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Hepatitis C in Vietnam Era Veterans

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Hepatitis C is a major problem in United States military veterans. In several studies of Veteran's Affairs (VA) Medical Center patients, we find that 8-9% are positive for hepatitis C antibodies. Some VA Medical Centers had 10-20% of patients with hepatitis C antibodies.^{1,2} The highest rate of hepatitis C is found in the Vietnam era veterans. Several studies have been initiated to better understand the high frequency of hepatitis C in veterans of the Vietnam conflict. Areas of research include the demographic characteristics, risk factors for infection and the potential role of military service in the acquisition of hepatitis C. Underlying this research is the question of what is unique about Vietnam or Vietnam-era veterans to help explain a high prevalence of hepatitis C which was not observed in World War II or Korean era veterans.

Vietnam era veterans are generally defined as those serving on active duty between 1964 and 1975. Other sources will restrict these dates from 1964 to 1973. An estimated 8,615,000 served during the Vietnam era while 2,150,000 actually served in Vietnam. An estimated 1,600,000 served in combat³. The clear majority of Vietnam era veterans served outside Southeast Asia during the war. Likewise a distinction has to be made between active duty military personnel, veterans and veterans served by the VA Medical Centers¹.

The demographics of hepatitis C in United States civilians and VA patients are important. Several epidemiological studies have found hepatitis C to be higher in U.S. males, African-Americans, lower socioeconomic groups and in those Americans in the 40 to 60 year old age groups¹. In addition to serving primarily males, the VA has historically served large populations of disadvantaged, uninsured and minority veterans. The VA has had well established programs for the treatment of ethanol and other substance abuse. These substance abuse programs have often attracted younger veterans with prior intranasal cocaine and intravenous drug use associated with hepatitis C infection. As a result of the VA programs' providing care for the disadvantaged, uninsured and substance abusing veterans, the VA has acquired significant patient populations with high risk for hepatitis C. Many of the highest risk groups for hepatitis C in the U.S.--identified by the Centers for Disease Control and NHANES III study: male, poor socioeconomic group, and between the ages of 30-50 (in the 1988-94 study)--have the same demographic criteria met by many Vietnam era veterans seeking care in the VA¹. Improved screening of VA patients with risk factors for hepatitis C has helped identify increasing numbers of patients with chronic hepatitis C.

What are the VA patients' risk factors for hepatitis C? In a study of 409 patients in the Palo Alto VA, 81 % of patients had a history of intravenous drug abuse (IVDA), 11% had no identified risk factor, 3% had a history of transfusion and 2% had both transfusion history and intravenous drug use⁴. A large multi-center VA study involving twenty six Medical Centers and approximately 5,800 patients was initiated by the San Francisco VA Medical Center to study demographic factors and treatment response in VA patients. In preliminary data from the Memphis VA Medical Center, 222 patients were entered with a mean age of 50.7 years. 216 patients were male and six were female. 119 patients were Caucasian, 100 patients were African-American and three were Hispanic-Americans. 68.5% of the patients were Vietnam-era veterans, 20.3% were Post-Vietnam/Gulf War era veterans. Only 2.7% of the hepatitis C patients served in the World War II or immediate post-World War II eras. Only 8.5% served in the Korean War or immediate post-Korean War eras. Unlike the Palo Alto VA, 47.3% of Memphis hepatitis C patients reported IVDA. 36.5% of patients reported a history of transfusion. 14.4% reported blood exposure in combat and 9.5% reported combat wounds. 19.4% reported non-combat occupational exposure to blood or body fluids.

The role of tattoos in transmission of hepatitis C has been controversial¹. In this group of Memphis veterans, 30.2% of patients had tattoos. 92.8% of patients reported multiple risk factors for hepatitis C. In analysis of patients with a single risk factor for hepatitis C, intranasal cocaine use, non-combat occupational exposure, surgery, transfusion, IVDA and sex with a prostitute were identified.

What was unique about the Vietnam era and hepatitis C? Medical advances during the Vietnam War included rapid evacuation, improved transfusion and high rates of U.S. casualty survival in an era prior to hepatitis C screening of the blood supply. Many Vietnam combat casualties who survived with multiple transfusions would have died on the battlefield in previous conflicts. The drug culture of the 1960s and 1970s in America and Western Europe was another major factor. Drug experimentation and injection among young people were more widespread than previous generations of the Twentieth century. This seriously effected U.S. troops stationed in West Germany and the continental U.S. as well as in Southeast Asia. In Vietnam, heroin use increased significantly in 1970, and by 1971 an estimated 10-15% of servicemen had used heroin. Interestingly, 11% of these users had used heroin prior to coming to Vietnam. Another overlooked factor in Vietnam heroin use was that it was primarily smoked. In a 1971 study of heroin addiction among servicemen in Vietnam, 90-95% of addicts smoked heroin and only 5-10% injected⁵.

Although there has been much publicity of the substance abuse in Vietnam, there has been much less awareness of the degree of IVDA among U.S. troops stationed in Europe and the United States during the Vietnam era. Likewise until the hepatitis C and HIV epidemics, many Americans had little appreciation of the widespread injection drug use among civilians from the late 1960s to 1980s. In our series of VA patients with hepatitis C serving in Southeast Asia, 43.8% had a history of IVDA. Among patients with hepatitis C who served during the Vietnam War outside of Southeast Asia, 58.8% had prior IVDA. Among veterans serving after Vietnam with hepatitis C, 42.2% had IVDA. Intravenous drug use and hepatitis C are not simply problems of veterans of the war in Southeast Asia.

In recent years hepatitis C has been studied in the U.S. military. 21,000 troops were tested in 1997. Only 0.1 % of recruits and active duty troops less than 30 years old had hepatitis C antibodies. 1.1% of active duty personnel age 35-39 and 3.0% of those over 40 had hepatitis C antibodies. Approximately 0.6% of Reservists had hepatitis C with the highest prevalence of 1.2% in those over 40 years old. In this study, hepatitis C infection did not correlate with military service in Vietnam².

Although intravenous drug use is the most common risk factor in both non-veteran and VA studies, what are other risk factors for hepatitis associated with military service? This has been an area of ongoing research and controversy. In addition to the usually accepted risk factors for hepatitis C, several potential categories include:

- (a) blood/body fluid exposure to health care personnel
- (b) blood/body exposure to combat personnel
- (c) contamination of vaccinations/immune globulin
- (d) blood exposure through the multidose vaccination process
- (e) blood exposure through sharing of razors, non-sterile instruments or utensils

Health care employment is a well-recognized risk factor for viral hepatitis. The Center for Disease Control did not find hepatitis C infection in civilian paramedics, emergency medical technicians and firemen to be associated with the duration of employment or exposure. The highest rate of hepatitis C was observed in the 35-49 year old age group⁶. Data on low hepatitis C transmission from blood exposure in civilian paramedics may not translate to combat exposure where universal precautions, intact skin and rubber glove use are absent. In a case report, blood exposure during fighting has been identified as a mode of transmission of hepatitis C⁷.

Historically, vaccine contamination has been recognized by the military as a major cause of viral hepatitis. During World War II, the Yellow Fever vaccine used by the U.S. Army in 1942 had contamination with the hepatitis B virus. Approximately 330,000 soldiers were injected and this resulted in 50,000 hospitalizations⁸. No similar association has been identified with hepatitis C.

Hepatitis A epidemics from contaminated food or water are common during war. U.S. troops suffered serious outbreaks of hepatitis A during World War II. Gamma-globulin injection has been used for decades by the U.S. military to prevent hepatitis A in troops going overseas and was used during the Vietnam and Gulf Wars. Gamma globulin contains antibodies obtained from blood donors. Although intramuscular use of immune globulin has not been associated with hepatitis C in the United States, intravenous immune globulin transfusion has been implicated as a risk factor for hepatitis C⁹. In East Germany, 14 batches of anti-D immune globulin were contaminated with hepatitis C. 1,018 East German women were injected from 1978-79 resulting in 76% hepatitis C antibody positive in a twenty year follow up study¹⁰. The relative role of immune globulin in hepatitis C transmission remains controversial¹¹. Since the mid-1990s, the U.S. military has shifted to a longer lasting hepatitis A vaccination and the role of immune globulin has been limited.

The risk of transmission of hepatitis C by multiple dose injections is the subject of ongoing research¹. Fortunately, more recent studies of military recruits and follow up studies of viral hepatitis during deployments have shown very low rates of hepatitis C infection^{2,12,13}.

Hepatitis C in Vietnam era veterans is an ongoing national problem. Complex challenges remain in the epidemiology and treatment of hepatitis C. Many Vietnam era veterans are now on the front lines of the hepatitis C epidemic. Improved understanding and treatment of these patients will ultimately benefit all Americans with hepatitis C.

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Variables associated with HCV infection in Veterans

- * Vietnam-era veterans
- * Blood transfusion prior to 1992
- * Injection drug use
- * Hemodialysis
- * High risk sexual activity
- * Cocaine use
- * Low socioeconomic status
- * Excess alcohol use
- * Tattoos or body piercing in men
- * Blood exposure in the work place
- * Unequivocal blood exposure

[Note: These variables may be inter-related and are not necessarily independently related to HCV infection.]

Source: U.S. Veterans Health Administration