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Sero-epidemiology of hepatitis E virus (HEV) in urban and rural children of north India

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Abstract

Objective: To estimate the prevalence of anti-HEV IgG and IgM antibodies to ORF3 peptide of Hepatitis E virus genome in an age stratified urban and rural population of children.

Design: Cross sectional survey.

Setting: Pediatric out-patient clinics in a tertiary hospital and a rural dispensary.

Methods: Study subjects between 6 months and 10 years with minor, non-hepatic illnesses were recruited for the study from March to December 1996. Baseline demographic details, drinking water source, sewage disposal methods, reasons for attending the hospital, histories of parenteral exposure in the past 12 months and acute hepatitis in the subjects and the family in the previous six months were obtained. Serum anti-HEV IgG antibodies were screened in all subjects, and in those who were positive, anti-HEV IgM antibodies were assayed as an indicator of recent infection. Serum aminotransferase (ALT) was estimated in those who were anti-HEV IgM antibody positive.

Results: Out of 2160 subjects recruited, 2070 samples could be screened for anti-HEV IgG antibodies. In the urban population (n = 1065) anti-HEV IgG antibodies were detected in 306 subjects (28.7%; 95% CI 26.0-31.6) and of these 131 (42.8%; 95% CI 37.2-48.6) were anti-HEV IgM antibody positive. Amongst 1005 rural children, anti-HEV IgG antibodies were present in 239 (23.8%; 95% CI 21.1-26.4) and IgM antibodies in 113 (47.3%; 95% CI 40.9-53.7) children. The antibodies were present since the first year of age till 10 years of age and,

increased with advancing age. Serum transaminases were raised in 7.5% (9/120) and 5.5% (5/88) of subjects with anti-HEV IgM antibodies in urban and rural centers respectively. Overall the seroprevalence of IgG antibodies against HEV were significantly more in urban as compared to that in rural subjects ($p = 0.011$). However, proportion of children with anti-HEV IgG carrying IgM antibodies was similar in the two study groups ($p = 0.298$). A model for estimating expected prevalence of anti-HEV IgG antibodies was *developed. The observed* antibody prevalence in both urban and rural subjects at each age interval after 48 months was less as compared to the expected levels and this gap increased with advancing age categories. It appeared that there was a decay of HEV antibodies with time.

Conclusions: Children are susceptible to HEV infection since early infancy. The probability of exposure to HEV during childhood was higher in urban than rural population. Seropositivity to HEV antibodies increased by over 2 times beyond 4 years of age as compared to younger age. Anti-HEV IgG antibodies appear to wean off with increasing age.

Key words: *Anti-HEV antibodies, Children, Hepatitis E virus, Seroepidemiology.*

Reference

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