

Co-morbidities and HIV Infection of Hemophiliacs in Taiwan: A Population-Based Study

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Introduction

There have been great advances in hemophilia care and co-morbidities of hemophiliacs are also taken seriously. HIV infection is a major issue for hemophiliacs. HIV infection might result in increased prevalence of some comorbidities, including HIV-related malignancy. Few studies on prevalence of HIV infection and co-morbidities of hemophiliacs have been conducted in Asian countries by a nationwide scale. National Health Insurance in Taiwan has established nationwide hemophilia care and registry since 1995. It makes a population-based analysis possible.

Materials and Methods

The National Health Insurance (NHI) in Taiwan was introduced in 1995. According to the report published by the Bureau of National Health Insurance (BNHI), hemophilia is included in the list of catastrophic illness. Patients with catastrophic illness certificates are eligible for exemption from copayments, and the approval of a catastrophic illness status is subject to evaluation and review by the BNHI.

We used the registration files and original claim data of catastrophic illness patients for analysis. Human immunodeficiency virus (HIV) infection was determined using ICD-9 code 042 from 1998 to 2009. Male cases of hemophilia A and B were identified using the International Classification of Diseases ninth revision (ICD-9), codes 286.0 and 286.1. Data were analyzed using SAS version 9.3 (SAS Institute, Cary, NC). Meanwhile, hemophiliacs and age-, sex-, income-, and urbanization-matched controls without hemophilia randomly extracted in a 1:5 ratio were retrieved from NHIRD in 2010, in order to compare their prevalence of co-morbidities.

Results

Human Immunodeficiency Virus Infection in Hemophiliacs

The annual prevalence of HIV infections in hemophiliacs in Taiwan grossly declined from 37.5 per 1000 hemophiliacs in 1998 to in 29.2 per 1000 hemophiliacs in 2009, averaging 32.2 per 1000 hemophiliacs. Overall, cases of new infection and death were scant from 1998 to 2009 (Table 1).

Co-morbidity of Hemophiliacs

Totally 900 hemophiliacs and 4500 age-, sex-, income-, and urbanization-matched controls with the similar sociodemographic characteristics were retrieved from NHIRD in 2010. A significantly higher prevalence rate of hypertension, liver disease, solid tumor without metastasis, chronic pulmonary disease, other neurologic disease, anemia due to blood loss, and iron deficiency anemia was found in hemophiliacs ($p < 0.05$), with marginally significantly higher prevalence of diabetes mellitus. There was no significant difference in the prevalence rate of HIV infection, lymphoma, renal failure, congestive heart failure, peptic ulcer, hypothyroidism, depression, and alcohol abuse. (Table 2)

Table 1. Total cases and prevalence of HIV infection of hemophiliacs in Taiwan

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Mean
New HIV cases	-	4	0	4	0	0	0	1	1	0	1	0	1
Dead HIV cases	-	3	3	0	0	0	0	1	0	0	0	0	0.64
Total HIV cases	25	26	23	27	27	27	27	27	28	28	29	29	26.9
Total hemophiliacs	667	696	730	766	804	825	860	883	901	929	973	992	835.5
Prevalence (1/1000)	37.5	37.4	31.5	35.2	33.6	32.7	31.4	30.6	31.1	30.1	29.8	29.2	32.2

Table 2. Prevalence of comorbidity of hemophiliacs

Variable	Hemophilia (n=900)	Control (n=4500)	p value
hypertension,	41 (4.56)	299 (6.64)	0.019
liver disease,	98 (10.89)	140 (3.11)	<.0001
solid tumor without metastasis,	15 (1.67)	34 (0.76)	0.009
chronic pulmonary disease,	15 (1.67)	143 (3.18)	0.014
other neurologic disease,	23 (2.56)	25 (0.56)	<.0001
anemia due to blood loss	4 (0.44)	1 (0.02)	0.003
iron deficiency anemia	14 (1.56)	2 (0.04)	<.0001
diabetes mellitus, uncomplicated	18 (2.00)	140 (3.11)	0.071
diabetes mellitus, complicated	2 (0.22)	38 (0.84)	0.053
lymphoma,	0 (0.00)	1 (0.02)	1.000
renal failure,	2 (0.22)	20 (0.44)	0.564
congestive heart failure,	2 (0.22)	20 (0.44)	0.564
peptic ulcer,	15 (1.67)	84 (1.87)	0.786
hypothyroidism,	0 (0.00)	9 (0.20)	0.371
alcohol abuse	1 (0.11)	16 (0.36)	0.337
depression,	6 (0.67)	41 (0.91)	0.471

Conclusion

This is the first population-based report on co-morbidities of hemophilia in a Chinese population. The prevalence of HIV infection in Taiwanese hemophiliacs was far lower than that in the West countries, maybe resulting in lower prevalence of HIV-related lymphoma. Co-morbidities of hemophiliacs found in this study were clinically valuable.

