

Viral Hepatitis in Iranian Armed Forces: Prevalence of HBV and HCV in the Wounded-In-Action (WIA)

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Objective: Viral hepatitis remains a health threat to military forces. Most recently there has been concern about hepatitis C virus transmission during military service. Hepatitis B and C are the main causes of mortality and morbidity in military personnel.

Methods: In this study, all WIAs of two corps of Revolutionary Guards of IR. Iran were checked for hepatitis B and C and liver function tests (LFT). A questionnaire was filled out for all WIAs, in which risk factors were asked.

Results: In this study, 563 WIAs were enrolled. Mean age was 38.9 ± 3.9 . Mean rate of disability was 25.5%. HBsAg positive prevalence was 4.8% and anti-HCV was 0.7%. In anti-HCV positive group, 50% had elevated enzymes and in HBsAg positive WIAs, 30.4% had elevated enzymes. All of HCV positive WIAs had surgery as a risk factor (100%).

Conclusions: Based on the prevalence of anti-HCV positive, which shows a 5.5 times increase in prevalence of HCV in our study group, we recommend HCV infection screening in WIAs.

Keywords: HBV, HCV, Military

Introduction

Prevalence of HBV is nearly 2 times as much as that of normal population and HCV prevalence in WIAs is 5.5 times higher than that of general population in Iran. As most of the WIAs did not know about their disease (92%), and only 4.5% had clinical complications, detecting these patients at this stage and treatment with antiviral medication can control severity and prevent morbidity of the disease.

Viral hepatitis is one of the most important health problems of the world. Nearly 350 million people are infected with hepatitis B virus (HBV)⁽¹⁾ and 170 million persons with hepatitis C virus (HCV)⁽²⁾ worldwide. Viral hepatitis remains a health threat to military forces. Because there are diverse routes of transmission, the risk of viral hepatitis cannot be completely eliminated⁽³⁾. Hepatitis B is a common cause of chronic hepatitis, cirrhosis and mortality in Iran⁽⁴⁾. HBV is one of the most important causes of morbidity in military forces because this job has risk of injury⁽⁵⁾. More recently, HCV infection has been considered a potential health threat for military personnel and WIAs due to illicit drug use, prior blood transfusions, and contact with the blood of battlefield casualties⁽⁶⁻⁹⁾.

During Iraq-Iran war (1980-1988), many of the Iranian who were in battlefield had some trauma, and became wounded. As their treatment (surgery or transfusion) was done in emergency situation, some of the health standards were not observed for them. The other point is screening of blood for HCV in Iran started in 1996, so the patients who had transfusion before this time may have been infected with HCV.

In this study, the prevalence of hepatitis B and hepatitis C in all WIAs active duty of Revolutionary Guards of IR Iran was checked.

Methods

In this study all WIAs active duty in two corps of Revolutionary Guards of IR.Iran were checked. During a special workshop in Baqiyatallah University of Medical Sciences, all physicians of

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these corps were trained. They examined all WIAs, completed the questionnaire for all and took blood samples from them. In questionnaires, we collected data about their risk factors such as the rate of disability, history of surgery, kind of injury (Traumatic, Chemical, Psychological), transfusion of blood products, needle stick, history of dental work at a dentist's, history of dental work at a dental hygienist's, history of icterus, history of hospitalization, blood disorders (e.g. hemophilia), and history of working as health care worker.

Sampling method was census, and all of the WIAs enrolled in the study. The inclusion criteria were history of trauma in war and working in that corps. After the test results were ready, all of the WIAs who were HBsAg negative were vaccinated for HBV.

Laboratory method

All samples were checked in Bahar Lab (the specific laboratory of Tehran Hepatitis Center) using radioimmunoassay tests commercially available from DiaSorin S.R.I. Italy. Anti-HBs was determined by radioimmunoassay (ETI-AB-AUK-3). The anti-HBs value of >10 mIU/mL has generally been considered protective. For anti-HCV screening, we used ELISA (ETI-AB-HCVK-3), and positive results were confirmed by Immunoassay Blot. For all WIAs, we checked liver function tests (aminotransferases (ALT and AST), alkaline phosphatase, prothrombin time (PT), and bilirubin). Questionnaire and test data were analyzed by SPSS® 11 software.

Results

In this study, 563 persons were enrolled. The mean duration of service at battlefield was 50.1 ± 20 months (ranging 5-98 months). Mean age was 38.9 ± 3.9 . Mean rate of disability was 25.5% (table.1).

The mean rate of disability was 25.5 ± 14 percent (ranging 5 to 81%). Some WIAs had a history of trauma more than 10 times, the mean of which was 2.6 (ranging 1 to 16 times). Just a few of them had a history of HBV vaccination (9.9%). Prevalence of HBs-Ag positive was 4.8% (27 persons) and for Anti-HCV positive was 0.7% (4 persons). We

Table 1. Frequency of disability according to the kind of disability.

	Chemical casualty (%)	Psychological casualty (%)	Traumatic casualty (%)
Yes	51.1	38.6	82.9
No	48.9	61.4	18.1

checked the LFT for all WIAs; mean of AST was 30.4 ± 29 U/L (ranging 6-655 U/L) and 13.1% (71 patients) had elevated AST in total WIAs. Mean of ALT was 31.2 ± 19 U/L and 19.4% (105 patients) had elevated ALT in total. In HBsAg positive WIAs, 30.4% had elevated enzymes and in Anti-HCV positive WIAs, 50% (2 patients) had elevated enzymes. Only 4.5% (25 patients) had clinical manifestation of hepatitis.

Most of the risk factors registered in questionnaire were transfusion of blood or blood products (Table 2).

Table 2. Prevalence of risk factors in WIAs

Risk Factors	HBsAg positive (%)	HCVAb positive (%)	Total Group (%)
Contact with icteric patient	2 (7.4)	0 (0)	75 (13.3)
Transfusion	11 (40.7)	3 (75)	253 (44.9)
Needle stick	1 (3.7)	0 (0)	29 (5.2)
Hx of dental work at a dentist's	23 (85.2)	4 (100)	532 (94.5)
Hx of dental work at a dental hygienist's	5 (18.5)	0 (0)	94 (16.7)
Hx of icterus	0 (0)	0 (0)	20 (3.6)
Hx of hepatitis	4 (14.8)	0 (0)	12 (2.1)
Hx of hejamat	3 (11.1)	1 (25)	97 (17.2)
Tattooing	1 (3.7)	0 (0)	13 (2.3)
Health care worker	2 (7.4)	2 (50)	95 (16.9)
Surgery	20 (74.1)	4 (100)	427 (75.8)
Hospitalization	21 (77.8)	4 (100)	490 (87)
History of liver disease in family	1 (3.7)	0 (0)	33 (5.9)
History of blood disorder e.g. hemophilia	0 (0)	0 (0)	6 (1.1)

There was no relation between HBsAg positive and any risk factors in WIAs. Although it seems that the prevalence of HBV is related to duration of service at battlefield, there was no significant relationship between them.

Discussion

In a case-control study, the role of battlefield trauma in hepatitis infection was checked in blood donors in Tehran Blood Transfusion Organization between 1995 and 1998. The prevalence of HBV was higher in people who had a history of battlefield trauma, and relative risk in WIAs was 1.6 times as much as in other people⁽¹⁰⁾. In another study conducted from 1996 to 1999, it was shown that the relative risk for HCV in military people is 1.4 times as much as in others. This study showed that prevalence of some risk factors such as transfusion, surgery and hospitalization in military personnel are higher than in general population, and the only risk

factor for HCV is a history of battlefield trauma that causes the 9.3 times more prevalence in them ⁽¹²⁾.

Based on the prevalence of 0.7% for anti-HCV positive in WIAs, compared with 0.12% in blood donors in Tehran ⁽¹¹⁾, it shows a 5.5 times increase in prevalence of HCV in them. As you may know, there was a special situation in battlefield and nobody took care of some standard procedures, so health care workers were at risk for hepatitis because of contact with victims' blood, direct contact or needle sticks. The other point is about HBsAg positive patients with prevalence of 4.8% that is higher than that of general population in Iran.

Most of the WIAs didn't know about their disease (92%) and only 4.5% of WIAs had clinical complications, 13.1% had elevated AST and 19.4 % had elevated ALT. Detecting these patients at this stage, and using the antiviral treatment for them can control the disease and prevent the severity of hepatitis. Furthermore, by detecting and controlling these cases, we can prevent new cases in their families.

We detected some cases of elevated enzyme without viral hepatitis where some diseases such as fatty liver should be considered.

As a matter of fact, HCV is a threatening factor in military personnel. By early detection and treatment, we can prevent HCV infection in military forces and reduce expenses because the new treatment protocols are very expensive, and damage caused by the disease is nearly irreversible.

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