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## **RESEARCH ARTICLE**

# The occurrence of hepatitis B and D viruses among uremic patients

## <sup>1</sup>Sarmad M Nsaif BSc, Diploma; <sup>2</sup>Dawood S Dawood M.B.Ch.B, PhD;<sup>3</sup>Aroub A.R Al-Kaisi M.B.Ch.B, FICMS.

1. College of Health and Medical Technology

2. College of Health and Medical Technology

3. Medical City, Baghdad Teaching Hospital, Laboratory Department 

## Manuscript Info

#### Abstract

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#### Key words:

Viral hepatitis, Renal failure, Uremia, Hepatitis B virus, Hepatitis D virus.

\*Corresponding Author

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Sarmad M Nsaif BSc, Diploma

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# **Background:**

Viral hepatitis is a systemic disease primarily involves the liver, it could be caused by different type of viruses, hepatitis B virus is the cause of serum hepatitis, it is classified as a hepadna virus, it can establishes chronic infections especially in those infected early in life, HBV is a major factor in the eventual development of liver disease and hepatocellular carcinoma in these individuals. Hepatitis D virus (delta hepatitis) can be found within certain HBs Antigen particles, in blood, HDV (delta agent) contain delta antigen surrounded by HBs antigen envelope.

#### Aim of the study:

Is to determine the occurrence of Hepatitis B and D viruses in uremic patients, in relation to age and sex and to evaluate blood transfusion as a risk factor that may increase the rate of infection with these viruses.

#### Patients materials and methods:

This study was conducted during the period from August to October 2011 in Baghdad Teaching Hospital in the Medical City including 70 uremic patients, 40 patients were doing dialysis for the first time and 30 patients underwent maintenance hemodialysis dialysis compared to 20 patients representing the control group who were subjected to viral screening tests for HBV (antigen) and HDV(IgM) prior to surgery and were complaining of diseases other than renal or hepatic diseases.

#### **Results:**

Out of the seventy uremic patients examined for HBV Ag ,only three showed positive results two were in the age group (41-60), with only one positive case in the age group (61-80), with a mean age of 46 years, compared to one positive case in the control group at the age group (20-40). All patients and controls that were screened for HDV IgM showed negative results. 3/3 were males, no positive results were reported in the female group. Regarding blood transfusion, no positive result regarding HBV Ag were reported.

#### **Conclusions:**

The occurrence of HBV and HDV in uremic patients revealed no significant association regarding age and gender. Blood transfusion as a risk factor for these viruses was evaluated, yet no statistical significant difference were detected.

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# **INTRODUCTION**

Viral hepatitis is an infection caused by viruses whose primary tissue tropism is liver (1). It can be classified according to the mode of transmission, the type of virus genome and the chronicity. Hepatitis B virus (HBV) and hepatitis D virus (HDV) are considered blood borne pathogens. HBV is a DNA virus while HDV is an RNA virus, both can cause acute and chronic manifestation (2). Hepatitis caused by HDV can occur only in association with HBV, it requires HBV as a helper to replicate (3).

Hepatitis B virus is found in all body fluid of infected people, but only blood, saliva, semen, vaginal fluid and urine have been shown to be infectious, the principle way of spreading HBV include intimate contact with infected people or exposure to the body fluid from these individuals, transmission occurs by intravenous, intramuscular, subcutaneous and mucosal exposure to infected body fluid (3, 4 and5).

Vertical transmission can occur from mother to her child (6&7), risk of maternal transmission of HDV is less common (8), sexual intercourse with infected people play a good role in the transmission of HBV, it is less important in HDV (9&10). Other methods of transmission are people sharing needle during injecting drug, haemodialysis, tattooing and needle sticks or other injuries from contaminated sharp instrument (8). Organ donation especially liver is also reported as a possible mode of transmission (3 &8).

# **Patients, Materials and Methods:**

This study was conducted during the period from August to October 2011 in Baghdad Teaching Hospital in Medical City including 70 uremic patients, of those 70 patients, 40 were doing dialysis for the first time and 30 patients underwent maintenance hemodialysis. Those were compared to 20 patients representing the control group who were doing viral test for HBV and HDV prior to surgery and were complaining of diseases other than renal or hepatic diseases.

Five ml of blood was taken from each patient, centrifuged and then 2 ml serum was taken and divided on two aliquots and stored in deep freeze at (-17) ,were examined later using Enzyme Linked Immunosorbent Assay (ELISA), with ELISA kit for HBs Ag and ELISA kit for HDV IgM.

# **Statistical Methods:**

Chi square was used to determine significance of relation between the different parameter markers, correlation between parameters was detected by using the person's correlation. The level of significance considered when P-value was less than 0.05.

# **Results**:

	Table (	1): Distribut	ion of HBV a	according to	age
	Age groups in years			Chi-Square Test	
	20-40	41-60	61-80	Total	
HBs +ve within age group (no. &%)	0	2	1	3	Value 1.119
	0%	4.9%	7.7%	4.3%	Degree of freedom 2
HBs -ve within age group(no.&%)	16	39	12	67	P value 0.571
	100%	95.1%	92.3%	95.7%	_
Total number within age group (no.&%)	16	41	13	70	-
	100%	100%	100%	100%	
Control group	1	0	0	1	

Table (1) shows the distribution of HBV according to age.

Table (2) shows the distribution of HBV according to gender.

	Gender		Total	Chi Square
	Male	Female		Tests
HBs +ve within age group (no. &%)	3	0	3	Value 2.351
				Degree of
	7.5%	0%	4.3%	freedom 1
				P value
HBs –ve within age group(no.&%)	37	30	67	0.125
-	92.5%	100%	95.7%	
Total number within age group (no.&%)	40	30	70	-
	100%	100%	100%	_
Control group	1	0	1	

Table (2): Distribution of HBV according to Gender

The distribution of HBV in relation to exposure to blood transfusion is shown in table no. (3).

	Blood Tr		
	+ve	-ve	Total
HBsAg +ve within BT (no.&%)	0	3	3
()			
	0%	6.1%	100%
HBsAg -ve within BT (no.&%)	21	46	70
	100%	93.9%	95.0%
Total number within age group (no.&%)	21	49	70
	100%	100%	100%

# Table (3): Distribution of HBV in relation to blood transfusion.

**Discussion:** 

The pattern of distribution of HBV according to age were studied, no positive results were detected in the age group (20-40) years, two were found in the age group (41-60), with only one positive case in the age group (61-80). Total positive cases were 3, with only one positive result in the control group at the age group (20-40). So no significant association were reported, this means infection can occur at any age group. The mean age for hepatitis B virus was 46 years, these results agree with those obtained by Yossif (1988) and Waysi (2000) who reported mean ages of 42years and 45 years respectively (10).Other global studies such as that done by Chokraborty et al (2005), reported a mean age of 35.6 years, Roshandel et al reported a mean age of 41.9 years(11). Other investigators reported lower mean age such as that recorded by Gaetano et al, which was 27 years; this difference could be due to the different source of infection or to the environmental and geographical distribution (12).

The occurrence of HBV according to gender were studied as well, HBs Ag was positive in three males out of 40 patients examined (7.5%), but no positive result were seen in the female group, no significant difference were found regarding gender(P value =0.125). The gender difference in HBV patients could be explained by the fact that males may have a greater chance to come in contact with the risk factors for HBV more than females, Similar results were obtained in Iraq in the study done by Waysi who showed a male to female ratio of 3:1(10). Other researchers showed similar results as well (11&12).

Among the patient and the control groups no any positive result were detected regarding anti HDV Ab (IgM). Other studied reported that HDV is present worldwide and in all age groups (13 &14); its distribution is parallel to that of HBV infection, although with different prevalence rate, the HDV absolutely requires an associated HBV infection, when the two viruses either infect simultaneously (co infection) or newly HDV infected person is chronically infected HBV carrier (super infection) (14).

No significant association was found between the number of blood transfusion and prevalence of HBs Ag unlike the results reported by a study done in Brazil (13). The rate of HBV infection had been declined in the last decade in renal units, a consequence of efficient prophylactic measures, doing viral screening test prior to blood transfusion and haemodialysis playing important role in decreasing the rate of infection (14&15).

#### **Conclusion**:

The occurrence of Hepatitis B and D in uremic patients revealed no significant association regarding age and gender. The risk factors, blood transfusion showed no significant association as well, extending the sample size and the use of more advanced methods in detecting these viruses may be indicated.

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