



ABSTRACT

Background: Syphilis and the burden of syphilitic infection have an impact on achieving viral suppression in HIV co-infected patients, particularly in males who have sex with males (MSM). We analyzed viral suppression and demographic characteristics in co-infected MSM patients compared to the non co-infected, in the 550 clinic at the University of Louisville.

Methods: This was a retrospective, case-cohort study. New enrollees to HIV care at the 550 clinic between January 2012 and December 2013 were studied. 25 MSM were found to have syphilis co-infection and compared to 25 MSM without syphilis. Data on race, RPR titers, CD4 and VL at initial visit and 1 year after antiretroviral therapy (ART) and ART regimens were collected. Chi-square and Fisher's exact tests were utilized for analysis

Results: Six of 25 patients (24%) in the co-infected group had a new syphilis infection. 52% of patients in the co-infected group had RPR titers $\geq 1:32$. Seventy-six percent of patients in the control group achieved virologic suppression at 1 year, compared to 52% in the co-infected group ($p=0.073$). There was no correlation between virologic suppression and RPR titers. All patients were on ART.

Conclusions: Our study suggests a trend towards lower virologic suppression rates in MSM patients with syphilis and HIV co-infection. The appropriate diagnosis and treatment of syphilis in the MSM population could lead to better response to ART and lower transmission rates of both diseases. Randomized studies are needed to determine the impact of syphilis and HIV co-infection on viral suppression.

INTRODUCTION

Syphilis infection has been shown to have an impact on achieving appropriate viral suppression in HIV co-infected patients.^{1,2,3} Detectable viral loads, in turn, have an important role in HIV transmission among susceptible populations, in particular in males who have sex with males (MSM).^{4,5} The burden of syphilitic infection, as represented by high Rapid Plasma Reagin (RPR) titers, may also have an effect on viral suppression and immune reconstitution. We sought to analyze viral suppression in HIV and syphilis co-infected MSM patients, when compared to HIV positive MSM controls without syphilis, in the 550 clinic at the University of Louisville, KY. In addition, we describe the demographic characteristics of these populations.

METHODS

Study design and population

This was a retrospective, case-cohort study. New enrollees to HIV care at the 550 clinic at the University of Louisville between January 2012 and December 2013 were studied. Six hundred and twenty new enrollees were identified and 25 MSM were found to have syphilis co-infection. These 25 patients were then compared with 25 MSM HIV-positive, syphilis negative patients, matched by age, who enrolled in care during the same period of time (control group).

METHODS

Study variables

Data on race, RPR titers, number of syphilis reinfections, CD4 and viral load at initial visit and after 1 year of antiretroviral therapy (ART), as well as ART utilized were collected. HIV Virologic suppression was defined as viral load <20 copies/ml at 1 year after initiation of therapy.

Statistical analysis

Relationships between CD4 count, HIV VL, RPR titers and HIV viral suppression were analyzed by using Chi-squared or Fisher's exact tests.

RESULTS

- Six of 25 patients (24%) in the co-infected group were diagnosed with a new syphilis infection upon entry to clinic.
- 52% of patients in the co-infected group had RPR titers higher or equal to 1:32.
- Seventy-six percent of patients in the control group achieved virologic suppression at 1 year, compared to 52% in the co-infected group ($p=0.073$).
- There was no correlation between CD4 < 200 and VL $> 100,000$ with RPR titers $>1:32$.
- All patients were started on ART in both groups
- 44% of patients in the control group were started on NNRTI-based regimens; 40% of patients in the co-infected group were placed on Integrase inhibitor-based regimens.
- Table 1 details the demographic characteristics and relationships between the co-infected and control groups.

Patient characteristics	
HIV and syphilis co-infected patients, n(%) (N=25)	Control group, HIV positive/syphilis negative, n(%) (N=25)
Median age 31.5 years	Median age 31.6 years
Race African-American 15 (60%) Caucasian 10 (40%)	Race African-American 8 (32%) Caucasian 13 (52%) Hispanic 4 (16%)
Sex Male 24 (96%) Transgender Male-to-female 1 (4%)	Sex Male 25 (100%)
New syphilis infection upon enrollment 6 (24%) Number of syphilis reinfections 7 (28%)	
RPR titer $< 1:32$ 12 (48%) $\geq 1:32$ 13 (52%)	
CD4/mm3 on entry to care <200 2 (8%) ≥ 200 23 (92%)	CD4/mm3 on entry to care <200 3 (12%) ≥ 200 22 (88%)
HIV Viral Load (VL), copies/ml on entry to care <20 4 (16%) ≥ 20 21 (84%)	HIV Viral Load (VL), copies/ml on entry to care <20 0 (0%) ≥ 20 25 (100%)
Stage of syphilis infection Early 11 (44%) Late or unknown duration 13 (52%) Neurosyphilis 1 (4%)	
HIV VL (copies/ml) at 1 year after starting ART <20 13 (52%) ≥ 20 12 (48%)	HIV VL (copies/ml) at 1 year after starting ART <20 19 (76%) ≥ 20 6 (24%)
CD4/mm3 at 1 year after starting ART <200 1 (4%) ≥ 200 24 (96%)	CD4/mm3 at 1 year after starting ART <200 1 (4%) ≥ 200 24 (96%)
ART regimen used PI-based 6 (24%) NNRTI-based 8 (32%) INSTI-based 10 (40%) Other 1 (4%)	ART regimen used PI-based 4 (16%) NNRTI-based 11 (44%) INSTI-based 10 (40%)

RPR= Rapid Plasma Reagin; ART= Antiretrovirals; PI= Protease Inhibitor; NNRTI= Non- nucleoside Reverse Transcriptase Inhibitor; INSTI= Integrase Strand Transfer Inhibitor

Table 1. Demographic characteristics and relationships between the co-infected and control groups.

CONCLUSIONS

- Our study suggests a trend towards lower virologic suppression rates in MSM patients with syphilis and HIV co-infection, which is in agreement with published literature.^{1,2,3}
- We did not observe a correlation between high RPR titers and lack of HIV virologic suppression, which has been suggested in some studies.²
- The appropriate diagnosis and treatment of syphilis in the MSM population could lead to better response to ART and lower transmission rates for both diseases.
- Further randomized studies are needed to determine the true impact of syphilis and HIV co-infections on HIV viral suppression.

REFERENCES

- Viral loads among young HIV- infected men with early syphilis. Taylor et al. Journal of the International Association of Providers of AIDS Care 2014, Vol. 13(6) 501-505
- Characteristics and coinfection with syphilis in newly HIV-infected patients at the University Hospital Dresden 1987-2012. Spornraft- Ragaller et al. J Dtsch Dermatol Ges 2014; 12(8): 707- 716.
- Low viral suppression and high HIV diagnosis rate among men who have sex with men with syphilis- Baltimore, Maryland. Cooley et al. Sexually Transmitted Diseases 2015; 42(4): 226-231
- Sexually transmitted infection trends among gay or bisexual men from a clinic-based sentinel surveillance system in British Columbia, Canada. Ling et al. Sexually Transmitted Diseases 2015; 42(3): 153-159.
- HIV and syphilis prevalence among men who have sex with men: a cross sectional survey of 61 cities in China. Wu et al. CID 2013; 57(2): 298-309.