SWISS HIV COHORT STUDY

Association of Unsafe Sex and Increased Incidence of Hepatitis C Infection in HIV infected Men Who Have Sex with Men

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Introduction

There is little data about incidence of infection with hepatitis C virus (HCV) in HIV-1 infected patients. Prevalence of HCV-infection is high in patients who have acquired their HIV-infection by needle- sharing during intravenous drug use (IDU) or by multiple transfusion or blood products.
HCV transmission by unprotected sexual intercourse has been considered to be rare. However, in recent years HCV infection by sexual route has been reported mostly anecdotally, mainly in HIV-infected men who have unprotected sex with men.
We assessed the incidence rate of HCV infection in HIV-infected persons without injection drug use (IDU) of the Swiss HIV Cohort Study (SHCS).

Methods

The Swiss HIV Cohort Study (www.shcs.ch) is a prospective cohort study with ongoing enrolment of adult HIV-infected patients. Patients are followed in one of seven study centres. Information is collected according to standardized criteria on structured forms at enrolment and at follow-up visits at 6 monthly intervals. We used the SHCS data-set of June 2004.
HCV infection in the SHCS dataset: From 1998 on serology for anti-HCV-antibodies was assessed in participants entering the study and, if negative, every two years thereafter. For active participants HCV serology was assessed in stored plasma retrospectively.
In addition to the usual epidemiological variables the following were constructed:
Injection drug use: Patients who reported to have a history of IDU at entry, reported IDU or participation in drug substitution program at least once during follow-up were included in this group.
Unsafe sex: In April 2000 new variables on consistency of condom use in vaginal and anal intercourse with stable or occasional partners were introduced in the SHCS CRF. Participants reporting not always using condoms after during follow-up were included in this group.
Analysis: We assessed the incidence of HCV infection in the Swiss HIV Cohort Study (SHCS) after April 2000. In patients with a presumed heterosexual (HET) or MSM transmission mode of HIV who denied injection drug use the association of HCV seroconversion and gender, age and constancy of condom use was evaluated. Incidences were calculated assuming a Poisson distribution of events. Standard survival analysis methods were used (statistics program Stata version 8SE).

Results

HCV prevalence

In HET and MSM participants without a history of injection drug use the prevalence of HCV infection was 6.1% and 2.6% respectively. The HCV prevalence in MSM participants with a positive syphilis serology at entry was 5%; this was higher than the 2.2% prevalence in TPHA negative MSM participants (p=0.008). No such association was found in HET participants significantly higher prevalence of than those who were TPHA negative (4.4% versus 6.2%, p=0.4.

HCV Incidence

1347 participants with heterosexual (HET) and 1542 with MSM HIV transmission mode were HCV seronegative at entry, did not report injection drug use and had a follow-up in the period of interest (Table 1.)

The proportion of participants reporting unsafe sex was significantly higher in younger individuals than in older ones (p for trend < 0.001 in HET and in MSM). There were 14 HCV sero-conversions in MSM and 8 in HET participants (Table 2). The incidence rate was significantly higher in MSM participants reporting unsafe sex.
This association was also found in the Kaplan Meier survival plot (Figure 1).

There was a significant trend for higher incidence in younger MSM participants (Figure 2).

Table 1: Prevalence of HCV infection

HIV transmission route		unsafe sex
HET N	1347	
Median age years (IQR)	36 (30 – 44)	
Male N	595 (44%)	149 (26%)
Female N	752 (56%)	252 (34%)
MSM N	1542	414 (27%)
Median age years (IQR)	37 (32 – 45)	

Table 2: Incidence rates of HCV infection

Patient group	HCV sero-conversions	Incidence/100 py (95% CI)	Incidence rate ratio (95% CI)	p
HET				
Unsafe sex	4	0.37 (0.10-0.95)	2.35	0.2
Safe sex	4	0.16 (0.04-0.40)	(0.6- 9.4)	
MSM				
Unsafe sex	8	0.70 (0.30-1.4)	3.45	0.02
Safe sex	6	0.20 (0.07-0.43)	(1.21 – 10.04)	

Figure 1

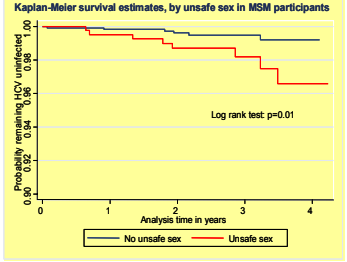
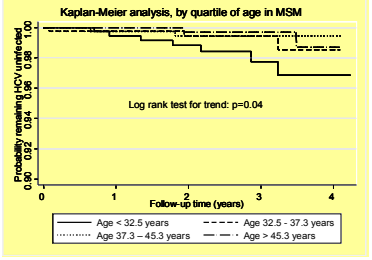


Figure 2



In a Poisson model including age, unsafe sex remained a significant associated with acquisition of HCV in MSM participants but not in HET patients (Table 3)

Table 3: Poisson regression model of incidence

Patient group	Univariate IRR	Mulitvariate IRR	p
HET			
Unsafe sex	2.4 (0.6-9.4)	2.9 (0.7-12)	0.13
Per increased quartile of age	1.7 (0.8-3.4)	1.7 (0.8-3.5)	0.16
Female sex	0.5 (0.1-2.0)	0.6 (0.1-2.6)	0.5
MSM			
Unsafe sex	3.5 (1.2-10)	3.0 (1.04-8.8)	0.04
Per increased quartile of age	0.6 (0.4-0.1.0)	0.6 (0.4-1.1)	0.09

Conclusions

The incidence of HCV infection in HIV-infected persons is low in the absence of injection drug use in the Swiss HIV Cohort Study.

In men who have sex with men self-reported unprotected ano-genital sexual intercourse is associated with a significantly higher risk of aquiring HCV infection.