Prevalence of Hepatitis B Infection Among Male Prisoners in Malang

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ABSTRACT

Background: *Hepatitis B virus (HBV) infection is a global public health problem. Prison populations are at high risk for HBV transmission. In Prison, there is very rare to perfom screening for hepatitis B. This study aims to determine the prevalence of HBV infection among male prisoners in Malang, East Java Province of Indonesia.*

Method: *In this cross sectional study, a total of 165 male prisoners were screened using rapid test (DiaSpot® test kit) for detection of HbsAg in serum samples.*

Results: *The risk factors for HBV transmission were had permanent tattoo (11.32%), multiple sex partner (6.67%), injecting drug users (24.32%), history of blood tranfusion (4.76%), and family history of hepatitis (9.37%). There are 101 subjects (61.2%) for negative anti-HBs result. Positive result for HBsAg and anti-HBs were 7.8% and 30.9% respectively.*

Conclusion: *The prevalence of HBV infection among male prisoners was 7.8%. It is suggested to perfom HBV infection screening on high risk population routinely.*

Keywords: *hepatitis B, prevalence, prison*

ABSTRAK

Latar belakang: *Infeksi virus hepatitis B (VHB) telah menjadi masalah kesehatan global. Populasi di lembaga pemasyarakatan berisiko tinggi untuk penularan VHB. Skrining Hepatitis B sangat jarang dilakukan di lembaga pemasyarakatan. Penelitian ini bertujuan menentukan prevalensi infeksi VHB di lembaga pemasyarakatan laki-laki di Malang, Provinsi Jawa Timur, Indonesia.*

Metode: *Survey dengan pendekatan potong lintang pada total 165 narapidana pria menggunakan tes cepat (DiaSpot® test kit) untuk mendeteksi HbsAg dalam sampel serum.*

Hasil: *Faktor risiko infeksi VHB adalah pada narapidana yang memiliki tato permanen (11,32%), pasangan seks ganda (6,67%), pengguna narkoba suntik (24,32%), riwayat tranfusi darah (4,76%), dan riwayat keluarga hepatitis (9,37%). Sebanyak 101 subjek (61,2%) dengan hasil anti-HBs negatif. Hasil positif untuk HBsAg dan anti-HBs masing-masing adalah 7,8% dan 30,9%.*

Simpulan: *Prevalensi infeksi hepatitis B pada narapidana laki-laki adalah sebesar 7,8%. Disarankan untuk melakukan skrining infeksi VHB pada populasi berisiko tinggi secara rutin.*

Kata kunci: *hepatitis B, prevalensi, lembaga pemasyarakatan*

INTRODUCTION

Hepatitis B viral infection is one of global health problems, especially in Indonesia. It is estimated that one-third of world's population are being exposed and about 350-400 million among them are chronic carriers of the hepatitis B virus.[1] Age-specific HBsAg seroprevalence varies markedly by geographical region, with the highest prevalence (>5%) in sub-Saharan Africa, East Asia, some parts of the Balkan regions, the Pacific Islands and the Amazon Basin of South America. Prevalence below 2% is seen in regions such as Central Latin America, North America and Western Europe. Overall, almost half of the global population lives in areas of high endemicity.[2] In Indonesia, prevalence of HBV infection is about 4.0-20.3 %.[3,4]

Prison has an important role in the transmission of infectious diseases, placing prison populations at risk of acquiring diseases such as hepatitis B and C.[5] Most prisoners have low social status, drug abuse, and risky sexual behaviors that are predictors of hepatitis outbreak in these people. Also, many of these people are infected in prisons, making prison a source of hepatitis.[6]

Studies show that infections such as AIDS, sexually transmitted diseases and hepatitis in prisons is growing, and a comprehensive program is needed to reduce the risk of transmission of these diseases.[7] Increasing attention to high-risk individuals is a vital necessity, and prisoners are a high-risk group.[8] This study aimed to investigate the prevalence of Hepatitis B and its potential influencing risk factors among male prisoners in a Malang Male Prison, East Java Province, Indonesia.

METHOD

This descriptive using cross sectional study was done in September 2016. The population of this study was the prisoners of male prison in Malang, East Java Province, Indonesia. Subjects were being asked about some risk factors of HBV transmissions that they had. Age, history of blood transfusion, and health record were documented for each individual.

The blood sample from 165 Subjects was taken about 5 mililiters derived from cubiti vein using sterile syringe and needle. Samples collected were allowed to clot and retract, after which serum was obtained by centrifuging at 3000 revolutions per minute (rpm). The serum was separated from whole blood for further analysis. Rapid test assay for Hepatitis B surface antigen (HbsAg) and antibody to Hepatitis B (anti-HBs) were performed to know the positive results using DiaSpot® test kit. The test strip and serum were brought to room temperature before the test was carried out. The test strips were removed from the pouch and labeled appropriately with arrows pointing toward the serum specimen. The test strip was immersed vertically in the serum for 10-15 seconds making sure that the maximum line in the test strip was not exceeded when immersing the strip. The test strip was then removed after the appropriate time and placed on a non-absorbent flat surface.The results were read after 15 minutes.

RESULTS

A total 165 male prisoners with age range 16-60 years (means 33.45 ± 9.7) were tested for HBsAg and anti-HBs. Table 1 shows the risk factors for HBV transmission between the subjects were had permanent tattoo (11.32%), history of multiple sex partner (6.67%), injecting drug user (24.32%), history of blood tranfusion (4.76%), and family history of hepatitis (9.37%). Age specific prevalence was higher in the age brackets 16-25, 26-35, and 36-45 years with 8.11%, 7.69% and 9.75% respectively (Table 2). There were 101 subjects (61.2%) for negative anti-HBs result. Positive result for HBsAg and anti-HBs were 7.8% and 30.9% respectively (Table 3).

Table 1. Prevalence of hepatitis B virus (HBV) in relation to risk factors

Risk factor	n (tested)	n (positive)	Prevalence (%)
History of blood transfusion			
Yes	21	1	4.76
No	144	12	8.33
Tattoo			
Yes	53	6	11.32
No	112	5	4.46
Family history of Hepatitis			
Yes	32	3	9.37
No	133	9	6.76
Multiple sex partner			
Yes	60	4	6.67
No	105	7	0.95
Injecting drug user			
Yes	37	9	24.32
No	128	4	3.12

Table 2. Age distribution of hepatitis B surface antigen (HBsAg) seropositivity among male prisoners

Age (years)	Total number tested (%)	Total number positive (%)
16-25	37 (22.42)	3 (8.11)
26-35	65 (39.39)	5 (7.69)
36-45	41 (24.84)	4 (9.75)
46-60	22 (13.34)	1 (4.54)
Total	165 (100)	13 (7.8)

Table 3. Prevalence of hepatitis B surface antigen (HBsAg) and anti-HBs among male prisoners

Positive HBsAg (+)		Positive Anti-HBs (+)		Negative HbsAg & anti-HBs	
No.	%	No.	%	No.	%
13 (165)	7,8	51 (165)	30,9	101 (165)	61,2

DISCUSSION

The classification of high endemicity for HBV infection has been defined as HbsAg greater than 7% in adult population.[9] From this study the prevalence of HBV infection among male prisoners of Malang Male Prison, East Java Province, Indonesia is 7.8%. In a study conducted in Australia and Iran showed that 2.5% and 3.6% respectively of male prisoners were positive for HbsAg which is lower than we found in this study. On the other hand, a study conducted in Ireland, 8.7% of prisoners have been infected with HBV which is more than the percent observed (7.8%) in this study.[10,11,12]

Today the most common way of virus transmission in most countries of the world is sexual contact.[12,13] While in Iranian prisons and society using injection drugs is the most common transmission method.[14] In our study, we found that the most common way of HBV transmission is using injection drugs. Sexual transmission has been estimated to account for 30% to 50% of new infections among adults in industrialised countries. The most common risk factors include multiple sex partners and history of a sexually transmitted infection. Finally, unsafe injections and other unsafe percutaneous procedures are a major source of blood-borne pathogen transmission in many countries: the risk of HBV infection from needle stick exposure to HbsAg positive blood is about 30%. Worldwide, unsafe injection practices account for 8 to 16 million HBV infections each year.[15]

This study showed that the prevalence of HBV infection was higher in the age range 16-45 years than in over 45 years old. The same trend was observed in Romanian adult population (18-69 years) during 2006–2008.[16] So some people in the 20-39 years old, individuals may present with acute hepatitis that will heal spontaneously. Thus, it is likely that older subjects have cleared the virus, explaining the low prevalence in people over 50 years. Another hypothesis to explain the low prevalence observed beyond 50 years is the death of carriers of the virus because of complications. This will therefore result in a reduction of the life expectancy of infected people. Likewise, in the study of McMahon et al, the prevalence of patients with symptomatic hepatitis increased with age, ranging from 9.5% in those aged under or equal to four years to 33.3% over 30 years.[17]

Most international guidelines recommend that several high-risk groups be screened for HBsAg, and that those at risk and not immune should be offered hepatitis B vaccination. These include: household and sexual contacts of persons with CHB, HIV-infected persons, persons who inject drugs (PWID), men who have sex with men, sex workers, as well as other groups such as indigenous peoples, persons who are incarcerated, and persons of transgender. Blood and organ donors should also be screened for HBsAg and other blood-borne pathogens in accordance with WHO recommendations to prevent HBV transmission, especially in low and middle-income countries.[18]

In our study, we also found there were 101 (61.2%) prisoners with negative HbsAg and anti-HBs. We suggest to perform vaccination and health education into this group to prevent the spreading of HBV infection. HBV can effectively be prevented by vaccination.[19] A safe and effective HBV vaccine has been available since the 1980s and can prevent acute and chronic infection with an estimated effectivity of 95%.[15] In 1992, the WHO recommended to implement universal vaccination against hepatitis B for newborns in all countries with an HBV prevalence rate higher than 5% in 1995. All other countries were recommended to implement universal vaccination in 1997.[20]

In Europe, half of the countries indicated that they have implemented screening programmes for risk groups: 16 countries have programmes for injecting drug users, 11 for prisoners. It remains unclear whether many countries have implemented programmes to monitor the infection rate in healthcare workers. There appears to be a need for more screening programmes for risk groups, hard-to-reach populations, and the general population, but before implementing any measure a thorough investigation should be carried out, based on a cost-effectiveness analysis and the availability of effective treatment.[21]

CONCLUSION

According to this study, hepatitis B has a high prevalence among male prisoners in a Malang prison, East Java province of Indonesia. Therefore regular screening of HBV infection, health education on personal and social hygiene, and vaccination against hepatitis B among prisoners are suggested to prevent the spreading of HBV infection.

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