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Short Communication

Prevalence of Hepatitis B and C among hemodialysis and thalassemic patients in a special medical center in East Tehran in 2011

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The blood born transmitted viral hepatitis occurs after frequent blood infusions among patients with thalassaemia and hemodialysis disease, and in a large number of these patients severe and chronic liver disease developed. This study aimed to determine the prevalence of hepatitis B and C serology among hemodialysis and thalassemic patients in a special medical center in East of Tehran in 2011. This was a descriptive cross-sectional study performed on 62 patients (49 hemodialysis and 13 thalassemic patients) in the same center. Initially, demographic information and data associated with possible risk factor were collected for each patient followed by testing blood samples for presence of anti-hepatitis C virus antibody (anti-HCV-Ab), anti-hepatitis B virus antibody (anti-HCV-Ab), and other serologic tests. By using SPSS software, t test and chi-square statistics data were analyzed. Anti-HCV-Ab (ELISA) was positive in 4 patients (6.1%). Confirmation of positive samples was carried out using HCV RNA PCR but the results in all patients (100%) were negative. Serologic markers of hepatitis B such as hepatitis B surface antigen (HBs-Ag), hepatitis B surface antibody (HBs-Ab) and hepatitis B core antibody (HBcAb)HBc-Ab were negative in all patients. Regarding the current practice of safe blood-transfusion program in our country, it is concluded that eliminating of risk factors and the use of screening tests with higher sensitivity could be among the key elements in controlling the prevalence of HCV/HBs infection among thalassemia/hemodialysis patients. Serologic markers of hepatitis B and C should be evaluated in periodic manner and HCV-RNA PCR should be evaluated yearly in all patients, because defect of cellular and humoral immune system could be present in these patients.

Key words: Prevalence, thalassemia/hemodialysis patients, hepatitis B and C.

INTRODUCTION

According to significant increase in the number of patients with hemodialysis, infection control and maintain good quality of life in these patients is important. However, with regard to increasing number of these individuals, percentage of people with hepatitis B and C has decreased. On the other hand, thalassemic patients due to the frequent blood infusion are at risk of hepatitis (Alavian et al., 2003; Alter, 1997). In America, according to WHO records 6.1% of people have hepatitis C virus (HCV) infection. But in the Iranian population less than 200,000 (less than 1%) persons have HCV (Alavian et al, 2005). In Iran before 1996, due to repeated transfusions, the risk of hepatitis C is 12.5 times higher today in thalassemic patients (Kabir et al., 2006). 20 to 40% of thalassemic patients have HCV infection (Mirmomen et al., 2006). A study in 2004 in the Rasht (city in north of Iran) showed that HCV antibody (HCV-Ab) is positive in 25% of thalassemic patients, in another study in 2001 in the Qazvin and Semnan, 24.2 and 39% of these patients,

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Table 1. Information of individuals of the study.

Information	Total	Male	Female
Thalassemic patients	13	10	3
Hemodialysis patients	49	37	13
Blood transfusion before 1995	11	4	7
Family history of viral hepatitis	4	3	1
HBV vaccination history	53	32	21

Table 2. Serologic markers of viral hepatitis B and C among hemodialysis and thalassemic patients in the Special Medical Center in East of Tehran in 2011.

Infection	Hemodialysis patients	Thalassemic patients
HCV-Ab	3 patients positive	1 patient positive
HBs-Ab	Negative in all patients	Negative in all patients
HBs-Ag	Negative in all patients	Negative in all patients
HBc-Ab	Negative in all patients	Negative in all patients

respectively, were seropositive for HCV-Ab. In all these reports, prevalence of HCV has significant relationship with a mean age, duration and number of blood infusions (Alavian et al., 2002, 2007; Ansar, 2002).

Accordingly, the underlying disease in these patients largely impaired the humoral and cellular immunity. For this reason, antibody response against diseases and vaccinations is impaired in these patients and on the other hand antibody detection against these diseases will have false negative results, therefore in diagnosis of these diseases other methods such as polymerase chain reaction (PCR) should be used (Kato et al., 2008).

Viral hepatitis infection in hemodialysis patients has the same pattern of these diseases that is seen in the country's population. The prevalence of hepatitis B virus (HBV) in North America and Western Europe is 3%, Central America, Eastern Europe and Africa sometimes up to 20%, and in Iran about 6.2% of the people have HBV infection. In different countries, 4 to 59% of hemodialysis patients were infected with HCV. HCV infection was reported in 7.61% of hemodialysis patients in Iran (Ehsani et al., 2009).

HCV-Ab test is required once every three months in hemodialysis patients and HCV-RNA PCR is required yearly. In this study, we determine the prevalence of hepatitis B and C in hemodialysis and thalassemic patients in the Special Medical Center in East of Tehran in 2011.

METHODOLOGY

A descriptive cross-sectional study was performed on 62 patients (49 hemodialysis patients and 13 thalassemic patients) in the same center. Initially, demographic information and data associated with possible risk factor (frequency of blood transfusion and surgery, tattoo, underlying diseases) was collected for each patient followed by testing blood samples for presence of anti-HCV-Ab, anti-HBc-Ab, and other serologic tests. By using SPSS software, t test and chi-square statistics data were analyzed.

RESULTS

This study was performed on 62 patients in this center, 40 (65%) males and 22 (35%) females, mean age is 44 ± 19 years, the minimum age is 9 and maximum is 79 years. Patients in this study are 49 hemodialysis patients (37 males and 13 females) and 13 thalassemic patients (3 males and 10 females). Forty patients have two or more co-morbidity (such as hypertension, renal failure, and diabetes mellitus) (Table 1).

In this study, 10 patients (9 males and 1 female) had no history of vaccination against hepatitis B. Table 2 shows serologic markers of viral hepatitis in population of study.

According to the results of viral hepatitis serological tests, HCV-RNA PCR performed in all patients of this center and the later test were negative for all patients.

DISCUSSION

This study was performed for the first time in this center. Four patients were seropositive for HCV but HCV-RNA PCR was negative in these patients. This revealed that the patients were infected in the past, but the infection was resolved at present. This is a warning for the dialysis centers, and isolation of these patients is necessary. In patients of this center, HCV-Ab test is required once every three months and HCV-RNA PCR is required yearly (Shamshirsaz et al., 2004).

Despite full course vaccination with double dose HBV

vaccine, HBs-Ab is negative in all patients. It is worrisome among these patients and other techniques such as intradermal injection of HBV vaccine and multiple dose of vaccine are recommended.

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