leave, vague abdominal or other symptoms etc.

Poor adherence was attributed by the patients to different causes, such as the low quality of food provided, the tablets being lost, the emotional burden, the adverse effects etc. A common cause of therapy discontinuation was the collective protests, usually in the form of hunger strikes, for several demands. From the patients that refused treatment or showed poor compliance, 7 invoked an article of the criminal code, based on which they aimed at release from prison on grounds of health deterioration and progression to AIDS. Of the 7 patients who were finally discharged from prison based on this article, 6 did not show substantial improvement in adherence.

Treatment adherence was related to the country of origin.

Among Greek inmates (N=57), 17 showed satisfactory adherence (28%), while among foreign inmates (N=36) the corresponding number of patients was 24 (61%). The difference was statistically significant (p=0.0006, 95% CI 0.086-0.52).

A significant correlation was also observed with age. Specifically, inmates below the age of 40 had a much lower treatment adherence rate (21/61, 34.4%), compared to those above 40 (20/32, 62.5%) (p=0.015, 95% CI 0.13-0.76).

No differences related to the gender of patients or the severity of their penalty were observed.

In respect to the source of infection, there was no difference in adherence between homosexual men (satisfactory 8/23, 34.8%), intravenous drug users (12/30, 40%) and those with both characteristics (8/21, 38%).

Nevertheless, 76.4% (13/17) of the heterosexuals coming from high prevalence countries (Africa) showed satisfactory adherence.

The disease outcome was a function of the inadequate follow-up of patients and the inappropriate medication intake.

Among the 52 patients with non satisfactory adherence a total of 16 deaths (three from drug overdose and the rest from the disease itself) and 13 cases of clear clinical deterioration were recorded. From the 41 compliant patients only one died from drug overdose.

DISCUSSION

Treatment adherence is an issue of vital importance in modern, combined antiretroviral therapy (Highly Active Antiretroviral Treatment, HAART). It reflects the patient's perception and attitude towards the disease and the treating physicians and depends on multiple variables which may potentially play a determinant role [1]. The ratio of adherence to non adherence has been associated in studies with age, source of infection, level of education and socioeconomic status, family support, psychological support, alcohol or substance abuse, depression, social isolation and stigmatization [2-5].

In particular, treatment adherence is inadequate among HIV infected inmates [6]. The extent, however, to which incarceration has an impact on adherence level is an ambiguous issue and the relevant studies do not unanimously share the same conclusions.

For individuals with infringing behavior, the usage of health care services is inadequate and consistency on follow up and medication intake is insufficient, mostly before incarceration, rather than following incarceration [7-9].

Both the fact of imprisonment and the living conditions in the stressful environment of the correctional facility potentially have a negative impact.

The probable deterioration of depression, stigmatization, the lack of trust to prison services, as well as the consideration of therapy as leverage for various claims negatively influence treatment adherence [4, 6, 7]. According to many investigators, a sentence leading to deprivation of liberty within the first 12 months of HAART initiation is a factor that adversely affects adherence, despite the fact that this observation was recorded mainly among intravenous drug users [6, 10]. Furthermore, the study of Geriffin et al. showed significant difference in the rate of CD4 lymphocyte count decline in incarcerated inmates compared to an outpatient population [11].

Yet, other investigators report deterioration, mainly after the release of HIV-infected individuals, in terms of both CD4 lymphocyte count and HIV-RNA load as compared to corresponding values obtained during imprisonment.

According to Springer et al., during incarceration of patients who have served multiple sentences due to recidivism, CD4 lymphocyte count increased by 74 cells/ml and viral load decreased by 0,93 $\log_{10}$ [12]. In addition, upon re-incarceration it was observed that the CD4 lymphocyte count decreased by 80 cells/ml and the viral load increased by 1,14 $\log_{10}$. In a study by Stehpenson et al., also conducted in incarcerated recidivists, the mean increase in viral load levels during release from prison was 1,29 $\log_{10}$ and the percentage of patients with non-detectable viral load (<400 copies/ml) had decreased dramatically [13]. The study of Palepu et al. revealed similar findings which lead to the conclusion that the longer the sentence, the higher the probability of successful virological suppression [10].

Finally, Seal DW, in a meta-analysis of 50 studies that were published between 2004 and 2005, concluded that release from prison has detrimental effects on the course of the disease [14].

Outside prison, infringing behavior, chaotic lifestyle, self-destructive notions and attitudes and intravenous drug usage lead to limited contact with the health care system [9].

The access of health care services is further limited by the deficits of psychological support and social reintegration infrastructure, the lack of home surrounding, stigmatization and isolation.

Especially for the intravenous drug users, who usually suffer from HIV - hepatitis co-infections, imprisonment may be the only opportunity to deal with their health problems [15].

In the present study a low cooperation level of patients with the health care services and a low level of adherence to treatment were noted, since the percentage of compliant patients was only 44%.

However, adherence was not particularly influenced by incarceration, given that release from prison did not contribute to improvement, even when the discharge was due to severe clinical and laboratory deterioration. It is obvious that the causes leading to infringing behavior, which resulted in incarceration, also contribute in the poor cooperation with the attending physicians, both inside and outside the correctional facility.

The article of the penal law for release from prison due to health deterioration was used as an excuse for denying therapy. In reality though, it served only as a pretense and not as a real motive of non adherence, since none of the patients who plead the aforementioned article, changed attitude towards treatment following the interruption of their detention.

The dramatic outcome of the disease in many

patients with poor adherence, especially nowadays that the possibilities of HAART are continuously evolving, underlines the necessity of revising the supportive infrastructures and services, both during incarceration and primarily outside prison [16].
Moreover, as adherence to therapy probably leads to lower health care costs, the effort to improve patient compliance is essential in the era of economic crisis [17].

Keywords: HIV, antiretroviral therapy, adherence, jail.

Conflict of interest
There is no conflict of interest.

SUMMARY

Adherence, the act of following a course of medication in exactly the manner prescribed, is critical for the success of therapy. Adherence is influenced by many behavioural and social factors and incarceration might be one such factor. This study determined the level of adherence and reasons for non-adherence to antiretroviral therapy among 93 HIV-infected prisoners. Up to 56% of these patients had poor adherence. A similar rate of adherence was detected in prisoners after release. Problems with antiretroviral adherence among prisoners appear to be mostly linked to their deviant behaviour. Inmates with poor adherence had higher HIV-related morbidity and mortality. Age and country of origin were also associated to adherence.

RIASSUNTO

L'aderenza alla terapia, che consiste nell'accettare e seguire appieno la terapia prescritta, è un elemento fondamentale per il raggiungimento del risultato clinico desiderato. L'aderenza terapeutica è influenzata da numerosi fattori comportamentali e sociali tra i quali è possibile includere anche il regime di detenzione. Nel presente studio abbiamo determinato il grado di aderenza, e i motivi della non aderenza, alla terapia antiretrovirale in un gruppo di 93 pazienti detenuti con infezione da HIV. Una scarsa aderenza alla terapia è stata riscontrata nel 56% dei casi. Un valore simile è stato osservato quando l'aderenza terapeutica è stata valutata successivamente alla scarcerazione.
I problemi ad aderire alla terapia antiretrovirale in questa particolare categoria di pazienti sembra essere collegata principalmente al loro comportamento deviante. La morbilità e la mortalità HIV-correlate sono risultate più elevate nei detenuti con scarso livello di aderenza terapeutica. L'età e il paese di provenienza dei pazienti sono risultati anch'essi fattori associati all'aderenza alla terapia.

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