

Prevalence, risk factors and genotype distribution of HCV infection among patients living with HIV

in North-Eastern Poland

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Introduction

In the recent years, prevalence and incidence of human immunodeficiency virus (HIV) and hepatitis C virus (HCV) in Poland are still rising. Since 1985, to August 30, 2014 the number of confirmed HIV cases reached 18123. Incidence HCV infection was 5.58 per 100000, with notable increase in mortality in 2011. One of the reasons high rate of coinfection HIV/HCV are responsible a common routes of transmission. Highly active antiretroviral treatment (HAART) shifted human immunodeficiency morbidity and mortality to other than HIV infection itself causes. Liver diseases are leading causes of mortality among individuals living with HIV, mainly due to chronic hepatitis C.

Aim of the study was to evaluate the prevalence of HCV infection based on serological (antibody HCV) and molecular (HCV-RNA) tests in a group of patients from one of 17 reference HIV centers, localized in North -Eastern Poland. Genotypes of HCV distribution was evaluated in a group from one of reference centers. Different risk factors related to HCV infection, feasibility and results of HCV therapy was evaluated as well.

Patients and Methods

457 HIV infected adults with available anti-HCV test results, mainly male (76.6%), mean age 38 years, were included to the study from HIV/AIDS Outpatient Clinic of The Medical University of Bialystok Clinical Hospital, in North-Eastern Poland (tab. 1). Data were collected prospectively from 2008 for all newly diagnosed patients and retrospectively for those, who were diagnosed earlier. All patients with anti-HCV positive serology results were included. Hepatitis B was evaluated as well. Clinical and epidemiological data was collected (age, sex, ethnicity, length of HIV infection, route of HIV transmission, history of detention, mental disorders, alcohol abuse, HBs status, nadir CD4 cell counts).

Serological analysis: antibody against HCV and HBs antigen were detected by commercial assays (Architect, Abbott).

Molecular tests: HCV-RNA was analyzed by RT PCR methods (Cobas Ampli Prep and Cobas Taqman, Roche Diagnostics). HCV genotypes were determined using commercial tests (Versant HCV, Bayer Diagn, Germany).

Statistical methods: the data were analyzed with Statistica PL software, applying Mann-Whitney, Fisher and χ^2 tests. In multivariate GML analysis sexual vs ivdu HIV transmission, gender, history of detention, alcohol abuse and age at the moment of analysis and age at HIV diagnosis were included to the analysis.

Results

Anti-HCV antibodies were detected in 325 cases (71.1%). The highest prevalence of anti HCV antibodies was observed among 30-39 years old patients (81.0%) and among 40-49 years old (75.3%), then against among <30 years old - 48.9%, and >50 - 36.9% ($p < 0.05$) (tab. 2). In univariate analysis were found that male sex, younger age at the study moment and at the HIV diagnosis, IVDU route of infection, alcohol abuse, history of detention being the factors associated with higher anti-HCV seroprevalence (tab. 2). In multivariate GLM analysis, comprising all the above factors, IVDU, history of detention and younger age at the moment of HIV diagnosis was associated with higher anti-HCV seropositivity (tab. 2).

HCV-RNA detection and HCV genotypes analysis

HCV-RNA and/or genotyping was performed in 207 patients. Positive test were obtained in 195 cases. 2 from 13 patients HCV seronegative, tested for HCV RNA and/or HCV genotype had positive HCV-RNA result. The HCV genotype analysis ($n=193$) showed genotype 1 predomination - 72 persons (37.3%), followed by genotypes: G3 - 62 cases (32.1%) and G4 in 59 patients (30.6%). No significant differences were detected in PLHIV groups of different ways of HIV transmission.

In multivariate regression analysis:

- IVDU way of HIV infection - OD 125.1; 95% CI 10.75-1453.6,
- incarceration - OD 4.45; 95% CL 1.141-17.39,
- younger age at the HIV diagnosis - OD 0,857; 95% CL 0,749-0.981

were identified as risk factors of HCV infection.

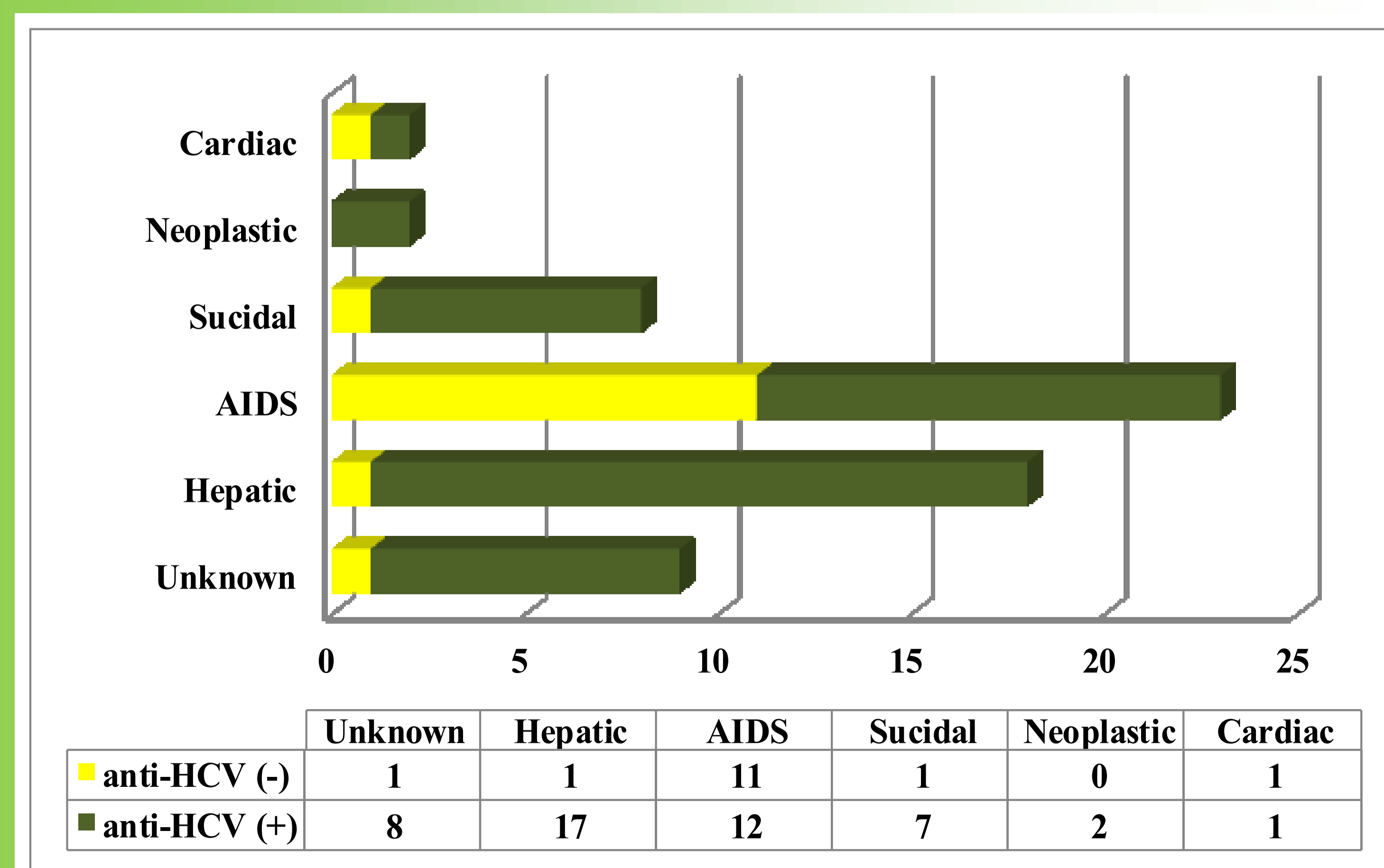


Fig. 1. Causes of death in patients with HIV/HCV coinfection and HIV monoinfection.

Tab. 1. Characteristics of the study group.

	Study group	HIV/HCV coinfection	HIV monoinfection	p*
Number of patients (%)	457	325 (71.1)	132 (29.9)	
Age, years median (range)	38.0 (23 - 72)	37.0 (23 - 57)	41.0 (23-72)	0.04
Gender, male (%)	350 (76.6)	264 (81.2)	86 (65.1)	0.0002
Age at HIV diagnosis median (range)	29.1 (14 - 64)	26.0 (14 - 51)	33.5 (17 - 64)	0.000000
Duration of HIV infection median (range)	10 (0 - 26)	11.3 (1 - 26)	7.0 (0 - 21)	0.000000
Nadir CD4 cells/μl, median (range)	199 (4 - 1176)	199 (4 - 1174)	199.5 (4 - 886)	0.283

p* - chi square test

Tab. 2 Prevalence, co-morbidities and univariate analysis of risk factors for anti-HCV(+) in HIV.

	Study group	HIV/HCV coinfection	HIV monoinfection	p
Age HIV diagnosis (%)				
<20	52	7 (13.5)	45 (86.5)	0.000000
20-29	224	178 (79.5)	46 (20.5)	
30-39	127	87 (68.5)	40 (31.5)	
≥ 40	54	39 (72.2)	15 (13.5)	
Current age groups (%)				
<30	41	20 (48.9)	21 (51.2)	0.000000
30-39	210	170 (81.0)	40 (19.1)	
40-49	154	116 (75.3)	38 (24.7)	
≥ 50	52	19 (36.9)	33 (63.5)	
Sex (%)				
male	350 (76.6)	264 (81.2)	86 (65.1)	0.0002
female	107 (23.4)	61 (18.8)	64 (34.8)	
HIV transmission (%)				
ivdu	264	258 (97.7)	6 (2.3)	0.000000
sexual	151	31 (20.5)	120 (79.5)	
· heterosexual	111	28 (25.3)	83 (62.9)	0.000000
· homosexual	40	3 (7.5)	37 (28.0)	
· iv/heterosexual	21	20 (95.2)	1 (4.8)	
· unknown	21	16 (76.2)	5 (23.8)	
Prisoners (%)				
yes	107	100 (93.5)	7 (6.5)	0.000000
no	345	222 (64.4)	123 (35.7)	
Alcohol abuse (%)				
yes	62	52 (83.9)	10 (16.1)	0.018
no	389	269 (62.2)	120 (30.8)	
Psychiatric disorder (%)				
yes	34	25 (73.5)	9 (26.5)	0.076
no	418	297 (71.1)	121 (29)	

Conclusion

Risk factors among PLHIV in North-Eastern Poland reflect "the old" IVDU way of HCV infection, as well as younger age at HIV infection history of detention. The "wave" of sexual transmission among MSM did not reach north-Eastern Poland and concentrate in Warsaw, the capital and recently occurred in Kraków (personal communication). HIV/HCV coinfection remains an important medical problem in North-Eastern Poland, requiring relevant attention and preventive and curative actions to be taken.