Viral Infection among Patients with Hemophilia in the Southeast of Iran

1Batoool Sharifi-Mood, 2Smail Sanei-Moghaddam, 3Masoud Salehi, 4Payman Eshghi, 5Soheila Khosravi and 6Manijeh Khalili

The aim of this study was to determine the seroprevalence of hepatitis C, hepatitis B and HIV infections in hemophiliacs. Seventy four hemophilic patients (62 male, 12 female, mean age 13 years, range 3-19 years) of registered hemophiliacs, from March 1986 to Oct 2005, in Zahedan, a city in Sistan and Baluchestan province (Southeast of Iran), were enrolled in this study and evaluated for hepatitis C virus, (HCV-Ab) hepatitis B surface antigen (HBsAg) and HIV-Ab. Serological tests for HIV, HBsAg and HCV were done by ELISA(Sorin Bio medika Kit). Positive samples for HCV were also confirmed by western blot. Out of 62 men with hemophilia, 23 cases (37%) were positive for HCV-Ab. All women with hemophilia were antibody negative. There was a significant difference between sex and seropositivity for HCV-Ab (p = 0.007). Among hemophiliacs, 35 cases were from Persian race and 39 cases were from Baluch race. HCV-Ab was positive in seventeen cases of Persian race and six cases from Baluch race. There was, also significant difference between race and seropositivity (p = 0.003). Seropositivity for HCV-Ab correlated with the time of treatment (before or after 1996s) with clotting factors (p = 0.05). Among 74 cases with hemophilia, 3 cases (2 male and one female) were HBsAg positive (4%) and there was no significant difference between sex and having a positive HBsAg (p = 0.8). Out of 35 persian patients, 2 cases were HBsAg positive. Only one case from Baluch patients had a positive test for HBsAg, there was no significant difference between positive test for HBsAg and race (p = 0.2). Also, there was no correlation between the time of treatment (before or after the 1990s) and positive test for HBsAg (p = 0.47). Anybody of our patients had a positive test for HIV-Ab. Upon the results emerged from this study, we recommend that all hemophiliacs should be evaluated for HCV and HBV infections but evaluation for HIV infection is not necessary.

Key words: Hemophilia, hepatitis B surface antigen, hepatitis C HIV, prevalence

1Department of Infectious Diseases and Tropical Medicine, Zahedan University of Medical Sciences, Zahedan, Iran
2Research Center of Blood Transfusion Organization, Southeast of Iran
3Department of Pediatrics, Zahedan University of Medical Sciences, Zahedan, Iran
INTRODUCTION

Hemophilia A and B are inherited bleeding disorders caused by deficiencies of clotting factor VIII (FVIII) and factor IX (FIX), respectively (Kasper and Lusher, 1993). In the past, hemophilia patients have been infected with Hepatitis C Virus (HCV), Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV) after treatment with non-viral inactivated clotting factor products derived from human plasma (Kasper and Lusher, 1993; Goedert et al., 2002; Bray et al. 1994). In the 1980s, the risk of transmitting viral contaminants in commercial FVIII concentrates was well recognized by the mid-1980s, most patients with severe hemophilia had been exposed to hepatitis A, B and C viruses and HIV (Lawrence and Recombine, 1994; Anonymous, 1997; Matania et al., 1995). Fresh frozen plasma and cryoprecipitate are no longer used in hemophilia A and B because of the lack of safe viral elimination and concerns regarding volume overload (Gordert et al., 2002; Anonymous, 1997). New viralicid techniques have been effective in eliminating the HIV transmissions and virtually eliminating hepatitis B and C exposures (Gordert and Eyster, 2003; Lawrence and Recombine, 1994; Matania et al., 1995). The present standard of using recombinant products in the treatment of hemophilia virtually eliminates the risk of viral exposure. Various purification techniques are used to reduce or eliminate the risk of viral transmission, including heat treatment and chemical precipitation (Smith and Levine, 1984; Lobato et al., 1996). Fortunately, many recombinant concentrates are now available. The advantage of such products is the elimination of viral contamination (Anonymous, 1994; Anonymous, 1992; Mauser et al., 1995). The effectiveness of these products appears comparable to that of plasma-derived concentrates. Although, new techniques have improved treatment of hemophiliacs and have reduced the risk of viral infections but these new techniques and new products don't use in all developing countries and there is yet the risk of transmission of viral infections. Several studies have showed that many of viral infection in hemophilia patients have been occurred before of the introduction of concentrated lyophilized products (Anonymous, 1997; Matania et al., 1995; Smith and Levine, 1984; Anonymous, 1994; Mauser-Bunschoten et al., 1995). In Iran, since 1996, new techniques have been used for treatment of hemophiliacs and therefore there is the risk of occurring of viral infection in our patients. Since, there is no study about viral infection in Zahedan hemophilia patients, we conducted this study.

MATERIALS AND METHODS

In this cross-sectional, descriptive study, all patients were registered with Zahedan Hemophilia Society (in Southeast of Iran), from March 1986 to Oct 2005 were enrolled and evaluated for hepatitis C virus antibody (HCV-Ab), hepatitis B surface antigen (HBsAg) and HIV-Ab. Serological tests for HIV, HBsAg and HCV were done by ELISA (Sorin Biomedical Kit). Positive samples for HCV were also confirmed by western blot.

RESULTS AND DISCUSSION

Seventy four hemophilic patients (62 male, 12 female, mean age 13 years, range 3-19 years) of registered hemophiliacs, in Zahedan, were enrolled in this study. Out of 62 men with hemophilia, 23 cases (37%) were positive for HCV-Ab. All women with hemophilia were antibody negative for HCV infection. There was a significant difference between sex and seropositivity for HCV-Ab (p = 0.007).

Among hemophiliacs, 35 cases were from Persian race and 39 cases were from Baluch race. HCV-Ab was positive in seventeen cases of Persian race and six cases from Baluch race. There was also significant difference between race and seropositivity (p = 0.003). Seropositivity for HCV-Ab correlated with the time of treatment (before or after the 1996s) with clotting factors (p = 0.05) (Table 1).

Out of 74 cases with hemophilia, 3 cases (2 male and one female) were HBsAg positive (4%) and there was no significant difference between sex and having a positive HBsAg (p = 0.8). Out of 35 persian patients, 2 cases were HBsAg positive. Only one case from Baluch patients had a positive test for HbsAg. There was no significant difference between positive test for HbsAg and race (p = 0.2). Also, there were no correlation between the time of treatment (before or after the 1996s) and positive test for HbsAg (p = 0.47). Nobody of our patients had a positive test for H1V-Ab.

Thirty one percent of our hemophilic patients were infected with HCV infection that 29% of infection was occurred before of 1996s. The HIV test was negative in all patients and only 3 patients were HBsAg positive. These results confirm the results of other studies showing that multi transfused hemophilia patients have often been exposed to HCV. Intriguingly, patients who were treated before 1996s were significantly more often HCV-Ab positive than the patients who were treated after 1996s. We can conclude that using of new products reduce the viral infection. In USA, 88% of hemophiliacs were infected with HCV and two thirds of these were coinfected with HIV (Rosenberg and Goedert, 1998). In recent study, with
16 years of active follow-up, there was an increased mortality rate in hemophilic patients who were infected with HCV (Rosenberg and Goedert, 1998). Goedert et al. (2002) reported that 58% of hemophilic patients were HCV/HIV-coinfected and 30% were infected with HCV without HIV. In Kazimierska study, among 21 hemophilic patients, 19% had a positive test for HIV infection (Troisi et al., 1993). In this survey, hemophiliacs was particularly exposed to infection by CMV, HBV and HCV which is connected unquestionably to blood transfusions (Troisi et al., 1993). In the last decades, mortality rates for patients with hemophilia had dramatically worsened because of viral infections (Goedert et al., 2002). Life expectancy would seem to have increased in the absence of viral infection (Goedert et al., 2002; Bray et al., 1996; Matania et al., 1995). An increase in virus related mortality was most apparent among the severely affected patients, who are the predominant users of clotting factor concentrates and are more likely to be infected with HIV or hepatitis than those with moderate or mild hemophilia (Goedert et al., 2002; Lawrence and Recombinate, 1994; Kazimierska and Gorski, 1989). Today, with new viricidal techniques, plasma-derived factor products offer greatly reduced risk for HIV and hepatitis B and C transmission (Goedert et al., 2002; Rosenberg and Goedert, 1998; Troisi et al., 1993). Although, dry heating, solvent-detergent treatment, vapor treatment and sodium thiocyanate plus ultrafiltration and are all effective purification steps, but there remains a slight possibility of viral transmission (Lawrence and Recombinate, 1994; Rosenberg and Goedert, 1998; Alter, 1995). In developing countries where these viral infections rate is high and using of new products is not routinely, we will observed these viral infections in hemophiliacs. Therefore, hepatitis B and A vaccine is recommended for individuals with hemophilia because they are at increased risk of developing hepatitis due to exposure to blood products (Goedert et al., 2002; Kazimierska and Gorski, 1989; Anonymous, 1995). Unfortunately, chronic liver disease is a significant problem in patients with hemophilia who are infected with hepatitis C virus and there is no any vaccine for it (Alter et al., 1989; Makris et al., 1990).

CONCLUSIONS

Upon present results, the great majority of patients with hemophilia who have received plasma-derived products that were not treated to eliminate potential contaminating viruses were infected with hepatitis C virus. Although, in developed countries, with new methods of purification and improved screening of donors, these infectious complications now are important only historically.

ACKNOWLEDGMENTS

We would like to thank all staff in Research Center Blood Transfusion Center that assisted us in this study.

REFERENCES


