



Correspondence

Do medical college students living in hostel in India need hepatitis A vaccine?

Sir,

Hepatitis A virus (HAV) is the most common cause of acute viral hepatitis worldwide, affects 1.5 million people globally, hence sharing 27 per cent of disease burden^{1,2}. HAV infection in early childhood is mostly asymptomatic illness. However, the severity of infection increases with increasing age of acquiring this infection^{1,3-5}.

The anti-HAV antibody seroprevalence varies in different regions depending on the socio-economic conditions, standard of living, clean water availability and hygiene, with most studies indicating a gradual shift in the age of acquiring anti-HAV antibodies in countries with transition from higher endemicity to moderate endemicity^{1,6-11}. This shift in the age of acquiring HAV infection leads to an increased incidence of symptomatic HAV infection, including heightened risk of liver failure and death^{1,3,4,6,12}. In a study from the United States, the data analysis from seven outbreaks of hepatitis A showed that age-specific probability of developing jaundice in hepatitis A patients was 7.2, 37.1, 70.7 and 85.2 per cent in the 0-4, 5-9, 10-17 and at least 18 yr age groups¹³.

Since lifelong protection is conferred by seroconversion from either vaccination or infection, individuals at risk can be identified by seroepidemiologic studies and can be vaccinated, saving expenditures in health care and improving overall general health of the community^{5,14}. Multiple instances of acute viral hepatitis due to hepatitis A from a point source affecting young adults have been reported^{15,16}. Data in this context for surveillance of protective levels of antibodies (>20 IU/l) in young adults from previous subclinical infection were desirable¹⁷. Hence, a study was designed with the objective to assess young adults (18-30 yr) for their susceptibility to hepatitis A, and also to detect and calculate the mean anti-HAV titres following immunization with two doses of 500 units

of inactivated hepatitis A viral antigen in seronegative individuals.

The study was conducted at Maulana Azad Medical College and LokNayak Hospital, New Delhi, India, between April 2015 and March 2016. The study protocol was approved by the Institutional Ethics Committee, Maulana Azad Medical College. Young healthy medical and nursing students attending Maulana Azad Medical College and Associated Hospitals and living in hostels who volunteered for this study and had no prior infection or immunization against hepatitis A, were screened for antibody titres against hepatitis A. IgG anti-HAV was determined by the method of enzyme immunoassay in venous blood of the volunteers¹⁸. Written informed consent was obtained from all volunteers.

The volunteers who were found to have anti-HAV titres <20 IU/ml and consented to participate in the study were vaccinated with two doses of hepatitis A vaccine six months apart, each containing 500 U of inactivated hepatitis A viral antigen (Healive), provided for the study by Sinovac Biotech Co. Ltd, China. Quantitative data (value of anti-HAV titres) were expressed as mean±standard deviation. SPSS (version 19.0, IBM Corporation, New York, USA) was used for statistical analysis. The proportion of individuals seropositive after vaccination was expressed as percentage and geometric mean titres (GMTs) of antibody calculated. The data were collected on the following parameters to evaluate the cause of failure of immunization, if any: height and weight (body mass index to be calculated), waist and hip circumference, tobacco consumption and alcohol consumption.

One hundred and ninety three young adults in the age group of 18-30 yr participated in the study. The mean age of the participants was 21.70±3.72 yr with a range of 12 years (18-30). Of the 193 participants, 129 (66.8%) were male and 64 (33.1%) were female. Serum analysis

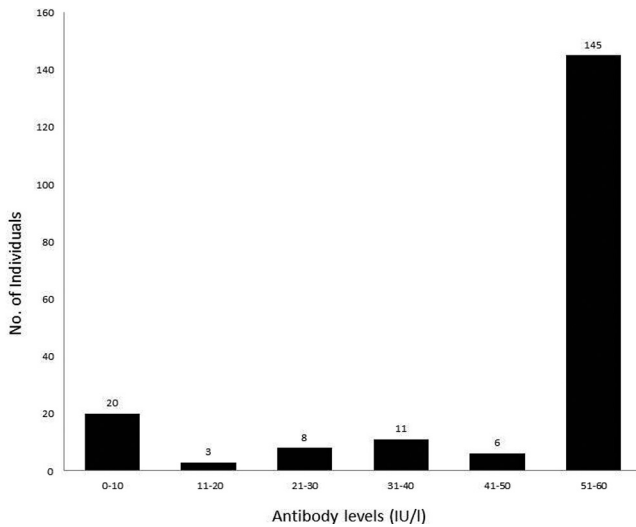


Figure. Representation of distribution of antibody levels in population.

of the participants showed that 170 of 193 (88.08%) developed protective antibody levels (>20 IU/l) while 23 (11.9%) did not develop protective antibody levels from previous subclinical infections. Gender-wise distribution showed that 55 of 64 (85.94%) females and 115 of 129 (89.1%) males were seroconverted. The anti-HAV titres varied from 3 to 60 IU/l. The mean antibody titre level was 53.62 ± 17.37 IU/l. The figure shows distribution of antibody levels in population studied.

The antibody GMT of seronegative individuals pre-vaccination was 5.83 IU/l (upper limit: 7.12 IU/l; lower limit: 4.78 IU/l within 95% confidence interval) which increased to 60 IU/l post-vaccination in each participant. Based on the GMTs of anti-hepatitis A, post-vaccination titres were superior to pre-vaccination titres. Seroconversion rate for the vaccine was 100 per cent. There were no cases of failure of vaccination.

An earlier study conducted in similar population of young adults attending Maulana Azad Medical College showed 37.4 per cent seronegativity¹⁹ in contrast to 11.9 per cent seronegativity in the present study. This difference in seroconversion rates could be due to background socio-economic conditions of the students. Another study conducted at All India Institute of Medical Sciences, New Delhi, reported 93.2 per cent anti-HAV seroprevalence in schoolgoing children²⁰. A study from Pune demonstrated a changing epidemiology of HAV with 50.3 per cent seroprevalence in the age group of 6-10 yr and 30.3 per cent seroprevalence in the age group of 18 months to six years²¹. Rakesh *et al*²² noted a higher attack rate of acute viral hepatitis

during an outbreak in individuals aged 15-24 yr (4.6%) as compared to individuals aged 5-14 yr (3.1%).

The rate of seroconversion in the present study was 88.08 per cent which was higher than similar studies conducted in Delhi (71.2%) and Mumbai (78%)^{6,10}. Heterogeneity and variations in seroconversion rates may be accounted by the differences in the age group, socio-economic conditions and hygiene of population studied in various studies.

Since, seroconversion and hence, protection against hepatitis A varies between different pockets of changing epidemiologic conditions, it is imperative to consider the issue of vaccination with respect to local epidemiologic conditions. Mass vaccination of adults is not necessary; however, identification of high-risk groups by measuring anti-HAV titres and their selective vaccination will be beneficial.

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Conflicts of Interest: None.

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