

## Prevalence of Hepatitis A Virus Infection in a HIV Positive Community

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**Abstract-** Hepatitis A is acute and usually self – limiting disease, but sometimes it can be dangerous such as in immunosuppressed patients. Purpose of this study is to investigate the prevalence of hepatitis A serology in HIV/AIDS Patients. 247 HIV positive patients from March 2005 to September 2006 were entered in this study. Participants completed questionnaires to elicit demographic, drug and sex risk information, and were tested for hepatitis A. They were all referred to Counseling center for behavioral diseases in Imam Khomeini Hospital. Cases were chosen from volunteers with no history of jaundice or acute hepatitis. Data were analyzed by SPSS version 13 and results were compared between seropositive and seronegative groups using T test and chi square. Statistical significance was accepted at a level of  $P < 0.05$ . 200 (80.98%) were male and 47(19.02) were female. The mean age was  $36 \pm 9.3$ . 238 (96.3%) of patients were seropositive .One hundred percent and 96% who were born in rural and urban areas were seropositive, respectively. Also, 85.7% and 96.6% who reside in rural and urban areas were seropositive, respectively. Iran is an endemic country for hepatitis A in which most people has asymptomatic infectious during childhood. According to high prevalence of hepatitis A positive serology in HIV/AIDS patients, routine vaccination seems to be unnecessary. But special sub populations like HIV infected infants should be evaluated more precisely and different approaches may be needed for them.

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**Key words:** Hepatitis; HIV; prevalence

### Introduction

Hepatitis A virus (HAV) causes acute, usually self limiting disease of the liver. The incidence of hepatitis A is closely related to socioeconomic conditions. Its prevalence varies between 15% to nearly 100% in different parts of the world. The main route of transmission is fecal-oral. Transmission via blood and blood products has been reported rarely (1- 3). Sexual activity is probably the major mode of transmission among men who have sex with men (4). The two latter are common risk factors among HIV infected people. According to international recommendations, HIV infected patients should be tested for HAV antibody and vaccinated if proved susceptible (5). But decision about vaccination in endemic areas, where most persons are asymptotically infected with HAV during childhood and are immune to disease, is better to be based on seroepidemiologic studies (1). As the main way of

getting infected is different between HAV with other hepatotropic viruses and HIV, it is postulated that its prevalence among HIV infected should be similar to general population (6). The aim of this study is to measure the seroprevalence of HAV in a group of HIV positive patients.

### Patients and Methods

247 HIV positive patients from March 2005 to September 2006 were entered in this study. They were all referred to Counseling center for behavioral diseases in Imam Khomeini hospital. Cases were chosen from volunteers with no history of jaundice or acute hepatitis. Participants completed questionnaires to elicit demographic, drug and sex risk information. All patients filled informed consent .The study protocol was approved by the Institutional Review Board of Tehran University of Medical Sciences.

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5 cc of blood was taken and sent to laboratory for HAV IgG ELISA. Data were analyzed by SPSS version 13 and results were compared between seropositive and seronegative groups using T test and chi square. Statistical significance was accepted at a level of  $P < 0.05$ .

## Results

247 HIV infected patients were enrolled in the study. 200 (80.98%) were male and 47(19.02) were female. The mean age of patients was  $36.2 \pm 9.3$ . The minimum and maximum of age were 5 and 74 years old, respectively. Four patients (1.6%) were younger than 12 years old.

The minimum and maximum of CD4 count were 10 and  $2352 \text{ cell/mm}^3$ , respectively.

As shown in Table 1, the two most common risk factors for HIV infection were injecting drug use (53%) and sexual transmission (20.2%).

In the overall, 238 (96.3%) were hepatitis A antibody (HAV Ab) positive and only 9 (3.7%) had negative serology. Among 243 patients who were older than 12 years old, 236 (97.1%) patients were HAV Ab positive. While among four pediatric patients (age < 12), 2 (50%) patients were seronegative. Furthermore, we showed seroprevalence of hepatitis B and C in Table 2.

There were no significant difference between sex, age, birth place and CD4 count in seronegative and seropositive patients ( $P > 0.05$ ; Table 3).

## Discussion

HIV positive patients usually experience severe and prolonged courses of infectious diseases, due to their

impaired immune system. HAV infection also follow the same rule. HAV load is higher and duration of viremia is longer in HIV infected than non HIV patients (7, 8). An outbreak of hepatitis A with high fatality rate among IDUs was reported (9).

It is long since HAV vaccination of HIV positive and other high risk groups, including IDUs, has been recommended (1, 2, 5). But seroprevalence studies in different parts of the world are always underway to modify international guidelines based on local data (3, 6, 9-11). Previous studies in HIV negative subgroups in Iran including soldiers and HBV carriers showed 97.6% and 79% seropositivity rate, respectively (12, 13).

**Table 1.** Risk factors of patients for HIV infection

| Risk factors             | No (%)    |
|--------------------------|-----------|
| Injecting drug use (IDU) | 131 (53)  |
| Sexual contact           | 50 (20.2) |
| IDU & sexual contact     | 47 (19)   |
| Blood products           | 9 (3.6)   |
| Mother to child          | 4 (1.6)   |
| Kidney transplant        | 1 (0.4)   |
| Unknown                  | 5 (2.2)   |
| total                    | 247 (100) |

**Table 2.** Seroprevalence of hepatitis B and C Infections.

| Hepatitis Infection | N (%)      |
|---------------------|------------|
| HBsAg               | 11 (5.5)   |
| HBsAb               | 66 (42.9)  |
| HBC Ab              | 36 (49.3)  |
| HCV Ab              | 150 (72.4) |
| HBsAg + HCV Ab      | 10 (5)     |

**Table 3.** Demographic & Lab information of HAV positive and HAV negative patients

|                                       | HAV Ab positive  | HAVAb negative    | P value |
|---------------------------------------|------------------|-------------------|---------|
| Male/Female                           | 194/44           | 6/3               | 0.26    |
| Birth place                           |                  |                   |         |
| Urban                                 | 215              | 9                 | 0.31    |
| Rural                                 | 23               | 0                 |         |
| Living in Birth place (Mean years)    |                  |                   |         |
| Urban area                            | $26.5 \pm 14.4$  | $21.1 \pm 11.9$   | 0.4     |
| Rural area                            | $15.2 \pm 11.3$  | 0                 |         |
| Mean age (years)                      | 36.6             | 25                | 0.79    |
| Mean CD4 count ( $\text{cell/mm}^3$ ) | $404.3 \pm 32.3$ | $483.5 \pm 196.7$ | 0.54    |

The results of present study also indicate that high percent of HIV positive patients have history of exposure and subsequent immunity to HAV. This correlates well with other studies in HIV negative groups.

As there was no significant difference between CD4 numbers of two groups, negative serology can not be attributed to defect in immune response to infection and antibody synthesis. It is rather a sign of true lack of exposure in this group of patients.

Immigration from endemic areas and receiving blood products have been mentioned as risk factors of exposure to HAV in some studies (3, 10, 14). In endemic areas, where widespread exposure happens early in life, these conditions do not seem to play significant role. In these areas, age is still major contributor of serologic condition. In a study in HIV exposed/infected children the prevalence of hepatitis A antibodies was 34% (11), whereas studies in different adult HIV populations show seroprevalence of 72%, 74% and 84% (6, 10, 14).

The numbers of children in this study were so scant that reaching a definite conclusion is not possible, but presence of two susceptible children out of four demonstrates that this age group needs special attention.

HAV vaccine is safe and immunogenic in HIV patients with no effect on HIV course or plasma viral load. Although some authors believe response to vaccine is not optimal in these patients, especially in advanced stages with low CD4 (15-19). According to high rate of immunity in our community, which is an endemic area for hepatitis A, routine vaccination of HIV positive patients seems to be unnecessary. But special sub populations like HIV infected infants should be evaluated more precisely and different approaches may be needed for them.

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