

Poster presentation

Presence of hepatitis B virus in cerebrospinal fluid of HIV-1 co-infected adolescents

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Purpose of the study

Although hepatitis B virus (HBV) was found in different extrahepatic sites, reports regarding the neurotropic character of HBV are rare. Moreover, data on detection of HBV in the brain or cerebrospinal (CSF) of HIV-infected patients and its clinical significance are lacking. Therefore, we aimed to detect the presence of HBV in the CSF of a group of HIV/HBV co-infected adolescents.

Methods

Paired CSF-plasma samples from HBs-antigen-positive patients included in a protocol evaluating HIV neurological complications were analyzed for the detection of HBV-DNA (Cobas Amplicor). The correlations between HBV-DNA in CSF, HIV markers, CSF characteristics, treatment with 3TC and neurological involvement were investigated.

Summary of results

We evaluated 23 HIV-infected adolescents, mean age 17.1 ± 1.8 years, 12 boys, 22 with parenterally acquired HIV-infection. Median CD4 count was 220 l/mm³ (range 1–738). Out of 16 patients with positive plasma HBV-DNA, nine had positive CSF HBV-DNA. We found a positive correlation between HBV-DNA and HIV-RNA in plasma ($r = 0.6$, $p < 0.001$) and in CSF ($r = 0.5$, $p = 0.05$). HBs antigen was present in the CSF of all nine tested samples. Patients were divided into three groups according to the presence of HBV: nine with both CSF and plasma positive viral load (VL), seven with only plasma-positive HBV and seven without detectable plasma or CSF-DNA. Among the first

group, CSF HBV-DNA values were lower compared to the plasma levels (4.11 ± 1.1 vs 7.1 ± 1.4 log₁₀ IU/ml, $p = 0.001$). In patients ever exposed to 3TC (with a median time of exposure of 26.5 months), we found significantly lower HBV-DNA values in plasma ($p < 0.04$) and in CSF ($p = 0.02$) as compared with those never exposed to 3TC. The diversity of neurological diseases made any clinical correlation difficult, although demyelinating lesions were found in 7/9 patients with CSF-positive HBV-DNA.

Conclusion

We report for the first time the presence of HBV-DNA in CSF of HIV co-infected patients. HBV was detected in the CSF of more than half of the patients with positive plasma HBV-DNA. CSF HBV-DNA levels were positively correlated with plasma DNA. The clinical significance of the presence of HBV in CSF is a very interesting aspect to be investigated in the future.