Original Article

Assessment of Risk Factors in Patients with Chronic Hepatitis B Referred to Dr. Labbafi Nejad's Hospital Hepatitis Clinic 2012-2014

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Abstract

Background: With the growing trend of unhealthy behaviors in the community, the likelihood of transmission of hepatitis B virus from infected people to society is increasing. So, early detection for preventing disease progression in patients and preventing the spread to the community has an important role. The aim of this study is assessment of risk factors in patients with chronic hepatitis B referred to Labbafi nejad's Hospital hepatitis Clinic during 2012-2014.

Materials and Methods: This cross-sectional study is done on 329 hepatitis B confirmed patients that were admitted to Labbafi nejad's Hospital hepatitis Clinic 2012-15. Information was collected by interviewing patients by researcher-made questionnaire. Variables are, all risk factors for hepatitis B, respectively. Statistical analysis was performed by SPSS version 21. Average and frequency was used for descriptive and chi-square test was used for analysis.

Results: 329 persons (59% males, 41%females) with a mean age of 44/83 years. 33/7% of these individuals have been identified through routine screening. The frequency of exposure to risk factors in this study are as follows: Some groups, such as history of dentist visit (62.3%), major surgery (45.5%) and hospitalization (54.7%) had higher prevalence than other groups. There were no cases of hepatitis B in history of cosmetics and splice joint, common use of blades and razors, HCV disease in patients at the same time, Family history of HIV positive in patients and HIV disease in patients at the same time.

Conclusion: It seems to be of great importance to pay more attention to certain jobs, lifestyles and cultural matters in Iran that predispose people to a number of risk factors so as to implement measures to control HBV spread. Also, given the high levels of hepatitis B infection among housewives (in this study), it seems that increased awareness and social - health education in order to avoid unprotected sexual contact with an infected partner can be highly effective. Despite existence of a long list of risk factors, different epidemiological studies with alternative methodologies accompanied by meta-analysis of risk factors in each separate area seems to be helpful in providing information about transmission.

Keywords: Hepatitis B, Risk Factors, Prevalence, Infectious Disease Transmission

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Introduction

Hepatitis B virus (HBV) is a double-stranded DNA virus of the hepadnaviridae family[1]. An estimated 350 to 400 million people worldwide are chronically infected with hepatitis B virus[2,3]. Hepatitis B carrier

rate varies widely from 0.01% to 20% through the world[4]. It is prevalent in Asia, Africa, Southern Europe and Latin America, where the prevalence of HBsAg in the general population ranges from 2% to 20%[5]. Despite the existence of a safe and effective vaccine, HBV continues to be a substantial and devastating health problem whose new cases are still being reported throughout the world[6].

The main route of HBV transmission, like hepatitis C virus (HCV) and human immlmunodeficiency virus (HIV) is via blood and blood products. In hyperendemic regions in the world vertical transmission from mother to newborn infant and horizontal transmission among children play an important role in intra-familial transmission of HBV[7-9]. Transmission of Hepatitis B virus in North America and Western Europe mainly results from sexual contact[10]. Needle-stick injuries in health personnel, haemodialysis, shared needles in drug abusers, dental surgery, receiving blood or blood products, bloodletting, ear and nose piercing practices, tattooing, and contact with body fluid or mucosa of HBV carriers (e.g. workers in clinical laboratories) have been associated with increased risk of transmission[10]. However, in the adult population, about 30% of reported hepatitis B cannot be associated with an identifiable risk factor[11].

In the Islamic Republic of Iran, 46% of patients with hepatocellular carcinoma and51% of those with cirrhosis are reported to be HBsAg positive[12]. In addition, HBV is recognized as the most frequent cause (70%–80%) of chronic hepatitis in the country.

Despite the availability of an effective vaccine, Hepatitis B virus (HBV) infection still remains a foremost health problem. Undoubtedly, finding the key routes of hepatitis transmission from the point of prevention in every country, specifically in endemic regions, is of high priority. Such efforts are especially important given that many infected patients with hepatitis are asymptomatic[13].

Given the capability of HBV elimination, it seems to be one of the health priorities to find the routes of its transmission in order to know the risk factors responsible for its spread and to find the target population on whom we should have put a great emphasis[2,14].

The purpose of this study was to investigate the risk factors for acquisition of HBV infection; we have conducted a cross-sectional study on subjects referred to Hepatitis Center from the Labbafi Nejad general hospital in which subjects.

Methods

This cross-sectional study was conducted during a 2 year period (2012-2014) on 329 HBV patients who came to Labafi Nejad Hospital in the city of Tehran, Iran.

Information was collected by interviewing patients by researcher-made questionnaire. A questionnaire including demographic and socioeconomic data and risk factors of hepatitis B including age, gender, level of education, job, STD history, jail history, history of contact with hepatitis, having extramarital sexual relationship, history of IV drug use (IDU), history of Non-IV drug use (Non- IDU), Hejamat (phlebotomy) and etc. were collected.

Statistical analysis was performed using the SPSS, version 21, software package (SPSS, Inc., Chicago, IL). Statistical analysis was also performed using $\chi 2$ for categorical variables. P values less than 0.05 were considered statistically significant.

Results

During a period from 2012 to 2014, total of 329 subjects who had chronic hepatitis B were identified in our center, in Labafi Nejad Hospital. The mean age of our total subjects, cases were 44.83±14.25. There were 194 (59%) men and 135 (41%) females.

Age frequency distribution of participants with hepatitis B showed that the frequency of the disease increased with age with age groups of 26–35 years and 36-45 years having the highest rates of the disease (Table 1).

The descriptive characteristics, being male, being married and profession of subjects is summarized in Table 2.

The descriptive characteristics of subjects such as alcohol consumption, smoking, icter history, tattooing, Hejamat (phlebotomy), ritualistic religious practices, aggressive trimming and makeup, needle stick, history of Non-IV drug use (Non- IDU), major surgery, history of hospitalization, history of dentist visiting, having unsafe sexual practices and dubious,

Table 1: Age frequency distribution of participants.

Age(yrs)	n	Percent
16-25	20	6
26-35	88	26.7
36-45	79	24
46-55	65	19.8
56-65	47	14.3
66-75	23	7
76-85	7	2.2

transfusion history, jail history, history of cosmetics and splice joint, history of common use of blades and razors, accident history, history of acupuncture, endoscopy, having war injury, vaccination history and having HIV disease in patients at the same time were found as risk factors in univariate analysis. (Table 3)

We also use different methods to identification of HBV in patient, which the results are shown in Table 4.

Discussion

Globally, hepatitis B virus (HBV) infection is most common form of chronic hepatitis and the leading cause of chronic liver disease and liver-related deaths[15]. The prevalence of hepatitis B worldwide is 5%, which makes it one of the most prevalent infectious diseases. HBV is transmitted through both vertical and horizontal routes. Nowadays the horizontal routes are much more important; however vertical routes have been very common in Iran[16].

Hepatitis B vaccination is the most efficient method to prevent HBV infection and its critical outcomes and most members of the World Health Organization have implemented universal HBV vaccination programs. In a past study conducted in Iran, the general prevalence rate showed no major decline before and after mass vaccination of children, however in the age group 2–14 years the rate decreased significantly from 1.3% to 0.8% over a period of 8 years[17]. Our result shows the similar percentage, and the rate of CHBV was lower in children.

The prevalence of HBV infection in this study is quite different throughout the different ethnicity, as it was higher in persian and Turk compared to Turkman and Baluch. Males were at higher risk of contracting HBV infection compared to females. It has been

Table 2: Baseline sociodemographic characteristics of study subjects.

	Frequency	Percent
Education		
Uneducated	56	17
High school	135	41
Diploma	104	31.6
Post-diploma	29	8.8
Graduate School	5	1.5
Ethnicity		
Persian	168	51.1
Kurd	19	5.8
Lor	18	5.5
Turk	101	30.7
Afghan	17	5.2
Turkman	2	0.6
Baluch	3	0.9
Unanimous	1	0.3
Marital status		
Single	34	10.3
Married	284	86.3
Divorced	4	1.2
Unanimous	7	2.1
Profession		
Housewives	109	33.1
Self-employed	111	33.7
Employee	27	8.2
University Student	10	3
School Student	1	0.3
Retired	24	7.3
Labor	39	11.8
Unanimous	8	2.4

Table 3: Possible risk factors among HBV seropositive individuals.

Risk Factor	Frequency	Percent
Alcohol	19	5.8
Smoking	46	14
Icter history	35	10.6
Tattooing	2	0.6
Phlebotomy (Hejamat)	88	26.7
Ritualistic religious practices	5	1.5
Aggressive trimming and makeup	118	36
Needle stick	8	2.4
non-injecting drug use	7	2.1
intravenous drug use	3	0.9
Major surgery	150	45.5
Hospitalization	180	54.7
Dentist visit	205	62.3
Unsafe sexual practices and dubious	11	3.3
Blood transfusion and blood products history	32	9.7
History of cosmetics and splice joint	0	0
common use of blades and razors	0	0
Jail	12	3.6
Accident	24	7.3
Acupuncture	4	1.2
Endoscopy	57	17.3
War injury	5	1.5
Vaccination history	38	11.5
HIV disease in patients at the same time	0	0
HCV disease in patients at the same time	0	0
Family history of HIV positive in patients	0	0
Family history of HCV positive in patients	1	0.3
Family history of HBV positive in patients	122	37.1

suggested that estrogen may play an important role in the protection and resistance of hepatic cells against the development of chronic liver disease[17]. Moreover, the association between male gender and hepatitis B is probably the result of greater exposure to risky sexual behavior among men, a hypothesis reinforced by the higher prevalence of other sexually transmitted diseases among these individuals[18].

Lower education was independently associated with the presence of HBV infection. The association between hepatitis B and lower education has been previously demonstrated in international studies[19]. Schooling is one indicator of socioeconomic status and these results probably reflect that a greater exposure to HBV occurs in situations of greater poverty and less access to information regarding preventive measures. In the present study, the analysis showed an association between previous acupuncture therapy and HBV infection. In fact, previous reports, particularly Asian studies from countries with high HBV endemicity, demonstrated an association between acupuncture and HBV infection.

Our results show that there were no cases of hepatitis B in history of cosmetics and splice joint, common use of blades and razors, HCV disease in patients at the same time and Family history of HIV positive in

Table 4: Different methods to identification of HBV in patients

Method	Frequency	Percent
Blood Donation	65	19.8
Screening tests before surgery	44	13.4
Routine screening	111	33.7
Signs and symptoms	35	10.6
Positive cases in family	39	11.9
Screening tests due to the increasing ALT	33	10
Other ways	2	0.6
	329	100

patients.

Recognizing risk factors for HBV infection is essential for development of control measures. Different studies have shown that sexual and injection drug use exposures are the main risk factors for HBV infection among adolescents and adults in countries of low or intermediate endemicity[20-23]. In contrast, in our study sexual exposure and reusing syringes among drug addicts were ranked among the least probable risk factors of infection. This most probably doesn't exactly reflect the reality as much as it reflects the conservative nature of our society. The major sources of infection in our study were dental procedures, surgical operations and history of hospitalization.

Some groups, such as health care workers, especially surgeons, nurses, and dentists; policemen; barbers; and drivers, are at higher risk of acquiring HBV infection in our region[18]. Some jobs in this study (housewives and self-employee) were found to be associated with higher risk of being chronically infected with hepatitis B virus. Certain jobs, lifestyles and cultural matters seem to be independent risk factors for HBV infection[24.]

In Mexico, Tattooing is mentioned among the risk factors[25]. In gypsy communities, it is suggested that tattooing could be a significant factor to be considered in relation to the transmission of hepatitis B [26]. In our study, it was found as a risk factor in 0.6% of patients.

Familial contact with HBV-infected patients play an important role in horizontal HBV transmission, as the result of our study show 37.1% of participant had a history of HBV positive in the patient's family. In Romania[27] and in Thailand[28] the most important risk factor for HBV infection was contact with an infected person. In Greece, one of the major independent risk factors was interfamilial exposure[29].

The main recommendation of this study is to have an active governmental education and media campaign about the risks of HBV infection, routes of transmission and methods of protection. The government can make use of the health and media experts across the country to formulate new plans for the educational and media campaign. Furthermore, increasing HBV vaccination of high risk groups, screening HBV infection during pregnancy, and surveillance of hepatitis B infected individuals will further decrease the prevalence of the disease in Iran.

Conclusion

As revealed from this study, there is a need for increasing the awareness and prevention of contracting and transmitting HBV infection. Also, there is a need to incorporate screening for HbsAg and vaccination against HBV. We highly recommend a meta-analysis of risk factors in each separate area that seems to be helpful and useful in providing and preparing data about transmission routes and surveillance of hepatitis B infection.

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References

1. Liaw Y-F, Chu C-M. Hepatitis B virus infection. The Lancet. 2009;373(9663):582-92.

2. Shahnaz S, Reza B. Risk factors in chronic hepatitis B infection: a case-control study. Hepatitis Monthly. 2005;2005(4, Autumn):109-15.

3. Jahani MR, Motevalian SA, Mahmoodi M. Hepatitis B carriers in large vehicle drivers of Iran. Vaccine. 2003;21(17):1948-51.

4. Alter MJ, Mast EE. The epidemiology of viral hepatitis in the United States. Gastroenterology Clinics of North America. 1994;23(3):437-55.

5. Yuen M-F, Yuan H-J, Wong DK, Yuen JC, Wong W-M, Chan AO, et al. Prognostic determinants for chronic hepatitis B in Asians: therapeutic implications. Gut. 2005;54(11):1610-4.

6. Mast EE, Alter MJ, Margolis HS. Strategies to prevent and control hepatitis B and C virus infections: a global perspective. Vaccine. 1999;17(13):1730-3.

7. Joshi N, Yr N, Kumar A. Age related seroprevalence of antibodies to hepatitis A virus in Hyderabad, India. Tropical gastroenterology: official journal of the Digestive Diseases Foundation. 1999;21(2):63-5.

8. Werner G, Frösner G, Fresenius K. Prevalence of serological hepatitis A and B markers in a rural area of northern Zaire. The American journal of tropical medicine and hygiene. 1985;34(3):620-4.

9. Lionis C, Frangoulis E, Koulentakis M, Biziagos E, Kouroumalis E. Prevalence of hepatitis A, B, and C markers in school children of a rural area of Crete, Greece. European journal of epidemiology. 1997;13(4):417-20.

10. Nair S, Perrillo R. Hepatitis B and D: In: Zakim D, Boyer TO, Hepatology, editors. At extbook of liver disease 4th ed Philadelphia:

Saunders. 2003:993.
11. Shapiro CN. Epidemiology of hepatitis B. The Pediatric infectious disease journal. 1993;12(5):433-7.
12. Alizadeh A, Ranjbar M, Ansari S, MirArab A, Alavian S, Mohammad K, et al. Seroprevalence of hepatitis B in Nahavand, Islamic Republic of Iran. 2006.
13. Alavian SM, Gooya MM, Hajarizadeh B, Esteghamati A-R, Moeinzadeh AM, Haghazali M, et al. Mass vaccination campaign against hepatitis B in adolescents in Iran: estimating coverage using administrative data. Hepat Mon. 2009;9(3):189-95.
14. Mendoza Ticona A, Samalvides Cuba F. Transmisión de los virus de la inmunodeficiencia adquirida, hepatitis B y hepatitis C por exposiciones laborales en trabajadores de salud: aspectos de profilaxis pre y post exposición. Revista Medica Herediana. 2005;16(4):276-84.
15. Ezechi OC, Kalejaiye OO, Gab-Okafor CV, Oladele DA, Oke BO, Musa ZA, et al. Sero-prevalence and factors associated with Hepatitis B and C co-infection in pregnant Nigerian women living with HIV infection. The Pan African medical journal. 2014;17:197. PubMed PMID: 25396023. Pubmed Central PMCID: PMC4229000. Epub 2014/11/15. eng.
16. Alavian SM, Hajarizadeh B, Ahmadzad-Asl M, Kabir A, Bagheri-Lankarani K. Hepatitis B Virus infection in Iran: A systematic review. Hepat Mon. 2008;8(4):281-94.
17. Baig S. Gender disparity in infections of Hepatitis B virus. J Coll Physicians Surg Pak. 2009;19(9):598-600.
18. Da Ros CT, da Silva Schmitt C. Global epidemiology of sexually transmitted diseases. Asian journal of andrology. 2008;10(1):110-4.
19. Torres JR. Hepatitis B and hepatitis delta virus infection in South America. Gut. 1996;38 Suppl 2:S48-55. PubMed PMID: 8786054. Pubmed Central PMCID: PMC1398044. Epub 1996/01/01. eng.
20. Goldstein ST, Alter MJ, Williams IT, Moyer LA, Judson FN, Mottram K, et al. Incidence and risk factors for acute hepatitis B in the United States, 1982–1998: implications for vaccination programs. Journal of infectious diseases. 2002;185(6):713-9.
21 Shepard CW, Simard EP, Finelli L, Fiore AE, Bell BP. Hepatitis B virus infection: epidemiology and vaccination. Epidemiologic reviews. 2006;28(1):112-25.
22. Souto FJ, Espírito Santo GA, Philippi JC, Pietro BR, Azevedo RB, Gaspar A. Prevalence of and factors associated with hepatitis B virus markers in a rural population in central Brazil. Revista Panamericana de Salud Pública. 2001;10(6):388-94.
23. Pereira LM, Martelli CM, Merchán-Hamann E, Montarroyos UR, Braga MC, de Lima ML, et al. Population-based multicentric survey of hepatitis B infection and risk factor differences among three regions in Brazil. The American journal of tropical medicine and hygiene. 2009;81(2):240-7.
24. SeyedMohammad M. Risk factors of hepatitis B infection: Health policy makers should be aware of their importance in each community. Hepatitis monthly. 2011;2011(4, Apr):238-9.
25. Tanaka J. Hepatitis B epidemiology in Latin America. Vaccine. 2000;18:S17-S9.
26. Rosario PM, Arnedo A, Montaner M, Prieto P, García J, Izuel M, et al. [Epidemic outbreak of hepatitis B from the tattoo in gypsy families]. Revista espanola de salud publica. 1995;70(1):63-9.
27. Ion-Nedelcu N, Mihăileanu C, Dobrescu A. [The risks of transmitting viral hepatitis in a section of the city of Bucharest]. Revista de igiena, bacteriologie, virusologie, parazitologie, epidemiologie, pneumoftiziologie Bacteriologia, virusologia, parazitologia, epidemiologia. 1988;34(2):155-62.
28. Nuchprayoon T, Chumnijarakij T. Risk factors for hepatitis B carrier status among blood donors of the National Blood Center, Thai Red Cross Society. Southeast Asian J Trop Med Public Health. 1992;23(2):246-53.
29. Gogos C, Fouka K, Nikiforidis G, Avgeridis K, Sakellaropoulos G, Bassaris H, et al. Prevalence of hepatitis B and C virus infection in the general population and selected groups in South-Western Greece. European journal of epidemiology. 2003;18(6):551-7.