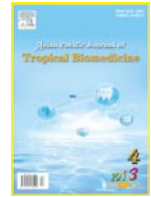




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Prevalence survey of infection with *Treponema pallidum* among HIV-positive patients in TehranBanafsheh Moradmand Badie¹, Zeinab Yavari¹, Shooka Esmaeeli^{1,2}, Koosha Paydary^{1,2*}, Sahra Emamzadeh-Fard^{1,2}, SeyedAhmad SeyedAlinaghi¹, Mehraz Rasoulinejad¹¹Iranian Research Center for HIV/AIDS, Tehran University of Medical Sciences, Tehran, Iran²Students' Scientific Research Center (SSRC), Tehran University of Medical Sciences, Tehran, Iran

PEER REVIEW

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Comments

This is a good study in which the authors evaluated the co infection of HIV and *Treponema pallidum* which is extending. Although there are some differences between this study and previous results which may be because of the different epidemiological characteristics of the populations. The results are interesting and suggest that there is a need for VDRL testing for all known cases of AIDS.

(Details on Page 336)

ABSTRACT

Objective: To identify the frequency of syphilis among Iranian HIV-positive patients. **Methods:** A cross-sectional study on the prevalence of syphilis and HIV co-infection among 450 patients diagnosed with HIV infection was conducted between 2004 and 2008 at Imam Khomeini hospital, Tehran, Iran. The lab tests including CD4 cell count, cerebrospinal fluid, venereal disease research laboratory (VDRL), fluorescent treponema antibody-absorption (FTA-Abs) and viral load were performed for all the patients. Data regarding medical history and their demographics were also collected. **Results:** Of all 450 HIV-positive patients, 24 (5.3%) had a positive VDRL test and only two men had a FTA-Abs positive test which means 0.45% of them had a definite co-infection of syphilis. 65.3% of the HIV-positive patients were injection drug users that the co-infection prevalence of them was 0.7%. We did not find any patient with neurosyphilis. **Conclusions:** Considering the increasing prevalence of HIV and also extensive use of highly active antiretroviral therapy in developing nations, the diagnosis of syphilis should be timely established using screening tests among such patients.

KEYWORDS

Syphilis, HIV/AIDS, Co-infection

1. Introduction

Human immunodeficiency virus (HIV) and *Treponema pallidum*—the causative agent of syphilis—can coinfect the same host, because their risk factors are the same and they are transmitted sexually[1]. By the end 2007, 33 million people were infected by HIV and meanwhile, syphilis is still one of the major causes of death in some developing countries where HIV infection is also prevalent[1,2].

Syphilis ulcers can facilitate the transmission of HIV,

decrease CD4 levels and increase viral load among HIV infected patients. On the other hand, HIV infection increases the risk of neurosyphilis[3]. It may alter syphilis's clinical features and its treatment outcomes and it might be related with syphilis treatment failure, especially if neurosyphilis had a delayed diagnosis[4]. In addition, syphilis can mimic various clinical expressions and cause severe cardiovascular and neurological problems among the HIV infected patients[5].

Despite the extended use of penicillin and the subsequent

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decline of syphilis prevalence after 1940s, this infection reappeared among patients who were infected with HIV in 1980s[6]. At that time, studies reported syphilis presenting in unusual ways or not responding to the available therapies[1,5].

Considering the extending prevalence of HIV infection and syphilis, we conducted this study to identify the frequency of syphilis among Iranian HIV-positive patients.

2. Materials and methods

In this cross-sectional study, we included 450 patients diagnosed with HIV infection between 2004 and 2008 at Imam Khomeini Hospital, Tehran, Iran. Our institutional review board at Tehran University of Medical Sciences reviewed and approved the study protocol. The patients' profiles were reviewed to obtain data such as sex, age, marital status, CD4 cell counts and status of diagnosis of syphilis and whether patients had received syphilis treatment. We also reviewed neurological symptoms (*e.g.* photophobia, cranial nerve abnormalities and focal neurologic deficits), the time of HIV diagnosis, HIV transmission routes and sexual behavior.

The diagnosis of HIV was confirmed by western blot (W. Neal Brunette). CD4 and CD8 cell counts were measured using Cytomic FC500 system (Beckman Coulter, Miami; USA). Cerebrospinal fluid, venereal disease research laboratory (VDRL) test was performed by using BD VDRL antigen (Becton Dickinson, USA) and fluorescent treponema antibody-absorption (FTA-Abs) was performed for VDRL-positive patients to confirm diagnosis of syphilis.

The profile description of the parameters was reported by using standard deviation (SD), mean, frequency and percentage. Categorical data were analyzed by the *Chi*-square test. All the statistical calculations were performed using the Statistical Package for the Social Sciences (SPSS) for Windows (version 12.0; Chicago, IL, USA).

3. Results

Among a total of 450 HIV positive patients, 356 were men (79.1%) and 94 were women (20.9%). Their mean age was 36.3 years, the mean CD4 count was 265.6 cells/mL and the mean time of recognizing their HIV infection was 9.4 months. Of all 450 patients, 188 were not married (41.8%), 180 were married (40.5%), 15 were widowed (3.6%) and 66 were divorced (14.7%).

Of all 450 HIV-positive patients, 24 (5.3%) had a positive VDRL test and just two of them had a FTA-Abs positive test which means 0.45% of them had a definite co-infection of syphilis. As presented in Table 1, 65.3% of the HIV-positive patients were injection drug users (IDU) and two of these IDUs were FTA-Abs positive (0.7%), but there was no FTA-Abs positive patient among the sexually infected, mother to child transmitted and blood transfused groups. In this

study, we did not identify any patients with neurosyphilis. Of all VDRL-positive patients, all of them had received azithromycin and all of the FTA-positive patients were taking benzathyl penicillin as the standard therapy.

Table 1

HIV transmission routes among study population.

Transmission routes	Number of the HIV-positive patients (%)
Injection drug use	294 (65.3)
Sexually transmission	110 (24.4)
Blood transfusion	10 (2.2)
Mother to child	4 (0.9)
Unknown	32 (7.2)

4. Discussion

In our study, 0.45% of HIV patients had a positive FTA-Abs test. In our analysis, the prevalence of HIV-syphilis co-infection was lower than those reported in other studies. For example, Kyriaks and Rodrigues reported the prevalence of syphilis to be present among 7.8% and 8.8% of HIV patients respectively[7,8]. Such observed differences in prevalence rates are due to different epidemiology of the infections in each study population as well as diversity of attitudes and knowledge about sexually transmitted infections (STI) and AIDS. Furthermore, our patients might have acquired enough knowledge about such diseases over the years of outpatient treatment.

The differences between the genders as observed in the analysis corroborates the results of Kyriaks *et al*[7]. Their finding was related to the fact that men who have sex with men had the most exposure to syphilis. However, we speculate that the reason of active syphilis among patients with long-term AIDS medical care could be the highly active antiretroviral therapy (HAART), which has increased patients' survival and also improve their quality of life, to help the patients resume their normal routines of life, including sexual activities[9,10].

One limitation of this study is that we were not able to accurately assess the presence of other STIs among our patients. In addition, we were not able to obtain the detailed drug history for all of the 450 patients.

Considering that syphilis is still a prevalent infection in some developing countries and HIV infection is also expanding among such nations, in addition to the faster and more severe progress of HIV infection in co-infected patients, the timely diagnosis of syphilis/HIV co-infection would be of utmost importance. Considering that IDU has mainly fueled the HIV prevalence in Iran, the practice of risky sexual behaviors among IDUs and also the increasing prevalence of sexually contracted infections should also be taken into account in this regard. Moreover, the introduction and extensive use of HAART has resulted in increased survival of patients and their practice of unprotected sex

especially in developing nations. Thus, in order to establish an early diagnosis of this co-infection, a complete screening by VDRL test is recommended for all HIV-positive patients.

Conflict of interest statement

We declare that we have no conflict of interest.

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Comments

Background

Recently, co-infection of HIV and *T. pallidum* is extending in the developing world. On the other hand, the prevalence of HIV itself is increasing as well, which leads this co-infection become more prevalent. It is noteworthy that for an immune-compromised patient, struggling with another infection could be very important in terms of clinical response to the medications and also transmissibility of the infections. The literature report many complications because of these concomitant infections in this regard.

Research frontiers

From my viewpoint, evaluating the presence of co-infections (any type, e.g. HBV, HCV, Treponema) among HIV infected in nations where the epidemiology of HIV/AIDS is somehow shifting is a necessity. In fact, increasing prevalence of HIV could lead to the re-emergence of other STIs and in result, lead to drug resistance and further clinical complications.

Related reports

I believe that it would be better to assess further correlations among the HIV/Treponema co-infected. In addition, evaluating the issue of drug resistance, CD4 level, viral load, other STIs, etc. is of note.

Innovations and breakthroughs

This study has shown a considerable rate of HIV and *Treponema pallidum* co-infection among the injection drug users in Iran. Thereby, preventive strategies for brawling back the co-infection among PLWHA should probably focus on IDUs as the major-at-risk population in Iran.

Applications

If we consider the general epidemiologic features of such patients the same as the general PLWHA, VDRL test should be considered for any HIV infected patient. This issue is more important among naïve patients, since such patients may experience worse clinical responses in the presence of STIs.

Peer review

This is a good study in which the authors evaluated the co infection of HIV and *T. pallidum* which is extending. Although there are some differences between this study and previous results which may be because of the different epidemiological characteristics of the populations. The results are interesting and suggest that there is a need for VDRL testing for all known cases of AIDS.

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