Journal of the International AIDS Society

Poster presentation

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# Risk factors for end-stage liver disease among HIV and hepatitis C virus co-infected patients in the Spanish VACH Cohort

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*from* Ninth International Congress on Drug Therapy in HIV Infection
Glasgow, UK. 9–13 November 2008

Published: 10 November 2008

*Journal of the International AIDS Society* 2008, **11**(Suppl 1):P134 doi:10.1186/1758-2652-11-S1-P134

This abstract is available from: http://www.jiasociety.org/content/11/S1/P134



## Background

There is increasing evidence supporting the hypothesis of a beneficial effect of highly active antiretroviral therapy (HAART) on the evolution and outcome of chronic liver disease (CLD) caused by hepatitis C virus (HCV) in HIV co-infected patients. The relative merit of different drugs or drug classes is, however, less well studied.

## Methods

We performed a cross-sectional study on the VACH Cohort, a multicenter cohort of HIV-infected individuals in Spain, to ascertain the possible associations between exposure to protease inhibitors (PI) or to non-nucleoside analogues (NAN), and the outcome of HCV CLD. We selected HCV co-infected patients who had ever initiated HAART and who had at least one follow-up visit [treatment evaluable (TE)]. We defined our main "exposure" variable as the total time of treatment with any of, either, PI's or NAN's. We evaluated "outcome" as the occurrence of end stage CLD (ESLD), defined as any of: ascites, oesophageal varices, hepatic encephalopathy, hepatorenal syndrome, portal hypertension, hepatocellular carcinoma, or related diagnoses (i.e. upper gastrointestinal bleeding, spontaneous bacterial peritonitis).

## Summary of results

Out of 15,183 patients in the VACH database, 6,004 were TE, of whom 2,669 (44,4%) were HCV co-infected; 128 patients (4.4%) developed an ESLD. Table 1 shows some important features of this sub-cohort, according to study group. The following factors (marked with * in Table 1) were associated with ESLD in the univariate analyses: being HBsAg-positive, nadir of CD4+ cell count, age and prior diagnosis of AIDS. Exposure to either PI's or NAN's was not. In a regression model, only HBsAg, age and nadir CD4+ cell count remained associated with ESLD. In a sensitivity analysis, Kaplan-Meier curves of time from initiation of HAART to diagnosis of ESLD, restricted to patients only exposed to one class of drugs, showed no differences between PI's and NAN's.

## Conclusion

In conclusion, we found no evidence to support the hypothesis of a different effect of PI's and NAN's on the occurrence of ESLD among HIV and HCV co-infected

**Table 1:**

| | female | prior AIDS* | ever IVDU | HBsAg+* | mean age* | 1st CD4 cell count | log10 last viral load | nadir CD4 count* |
|---|---|---|---|---|---|---|---|---|
| ESLD | 17.4% | 43.7% | 84.1% | 12.5% | 36.7 | 303.3 | 2.50 | 128.7 |
| Other | 20.2% | 34.2% | 82.2% | 5.3% | 34.6 | 311.1 | 2.45 | 170.6 |

individuals. Hepatitis B co-infection, more profound immunosupression and older age were associated with this outcome.