

# Military Personals Should Be Vaccinated Against Hepatitis B Infection

Seyed Moayed Alavian<sup>1,\*</sup>

<sup>1</sup>Baqiyatallah Research Center for Gastroenterology and Liver Diseases, Baqiyatallah University of Medical Sciences, Tehran, IR Iran

\*Corresponding author: Seyed Moayed Alavian, Baqiyatallah Research Center for Gastroenterology and Liver Diseases, Baqiyatallah University of Medical Sciences, P.O.Box: 14155/3651, Tehran, IR Iran. Tel/Fax: +98-2188945186, E-mail: chairman@kowsarcorp.com.

**Received:** November 28, 2013; **Accepted:** December 8, 2013

**Keywords:** Hepatitis B; Vaccination; Military Medicine; Prevention

## 1. Introduction

Chronic hepatitis B virus (HBV) infection is a global health problem associated with a diverse range of human liver disorders, from chronic hepatitis to cirrhosis and hepatocellular carcinoma (HCC) (1, 2). The infection has a worldwide distribution and it is more common in underdeveloped areas of the world (3). It is estimated that about 30% of the world's population, i.e. about 2 billion people, have serological evidence of infection with HBV (4) and approximately 350 to 400 million of them are chronically infected with HBV. The WHO has estimated that hepatitis B results in one to two million deaths every year worldwide. The prevalence of HBV infection varies depending on geographical areas (5). Currently, Iran has intermediate to low endemicity for HBV infection (6-8). HBV can be transmitted either prenatally or horizontally (9). Most HBV infected patients have acquired the infection from their infected mothers as vertical transmission or during childhood and most of them are not aware of their infection (10). Worldwide, there is a close relationship between the endemic frequency and the route of transmission of HBV infection (11). Horizontal transmission includes contact with infectious blood, bodily fluids or unsterile needles and unprotected sex (12).

## 2. Risk Factors

Despite the availability of an effective vaccine, Hepatitis B virus (HBV) infection still remains a health problem. Undoubtedly, finding the key routes of hepatitis transmission to allow for its prevention in every country, specifically in endemic regions, is of high priority. Such efforts are especially important given that many infected patients with hepatitis are asymptomatic (13). Familial contact, blood transfusion, hospitalization, major surgery, extramarital sexual contact, IV-drug use, experimen-

tal dentist visit and some jobs (police, barber, and driver) have been found to be independent risk factors for developing chronic hepatitis B virus infection (12). It has been shown that hepatitis B virus is transmitted through contact of close household members infected by HBV. According to these data, vaccination of people living with HBV infected individuals in the same household is strongly suggested. It seems to be of great importance to pay more attention to certain jobs, life styles and cultural matters.

## 3. Military and Risk of HBV Infection

In a study performed by Alavian et al. (14), past history of war injury was a significant risk factor for military personals. More hospitalization and history of transfusion in this group were the main risk factors for HBV infection. Their families were at a higher risk for acquiring HBV infection and testing and vaccination against HBV infection was strongly recommended for family cases of HBV infection (15). Living in military camps and being at a greater risk of injury and hospitalization and receiving medical care results in a higher risk of HBV infection acquisition. Since, HBV is stable on environmental surfaces for 7-10 days, indirect inoculation of HBV can also occur via inanimate objects. The risk of sharing objects lies in the possibility that contaminated objects for personal use, e.g. hair-brushes, combs, razors and toothbrushes, can damage the skin or mucous membranes and transmit HBV. This type of horizontal transmission occurs mainly in areas of high endemicity and in conditions of low hygiene. This may happen at home or outside, e.g. with friends or in military camps (14).

Literature review reveals that HBV infection among Greek military recruits was significant and after HBV vaccination there was a decline in the prevalence of chronic HBV infection, which supports the effectiveness of the immunization program (16).

### Implication for health policy/practice/research/medical education:

Hepatitis B infection is preventable infection and high risk group should vaccinate against it. Military personals are at higher risk of acquiring the infection and vaccination against HBV is recommended.

Copyright © 2014, Aja University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

#### 4. Impact of Vaccination on Hepatitis B

Hepatitis B virus (HBV) is a vaccine preventable disease and an inactivated plasma-derived hepatitis B vaccine was licensed in November 1981 and became available for general use by 1982 (17). The effectiveness of routine infant hepatitis B immunization in significantly reducing or eliminating the prevalence of chronic HBV infection has been demonstrated in a variety of countries and settings. In general, studies conducted in high HBV-endemic areas have demonstrated declines in the prevalence of chronic HBV among children to less than 2% after introduction of the vaccine. In Iran, a neonatal HBV vaccination program was deployed in 1993 and a significant decline in HBV prevalence has been reported. In 2006, Iran's Ministry of Health and Medical Education (MOHME) announced a new plan for extending HBV vaccination coverage to those born before 1993 and not yet included in the national vaccination program. A 4-year mass campaign was planned for those born between 1989 and 1992 to provide immunization against HBV infection. In Iran the epidemiology of HBV changed from intermediate to low endemicity (18-20).

In a large study from USA that was done in multicenter military recruits (21) showed that anti-HBs seropositivity prevalence was highest among youth and decreased with increasing age. Screening new recruits for evidence of immunity before hepatitis B immunization is essential (21). In 2002, the US Department of Defense (DoD) mandated hepatitis B immunization for all military recruits.

It seems that testing and vaccination against HBV infection is a wisdom approach to protect individuals from future contact with HBV infection. The HBV vaccine is safe and effective in prevention of HBV infection. Chronic HBV-infection can lead to morbidity and mortality, thus greater attention must be paid for the development of prevention strategies and implementation of more effective interventions for control of HBV infection in military personals.

#### 5. Conclusion and Recommendations

HBV infection contribute to a significant global burden of diseases. Safe and effective vaccines against the disease are available and their use is rapidly expanding, particularly for young people. From the available data, positive impact of the vaccine in reducing the disease burden due to HBV infection is evident. Therefore, to continue to decrease the burden of HBV infection in military personals, the following factors are recommended:

- Screening of all military personnel for HBV infection and performing HBV vaccination for negative individuals.

- Screening of HBV infection in family of positive cases and vaccination of negative individuals.

- Educating military personals for better understanding of the routes of transmission of parenteral transmitted vi-

ruses such as HBV, HCV and HIV and promoting greater health precautions.

- Increasing health precautions in military health centers.

#### Financial Disclosure

The study was supported by Baqiyatallah University of Medical Sciences.

#### References

1. Kao JH, Chen PJ, Lai MY, Chen DS. Hepatitis B genotypes correlate with clinical outcomes in patients with chronic hepatitis B. *Gastroenterology*. 2000;**118**(3):554-9.
2. McMahon BJ. Epidemiology and natural history of hepatitis B. *Semin Liver Dis*. 2005;**25**(Suppl 1):3-8.
3. Alavian SM. Ministry of Health in Iran Is Serious about Controlling Hepatitis B. *Hepat Mon*. 2007;**7**(1):3-5.
4. Kane M. Global programme for control of hepatitis B infection. *Vaccine*. 1995;**13**(Suppl 1):S47-9.
5. Alavian SM. New globally faces of hepatitis B and C in the world. *Gastro Hepat FBB*. 2011;**4**(4):171-4.
6. Alavian SM, Hajariazdeh B, Ahmadzad Asl M, Kabir A, Bagheri Lankarani K. Hepatitis B Virus Infection in Iran: A Systematic Review. *Hepat Mon*. 2008;**8**(4):281-94.
7. Alavian SM, Tabatabaei S, Nourizad S, Mansouri F, Khademi N, Amini Kafi-abad S, et al. Seroepidemiology of HBV Infection in Kermanshah- West of Iran; a Population Based Study. *Jundishapur J Microbiol*. 2012;**5**(4):564-9.
8. Alavian SM, Tabatabaei SV, Ghadimi T, Beedrapour F, Kafi-Abad SA, Gharehbaghian A, et al. Sero-prevalence of Hepatitis B Virus Infection and Its Risk Factors in the West of Iran: A Population-based Study. *Int J Prev Med*. 2012;**3**(11):770-5.
9. Miri SM, Alavian SM. Risk factors of hepatitis B infection: Health policy makers should be aware of their importance in each community. *Hepat Mon*. 2011;**11**(4):238-9.
10. Hatami H, Salehi M, Sanei E, Khosravi S, Alavian SM. Intra-familial Transmission of Hepatitis B virus Infection in Zahedan. *Iran Red Crescent Med J*. 2013;**15**(1):4-8.
11. Degertekin H, Gunes G. Horizontal transmission of hepatitis B virus in Turkey. *Public Health*. 2008;**122**(12):1315-7.
12. Sali SH, Bashtar R, Alavian SM. Risk Factors in Chronic Hepatitis B Infection: A Case-control Study. *Hepat Mon*. 2005;**5**(4):109-15.
13. Alavian SM, Gooya MM, Hajarizadeh B, Esteghamati AR, Moeinzadeh AM, Haghazali M, et al. Mass Vaccination Campaign against Hepatitis B in Adolescents in Iran: Estimating Coverage using Administrative Data. *Hepat Mon*. 2009;**9**(3):189-95.
14. Alavian SM, Malekzadeh R, Azimi K, Ghasemian-Moghadam AA, Soleymannejad H. [Military injuries as great risk factor for HBV contamination in Islamic soldiers]. *J Mil Med*. 2001;**1-2**(3):9-14.
15. Alavian SM, Hosseini SM, Fattahi E, Gabbari A. [Determination of hepatitis B frequency among family members of HBsAg positive in military and non-military persons]. *J Mil Med*. 2004;**6**(2):99-104.
16. German V, Giannakos G, Kopterides P, Liaskonis K, Falagas ME. Serologic indices of hepatitis B virus infection in military recruits in Greece (2004-2005). *BMC Infect Dis*. 2006;**6**:163.
17. Krugman S. Hepatitis B vaccine. *Pediatr Infect Dis*. 1982;**1**(4):217-8.
18. Alavian SM, Zamiri N, Gooya MM, Tehrani A, Heydari ST, Lankarani KB. Hepatitis B vaccination of adolescents: a report on the national program in Iran. *J Public Health Policy*. 2010;**31**(4):478-93.
19. Alavian SM, Fallahian F, Bagheri-Lankarani K. The Changing Epidemiology of Viral Hepatitis B in Iran. *J Gastrointest Liver Dis*. 2007;**16**(4):403-6.
20. Alavian SM, Fallahian F, Bagheri Lankarani K. Epidemiology of Hepatitis E in Iran and Pakistan. *Hepat Mon*. 2009;**9**(1):60-5.
21. Scott PT, Niebuhr DW, McGready JB, Gaydos JC. Hepatitis B immunity in United States military recruits. *J Infect Dis*. 2005;**191**(11):1835-41.