Hepatitis E virus epidemiology among HIV infected women in an urban area in Tanzania

Ebba Mannheimer1, Lene Holm Harrisøe2, Zahra Persson Theilgaard2, Mercy Chiduo3, Sofie Midgley4, Jan Gerstoft1, Henrik Ullum2, Terese L. Katzenstein1

1Department of Infectious Diseases, Copenhagen University Hospital, Rigshospitalet, 2Department of Clinical Immunology, Rigshospitalet, 3National Institute of Medical Research (NIMR), Tanga, Tanzania, 4Department of Microbiological Diagnostics and Virology, State Serum Institute, Copenhagen

BACKGROUND

- Hepatitis E virus (HEV) (genotype 1 and 2) is the single most important agent causing acute viral hepatitis.
- HEV leads to large scale water borne epidemics by fecal-oral transmission in developing countries in Africa, Asia and Central America.
- HEV mainly attacks young adults causing a self-limiting acute infection, but with a high mortality rate (15-25%) among pregnant women, especially during the third trimester.
- HEV seroprevalence studies among pregnant women in Africa are scanty; seroprevalences among the general female population range from 0% and 7% in Tanzania to 84% in rural areas of Egypt.
- HIV prevalence in pregnant women in Sub-Saharan countries is high, there is limited knowledge of HEV co-infection rates in this group of susceptible patients. In this study the HEV seroprevalence among HIV-1 infected pregnant women in Tanga, Tanzania was investigated.

METHODS

Plasma samples from a cohort of HIV-1 infected pregnant women participating in a shortcourse ART PMTCT study (the ComTru Study1) in Tanga, Tanzania were retrospectively tested. The samples were collected between 2006 - 2011. Blood samples collected at month 9 postpartum (9PP) were analyzed for anti-HEV antibodies (IgG and IgM). From patients testing positive, earlier samples (at enrollment in 2nd or 3rd trimester, at delivery and at day; 7, 28 and 42 PP) were tested for antibodies and/or HEV RNA.

If both the enrollment sample and the 9PP sample were anti-HEV IgG positive and IgM negative, the infection was defined as a past HEV infection. HEV incidence was estimated from anti-HEV seroconverting. If any samples were anti-HEV IgM and/or HEV RNA positive, the infection was defined as a recent infection or an active infection.


The ComTru study was supported by a grant from EDCTP. Ebba Mannheimer has received Agnethe Løvgrens Scholarship.

RESULTS

- 208 (of the 550 women included in the ComTru study) with samples available from enrollment and 9PP were included.
- Mean age: 27.6 years (SE 0.2).
- Mean gestational age: 23.4 weeks (SE 0.4).
- Mean CD4 count: 515 cells/µL (SE 27).
- 14 patients were anti-HEV IgG positive/IgM negative at time of enrollment yielding a seroprevalence rate of 6.7% (CI 4.1-11.0%) among HIV-1 infected women.
- 2/194 seroconverted from anti-HEV negative to anti-HEV IgG positive/IgM negative, between delivery and 9PP with an incidence of HEV of 1.0% (CI 0.3-3.7%).
- Both tested negative for HEV RNA at enrollment in 2nd or 3rd trimester, at delivery and at day; 7, 28, 42 and 9PP.

CONCLUSION

The HEV seroprevalence among HIV-1 infected pregnant women in an urban area in Tanzania was 7% and furthermore approximately 1% seroconverted during 12 months of follow-up, indicating ongoing HEV transmission.