

The Prevalence of Hepatitis B & C Among Hemodialysis Patients in Baghdad Medical City.

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Abstract

Background

Hepatitis B and C are infectious diseases caused by the hepatitis B and C viruses respectively, that affects the liver. Hepatitis viruses are transmitted by blood-to-blood contact associated with dialysis, poorly sterilized medical equipment, needle-stick injuries, blood transfusion, and intravenous drug users.

Methods

This is a cross-sectional study conducted in the Hemodialysis Unit of Baghdad Teaching Hospital between the period of April and September 2018. Ninety-eight patients were enrolled in this study after adopting informed consent.

All patients were on regular hemodialysis as a renal replacement therapy with different durations. Full history was taken from them including age, gender, occupation, marital status, past medical, and surgical histories.

Blood test results were also recorded. All data were analyzed using SPSS20 with 95% confidence which means a p-value less than 0.05 to be statistically significance.

Results

The percentage of Hemodialysis patients infected with Hepatitis C was (43%) while those infected with Hepatitis B was (3%). There is no statistically significant association between age and infection with Hepatitis B & C ($P>0.05$). The mean age of patients infected with Hepatitis B was (65.8 ± 8.2), while for patients infected with Hepatitis C it was (45.3 ± 14.7).

Conclusion

Hepatitis C is more prevalent than Hepatitis B in the Hemodialysis Unit and the infection was not statistically associated with the age or gender of the patients

Keywords: Hepatitis, Haemodialysis, Baghdad

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1. Introduction

Hepatitis B and C are infectious diseases caused by the hepatitis B Virus (HBV) and C virus respectively, that affects the liver. They can cause both acute and chronic infections. Many people affected with hepatitis B virus have no symptoms during the initial infection. Some develop a rapid onset of sickness with vomiting, jaundice, tiredness, dark urine and abdominal pain. Often, these symptoms last a few weeks and rarely does the initial infection result in death. ⁽¹⁾⁽²⁾ The virus is transmitted through contact with blood or other body fluids from an infected person. When transmission occurs vertically (from mother to child) or horizontally to small children (during play, from household contacts etc), the infection usually becomes chronic. By contrast, when transmission occurs in adolescents/adults—usually via sexual contact, contaminated needles (“sharps”), and less often from transfusion of blood products—the infection usually resolves unless the individual is immunocompromised (e.g., infected with human immunodeficiency virus).⁽³⁻⁶⁾ Approximately 240 million people are chronic HBV surface antigen (HBsAg) carriers, with a large regional variation of HBsAg positive patients between low (2%) and high (8%) endemicity levels. ^(7,8) The prevalence is decreasing in several highly endemic countries due to improvements in the socioeconomic status, universal vaccination programs, and perhaps effective antiviral treatments. ⁽⁹⁾ During the initial infection people often have mild or no symptoms. Occasionally infection causes symptoms similar to HBV infection. The virus persists in

the liver in about 75% to 85% of those initially infected. HCV is spread primarily by blood-to-blood contact associated with intravenous drug users, poorly sterilized medical equipment, needle-stick injuries in healthcare, and blood transfusion. The risk of infection from a transfusion is less than one per two million. It may also be spread from an infected mother to her baby during birth. ⁽¹⁰⁾⁽¹¹⁾ It is estimated that 143 million people (2%) of people globally are living with chronic hepatitis C. About 3–4 million people are infected per year, and more than 350,000 people die yearly from hepatitis C related diseases. ⁽¹²⁾⁽¹³⁾ Dialysis (renal replacement therapy) is the process of removing excess water, solutes, and toxins from the blood in people whose kidneys can no longer perform these functions naturally. ⁽¹⁴⁾ Dialysis can be done through peritoneal or vascular approaches. ⁽¹⁵⁾ Dialysis represent a risk factor for transmission of hepatitis B&C virus which increases the burden of the disease. Those infected with these viruses have in increased morbidity and mortality due cirrhosis, hepatocellular carcinoma and cardiovascular disease. ⁽¹⁶⁾⁽¹⁷⁾ The incidence of hepatitis B virus infection in dialysis populations has declined over recent decades, largely because of improvements in infection control and widespread implementation of HBV vaccination. Regardless, outbreaks of infection continue to occur in dialysis units, and prevalence rates remain unacceptably high. For a variety of reasons, dialysis patients are at increased risk of acquiring HBV. ⁽¹⁸⁾ The aim of this study is to identify the prevalence of Hepatitis B & C among Hemodialysis patients and find associating factors among them.

2. Methods

1. This is a cross-sectional study conducted in the Hemodialysis Unit of Baghdad Teaching Hospital between the period of April and September 2018. Ninety-eight patients were enrolled in this study after adopting informed consent. All patients were on regular hemodialysis. As a renal replacement therapy with different durations for the procedure. Full history was taken from them including age, gender, occupation, marital status, and past medical and surgical histories. Blood test results were also recorded. The data was collected using pre-designed collection sheets for each patient enrolled. Patients who were involved comprised 58 males and 40 females. Inclusion criteria for patients were to have been previously diagnosed as having end stage renal failure and in hemodialysis as a renal replacement therapy. No restriction was done for particular age or sex or ethnicity and patients were excluded only if they refuse to participate or not having complete blood test results. All data were analyzed using statistical analysis SPSS v.20. Student t-test was used to compare means. The tests were done with 95% confidence which means a p-value less than 0.05 to be statistically significance. cheap, minimally painful and effective. It is available as over the counter drugs. The disadvantage is that it requires long-term adherence. There is risk of systemic toxicity in children so should be used in limited areas and in lower concentrations.

3. Results

The characteristics of patients and their demographic data are shown in table (1).

Table (2) shows that 42% of Hemodialysis patients were infected with HCV, 57% of which were males and 43% were females. While 3% of Hemodialysis patients were infected with HBV and were all males. 2% of the study patients had co-infection, and 52% were sero-ve for Hepatitis. Age and sex distribution of HBV serodiagnosis among study patients are shown in Table (3). The Table shows that HBV tends to infect 4 men for each woman. Age and sex distribution of HCV serodiagnosis among study patients are shown in table (4). The Table shows that for every 4 men infected with HCV, there are 3 women After comparing the sex of the patients with Hepatitis B, it was found that there is no statistically significant difference between them. (Table 5) After comparison the sex of the patients with Hepatitis C, it was found that there is no statistically significant difference between them. (Table 6) Table 7 shows that Hepatitis B occurs more often in people aged (70-80) years, while Hepatitis C tends to occur more often in people aged (20-60) years.

Table 1: Demographic data of patients.

		Number	%
Gender	Male	58	59
	Female	40	41
Job	Retired	53	54
	Employee	38	39
	Student	7	7
Educational Level	Primary	46	47
	Intermediate	29	30
	Secondary	8	8
	Bachelor	11	11
	Diploma	4	4
Marital Status	Single	12	12
	Married	76	78
	Divorced	6	6
	Widow	4	4
Total number		98	100

Table 2: The frequencies and percentages of Hepatitis B & C among Hemodialysis patients.

		No. (%) Hep. B	No. (%) Hep. C	No. (%) Hep. B & C	No. (%) Sero -ve
Gender	Male	3 (100)	24 (57)	1 (50)	22 (43)
	Female	Zero	18 (43)	1 (50)	29 (57)
Total		3 (100)	42 (100)	2 (100)	51 (100)

Table 3: Age and sex distribution of HBV.

Patients	No.	Age (mean ± SD)		M:F (sero +ve)
			Age range	
Sero +ve HBV	5	65.8±8.2	17-75 years	4:1
Sero -ve HBV	93	47.3±15.3		
Total	98			

Table 4: Age and sex distribution of HCV.

Patients	No.	Age (mean ± SD)	Age range	M:F (sero +ve)
Sero +ve HCV	44	45.3±14.7	17-75 years	4:3
Sero -ve HCV	54	50.7±16		
Total	98			

Table 5: comparison between sex and HBV.

Sex/HBV	Sero +ve HBV (no.)	P-value
Male	4	>0.05
Female	1	
P is significant at <0.05		

Table 6: comparison between sex and HCV.

Sex/HCV	Sero +ve HCV (no.)	P-value
Male	25	>0.05
Female	19	
P is significant at <0.05		

Table 7: The frequencies of Hepatitis B & C in different age groups.

Age		Hep.B		Hep.C	
		Positive Count	Negative Count	Positive Count	Negative Count
Age	10-20	0	3	0	3
	20-30	0	13	10	3
	30-40	0	16	8	8
	40-50	0	22	10	12
	50-60	1	18	9	10
	60-70	1	14	4	11
	70-80	3	7	3	7

4. Discussion

The decline in the incidence of hepatitis B virus infection is due to many factors including the application of universal infection precautions, vaccination and screening of transfused blood for HBV, which has led to hepatitis C virus (HCV) becoming the major form of hepatitis in HD patients.⁽¹⁹⁾⁽²⁰⁾⁽²¹⁾ HCV infection is common in patients with end-stage renal disease undergoing maintenance HD or peritoneal dialysis. The prevalence of HCV antibody positivity in hemodialysis patients varies markedly from 5% in industrialized countries to 54% in some developing countries.⁽²²⁾ On the other hand, serum HBV surface antigen (HBsAg) seropositivity ranges from less than 1% to 20% in patients on regular hemodialysis. However, outbreaks of acute HBV infection continue to occur in this setting.⁽²³⁾ 45% of the patients in this study had hepatitis C, while 5% had hepatitis B and this very different from a study done recently in Iraq showed the prevalence of Anti-HCV antibodies to be positive in 7.1% of the patients.⁽²⁴⁾ Multiple studies had shown that the development of chronic hepatitis B after acquiring hepatitis B virus is dependent on the age of the patient. More than 90% of infants infected at birth by HBV-infected mothers suffer from persistent HBV infection. By contrast, more than 95% of adults infected with HBV during adulthood—primarily through sexual transmission—will eliminate HBV naturally. Among immunocompetent individuals infected with HBV in adulthood, the majority will have no apparent infection, while approximately 20–30% will initially develop acute hepatitis. In 95% of cases,

detection of HBsAg will resolve within 6 months of infection.⁽²⁵⁾⁽²⁶⁾ The youngest patient in this study was 19 years old, so this can explain why only 5% had chronic hepatitis B infection. According to CDC, the vaccine of hepatitis B is 80% to 100% effective in preventing infection or clinical hepatitis in those who receive the complete vaccine series⁽²⁷⁾, since most of the patients had received the vaccine, the prevalence of hepatitis B is much lower than hepatitis C. Hepatitis represents an increased threat and risks among hemodialysis patients as 1.9% of all deaths were related or a consequence of the infection.⁽²⁸⁾ As hepatitis B is easier to control than HCV, it recommended to have optimum predialysis HBV vaccination, adherence to protective precautions, separation of the positive patients in an isolated area. As seroconversion with HBV vaccines less than in the general population due to lower renal function, those patients should receive either higher doses or more frequently.⁽²⁹⁾ Our study showed that there is no significant association between age and the occurrence of both hepatitis B & C. Other study held in north of Iraq showed that patients infected with HBV were significantly younger on average than non-infected patients, this observation was in agreement with that of a study conducted in Libya.⁽³⁰⁾ On the other hand, patients infected with HCV were older on average than non-infected congruent with other studies⁽³¹⁾⁽³²⁾ with no clear reason for that. This study showed more prevalence of hepatitis B and C infection among the male gender; however, this was not statistically significant. This insignificance finding was also reported in a study done in Iraq in 2017.

⁽³³⁾ Hepatitis C infection was shown by a study conducted in Brazil to be more prevalent among males who have end stage renal disease in 56.1 %. ⁽³³⁾ No effective vaccine is available for preventing Hepatitis C, for that reason, patients who receive frequent hemodialysis are more prone to develop chronic hepatitis C than hepatitis B. Failures of HCV and HBV screening, excessive exposure to blood and blood products, nosocomial transmission, and long dialysis duration are the main determinants of increased risk of HCV and HBV infection in the HD patient group.⁽³³⁾ Hepatitis represents an increased threat and risks among hemodialysis patients as 1.9% of all deaths were related or a consequence of the infection. ⁽²⁸⁾ As hepatitis B is easier to control than HCV, it is recommended to have optimum predialysis HBV vaccination, adherence to protective precautions, separation of the positive patients in an isolated area. As seroconversion with HBV vaccine is less likely in hepatitis patients than the general population due to lower renal

function, those patients should receive either higher doses or more frequently. ⁽²⁹⁾

Conclusion

Hepatitis C is more prevalent than Hepatitis B in the Hemodialysis Unit and the infection was not statistically associated with the age or gender of the patients. Hepatitis C represents an important risk in patients with renal disease who receive hemodialysis as a renal replacement therapy. The universal vaccination of the general population and those with hepatitis has led to a lower risk of infection with hepatitis B virus.

Recommendations

It is recommended to have optimum predialysis HBV vaccination, adherence to protective precautions, and separation of the positive patients in an isolated area.

Conflicts of interest

The authors declare no conflict of interest.

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