Seroprevalence of HEV among PLHIV in South Western France and Risk Factors of Transmission

Corresponding author:
Marc-Olivier Vareil
Service des Maladies Infectieuses
Centre Hospitlaier de la Côte Basque
13 av. Interne J. Loeb
64109 Bayonne Cedex
movareil@ch-cotebasque.fr

Vareil MO[1], Florence Abravanel[2], Anne-Christine Jaouen[1], Sébastien Lhomme[2], Sophie Farbos[1], David Leyssene[1], Heidi Wille[1], Jacques Izopet[2]

[1]Centre Hospitalier de la Côte Basque, Bayonne, France, [2]Toulouse University Hospital, Toulouse, France

Poster 627

Background

Hepatitis E virus is a common fecal-oral transmitted virus highly prevalent in southern France. The prevalence and infection's route in people infected by HIV (PLHIV) remains unclear as well as the interaction with other chronic hepatitis such as HBV and HCV.
We aim to study the prevalence and the source of infection among PLHIV and high rate of chronic hepatitis.

Table1

Population N= 307	n	Mean or %
Sexe (Men)	220	71.6
MSM	113/31	36,8/10,1
Hétérosexual	163	53,1
CD4 (cell./mm³)		
≤ 200	6	1,9
201-500	54	17,6
501-1000	175	57
> 1000	72	23,5
Viral Load < 50 cop./ml	282	91,9
On HAART	306	99,7
Tenofovir	196	63,8
Other NRTI	271	88,3
NNRTI	124	40,4
Protease Inhibitor	77	25.1
Integrase Inhibitor	154	50.2
Hbc-ab positive	113	36,8
HCV-ab positive	59	19,2
-with positive HCV viral Load	14	4,6
TPHA and / or VDRL positive	74/31	24,1/10,1
Cirrhosis	21	6,8
Ig VHE +	64	20.6

Methods

Design: Cross sectional study in a single center institution in southwestern France.

Patients: Patients consulting in the infectious disease department at "**Centre Hospitalier de la Côte Basque**" were included after writing consent during a 7 months period time. All patient were tested for anti HEV IgG /IgM (Wantai Elisa) by the National Reference Center for Hepatitis E in **Toulouse University Hospital, France**.
Status fo HBV, HCV and Syphilis were also tested in addition of the regular follow-up.
PCR were performed in blood for HEV IgM positive patients or elevation of ALT activites.
Self administered questionnaires were realized the same day of the HEV testing to investigate possible route of transmission focusing on diet habits (type of meat, - pork-rabbit-blood sausage…, cooking habits raw or rare,well done meat,s seafood, type of water consumption -bottle , habitat rural vs urban, and location of meat purchase – grocery store, or purchase directly form the producer), sexual orientation, drugs habit, travels and blood transfusion history.
Fibroscore® was performed for every HCV positive patient .

Definition of cases: Patients positive for HEV IgG, HCV IgG, HBV Hbc IgG and TPHA were considered as positive for the associated infections.

Statistical analysis: Prevalence rate were calculated. Logistic multivariate analysis was performed for factors associated with HEV IgG positivity.

Clinical Trial number: NCT02847507

Table 2 : Biological features according to HEV status

	HEV -	HEV +	*P*
AST (UI/L)	37 (34 - 39)	42 (28 - 56)	***<0,001***
ALT (UI/L)	40 (36 - 44)	46 (23 - 67)	***<0,001***
GGT (UI/L)	51.5 (45 - 58)	50 (36 - 62)	*0,83*
PAL (UI/L)	80 (78 - 84)	86 (80 - 92)	*1.0*
Total cholesterol (g/L)	2 (1,96 - 2,05)	1,96 (1,85 - 2,09)	*0,21*
Triglycerids (g/L)	1,57 (1,39 - 1,75)	1,43 (1,20 - 1,65)	***<0,001***
Hémoglobin (g/dL)	14,7 (13,4 - 16,1)	14,7 (13,4 – 16.0)	*0,17*
Leucocytes (cell/mm³)	706 (677 - 736)	6,67 (6,17 - 7,17)	0,14
Lymphocytes (cell/mm³)	235 (225 - 246)	2,03 (1,88 - 2,17)	***<0,001***
Plaquettes (10³ cell/mm³)	235 (227 - 242)	223 (210 - 236)	*0,12*
Créatinine (µmol/L)	83,3 (63,6 - 103)	84,5 (65 - 104)	*0,80*
CD4 (cell/mm³)	816 (760 - 994)	703 (637 - 770)	***0,003***
CD8 (cell/mm³)	934 (874 - 994)	788 (699 - 977)	***0,007***
CD4/CD8	1,03 (0,96 - 1,10)	1.05 (0,91 - 1,19)	*0,86*
Viral Load < 50 c/.ml	221 (90,9%)	61 (95,3%)	*0,26*
Nadir CD4	316 (288 - 345)	340 (285 - 395)	*0,90*
TPHA + (n=74)	**48 (19,7%)**	**26 (40,6%)**	***< 0,001***
VDRL + (n=31)	**18 (7,4%)**	**13 (20,3%)**	***0,002***
HBV Hbc IgG	90 (37%)	23 (35.9%)	0.87
HCV IgG	51 (21%)	8 (12.5%)	0.12
fibroscore® HCV + (n=52)	0.41 (0.23 - 0.53)	0.34 (0.16 - 0.44)	0.20

Results

Three hundred and twenty on patients were screened and 307 patients were analyzed.
Prevalence for HEV, HCV, HCB and TPHA were 20.8, 19.2, 36.8 and 24.1 % respectively. Thirty-six patients (11.7 %) were positive for HEV IgG and at least one other hepatitis.
All patients but one were on antiretroviral, median CD4 count was 744 cell / mm3, and 91.9% of patients had HIV viral load below 50 cop./ml **(Table 1).** No patient was positive using PCR HEV testing.
Patients positive for HEV IgG were older, (56 years old vs 51) had significantly ($p < 0.005$): higher hepatic enzymes level, lower total lymphocytes, CD4 and CD8 counts but identical CD4 / CD8 ratio **(table 2).**

In univariate analysis, sexual orientation, drugs or alcohol consumption, rural habitat, travel's history or former countries of residence, frequent contact with pigs or hunting habits were not associated with HEV IgG. Consumption of seafood more than once a week and pigs' meat bought directly at the farmer were positively associated with HEV IgG ($p < 0.005$) while CD4 > 800 cell/mm3 was negatively associated with HEV IgG.
In multivariate analysis, no association with food or water connsumption was identified. Patient with markers of syphilis, were more likely to have HEV, OR= 2 .84 ($p < 0.05$) for TPHA and OR = 3.79 ($p = 0.002$) for VDRL **(table 3).**
Moreover, among the 52 patients positive for HCV, 8 (15.4%) were also positive for HEV but mean fibroscore® was not significantly different according HEV status (0.41 Vs 0.31, p = 0.20, F2 fibrosis score).

Table 3 : Risk factors of HEV transmission : multivariate analysis

Model1 : association with VDRL

Variable	OR	IQR	*p*
Age > 50 y.	0.87	1.01 - 3.46	0.04
VDRL +	3.79	1.66 – 8.66	0.002
Rural habitat	0.41	0.18 – 0.93	0.03
CD4> 800/mm³	0.53	0.29 – 0.98	0.04

Model 2 : association with TPHA

TPHA	2.84	1.57 – 5.14	0.05

Conclusion

Prevalence of HEV is high in PLHIV, and often associated with other hepatitis viruses. Serological status for HEV is associated with lower CD4 count but does not seem to impact CD4 / CD8 ratio.
Usual route of transmission were not found in our settings, but past history of syphilis was strongly associated with VHE status, suggesting possible similar ways of transmission.