

LETTER TO THE EDITOR

Seroprevalence of IgM antibodies to hepatitis A virus in at-risk group in Benin City, Nigeria

Hepatitis A virus (HAV) infection is the most common cause of acute viral hepatitis worldwide (1). Hepatitis is responsible for approximately 1.5 million reported clinical cases but serological data indicate that the numbers are in the tens of millions worldwide (2). Although hepatitis A is a self-limiting liver disease (3), it occasionally progresses to severe, life-threatening illness (4, 5). The estimated mortality rate is 0.1% for children aged <15 years, 0.3% for adults aged 15–39, and 2.1% for adults aged ≥40 years (6, 7). The standard diagnosis of acute hepatitis A is done by detecting immunoglobulin M (IgM) antibodies to HAV in patients who present with clinical features of hepatitis (8). Nevertheless, as many hepatitis A cases are asymptomatic, anti-HAV IgM can be found in individuals who do not have clinical symptoms or biological abnormalities (9). Indeed, anti-HAV IgM has been detected in apparently healthy individuals in India (10). This is surprising because adults are often thought to have symptomatic infection (11). There are no data on the seroprevalence of anti-HAV IgM in apparently healthy populations or at-risk groups in Nigeria, particularly in Benin City. This study aimed to determine the seroprevalence of anti-HAV IgM in an at-risk population in Benin City and to identify the social, demographic, and other risk factors.

The study included 200 randomly sampled at-risk individuals attending the volunteer, counseling, and testing clinic at University of Benin Teaching Hospital (UBTH) in Benin City who were seronegative for HIV. The participants were 95 males and 105 females aged 2 to >62 years. Before specimen collection, informed consent was obtained from each participant or the parent or guardian of the children. The study was approved by the Ethics and Research Committee of UBTH.

Blood was collected in ethylenediaminetetraacetic acid containers. Plasma was prepared and tested for HAV IgM using the HAV antibody Rapid Test kit (Qingdao High-top Biotech Ltd., Shandong, China) following the manufacturer's instructions. The data were analyzed by chi-square test and odds ratio analysis using INSTAT® (Graph Pad Software Inc., La Jolla, CA, USA).

Three samples (1.5%) were positive for anti-HAV IgM. This is comparable to the 2.0% reported among apparently healthy individuals in India (10). This may indicate asymptomatic acute HAV infection, but molecular

analysis is needed to verify this because HAV RNA is not detected in all HAV IgM positive specimens (12). HAV can be detected in human specimens long before onset of symptoms (13). Therefore, anti-HAV IgM may also appear before symptoms, a speculation that contradicts detectable anti-HAV IgM when symptoms of HAV appear (14). Further studies are needed to verify this.

Among the several demographic factors we investigated, only age significantly affected the seroprevalence of anti-HAV IgM ($p=0.043$). The three anti-HAV IgM positive cases were aged between 22 and 31 years. This finding is not in agreement with that of Rajani and Jais (10), who observed anti-HAV IgM only in the age group ≤20 years. This may reflect geographic differences as well as the environmental dynamics of New Delhi and Benin City.

Consumption of contaminated foods and water is a common source of HAV infection, and waterborne transmission predominates in developing countries (15). In our study, two factors significantly affected the seroprevalence of HAV infection: the source of water and not washing fruits before eating ($p=0.0001$ and $p<0.0001$, respectively). People who used streams or rivers as sources of water had the highest seroprevalence of HAV infection (OR = 76.8, 95% CI 5.9–993.5).

Although HAV is transmitted by the fecal–oral route, transmission via contaminated needles has also been reported (16). In our study, a history of tattoo/scarification was significantly associated with HAV infection (OR = 98.0, 95% CI 4.4–2181.7; $p=0.006$). With tattoos and body piercing being in vogue, young adults living in resource-poor regions such as Nigeria may resort to using unsterilized materials for these purposes. To our knowledge, this is the first report associating a history of tattoo/scarification with HAV infection in our locality. However, it is noteworthy that only two of the study participants indicated having a history of tattoo/scarification, which may bias the statistical analysis. Other potential risk factors did not significantly affect the seroprevalence of HAV infection in this study ($p>0.05$).

In summary, the overall seroprevalence of HAV was 1.5% in this at-risk population. Young adults using streams or rivers as sources of water, who had a history of tattoo/scarification or who do not always wash fruits before eating them, were more likely to have HAV infection.

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