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Cover Page Footnote
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Using of HBv. sAg ELISA kit to detect Hepatitis B infection in blood donors in AL-Refaie Blood Bank

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Abstract:

Hepatitis B virus infection remains a major public health problem throughout the world. Approximately, 350 million HBv carriers are chronically infected. Chronic carriers of HBv have an elevated risk of developing cirrhosis and hepatocellular carcinoma which lead to the death of an estimated 0.5 to 1.2 million subjects annually. Worldwide, HBv infection is considered to be the tenth leading cause of death. The principle way of transmission is through the blood and blood products, hemodialysis, shared needles among drug abusers, dental surgery, receiving blood or blood products. This study is carried out in Thi-Qar province–Al-Rifaei district – in general, Al-Rifae hospital and blood bank from the period of the first of December/ 2016 to the first of March /2017. The aim of the study was the determination of the efficacy of HBv. sAg ELISA kit to detection of HBv infection in blood donors. (100) one hundred blood samples were collected randomly divided into males and females, the ages were rated between 19-60 years old and all these blood samples tested by ELISA technique by using HBv. sAg ELISA kit. the results explained the number of infected cases were 11% (reading of samples < cut-off value (0.131)) and other 89% were negatively results (reading of samples > cut-off value (0.131)). a statistically significant increase of infection in case of male (P>0.005) compared with females, while there was no statistical significance of infection in case of residence and ages of blood donors.

Keywords: HBv. sAg. Hepatitis B. Blood donors

Introduction :

Hepatitis B virus is classified as one of Hepadna viridea family and has a circular, partially double-stranded DNA (1). Virus replication occurs in the liver; however, specific proteins and antibodies of the virus are present in the blood of infected individuals. Some blood tests have been developed to detect these proteins and antibodies (2). Despite the availability of an effective vaccine against hepatitis B virus, its infection remains a significant public health problem throughout the world. Approximately, 350 million HBv carriers are chronically infected (3). Chronic carriers of HBv have an elevated risk of developing cirrhosis and hepatocellular carcinoma which lead to the death of an estimated 0.5 to 1.2 million subjects annually (3,5). Worldwide, HBv infection is considered to be the tenth leading cause of death (4). The principle way of transmission is through the blood and blood products, hemodialysis, shared needles among drug abusers, dental surgery, receiving blood or blood products, cupping, tattooing, ear and nose piercing practices and sexual exposure to HBv can elevate the risk of transmission (6). The prevalence of HBv infection is high in the Western Pacific and South-East Asia;. However, a variable pattern has been observed in different regions of the Middle-East (4). Three areas were proposed by HBv prevalence in the world (3,6). The prevalence of Hepatitis B virus surface antigen (HB sAG) in hyperendemic, endemic and hypoendemic areas is more than 8 %, 2 %, to 7% and less than 2% respectively (3,7). The prevalence of HBv sAg was reported to be 2-7% in Iran; therefore Iran was classified as an intermediate HB sAg positive area (7). An estimated 3% of the Iranian population were HB sAg carriers; varying between 1.32% and 6.3% in different regions of the country (8,9). Vaccination is considered to be the most effective way to control the spread of HBv (10). Recent studies have shown that the changing epidemiology of Hepatitis B virus infection in Iran is at least to some extent due to HBv vaccination as a national program in routine neonate care. The national expanded HBv vaccination program was

implemented in 1993 and 2007 for newborns and adults, respectively (4,8). In our country, programs such as behavioral interventions, syringe-distribution, and vaccination, particularly among male prisoners, are suggested to limit the spread of the virus (11).

The aim of the study :

Determine the efficacy of HBv. sAg ELISA kit to detect Hepatitis B infection in blood donors.

Materials and method :

(100) one hundred blood samples were collected randomly divided into males and females and all these blood samples tested by ELISA technique by using HBv. sAg ELISA kit (Plasmatic company).

Results :

Table (1) show the result of HBs Ag testing by ELISA technique

Result	%	No.	Total	Cut-off value
Negative	89	89	100	0.131
Positive	11	11		

Table (2) explain the gender of the studied group

Gender	No. of blood donors	%
Female	15	15%
Male	85	85%
Total	100	100

Table (3) show the frequency of studied group in case of ages

Age group (years)	No. of blood donors	%

> 30	35	35%
31-39	45	45%
< 40	20	20%
Total	100	100%

Table (4) show the frequency of studied group in the case of social and demographical variances

Residence	No. of blood donors	%
Urban	45	45%
Rural	55	55%
Total	100	100%

Table (5) infected cases related to age group :

Age group	Infected cases	Ratio
> 30	1	9.09%
31-39	4	36.36%
< 40	6	54.55%
Total	11	100%

Table (6) infected cases related to gender

Infected cases	Gender	Ratio
11	Male	9
	Female	2

Statistically significant increasing (P> 0.005) in case of infection between males compared with females, there was no statistical significance in case of residence (P< 0.035) also in case of ages (P< 0.075) between age groups of studied blood donors.

Discussion :This immediate study was approximately agreed with many previous studies which conducted in blood donors in Thi-qar province but HBs Ag infected cases between 2003-2008was ranged as follow (2.7%, 2.6%, 2.1%, 3.8%, 4.3%, 5.5%) and the causes of this decreasing in infected cases go back to the following vaccination programs in 1989 and entrance of detection methods to diagnose of infected cases among blood donors added to that increasing of social level before events of 2003 and absence of migration from surrounding countries to Iraq , all these causes

lead to naturally decreasing in infection rates in Iraq (12) . In Palestine show decreasing infection (3.4-4.3%) because of the Palestine localized in middle epidemiological regions and entrance of diagnostic programs to HBs Ag in case of blood donors in 1989 (12). But our study disagreed with the previous study which appears the HBs Ag infected cases lower in Lebanon (0.3%), Egypt (1.18%), Oman (2.8%), Arabian Saudi (3.6%) and Germany (0.6%) (14). Because of rigid healthy Lows in these countries. The viral hepatitis type B spreading in Iraq is increasing especially after 2003 due to entrance of American army and refusable homo and heterosexual activities in prisons and jails and what the army used of biological weapon added, that carelessness of healthy enlightenment and vaccination programs especially in poor neglected Thi-Qar province because of many conditions such as anarchy , healthy carelessness result from disintegration terrorism which finally lead to huge decreasing in laboratory tools and other medical instruments and nursing which responsible for blood testing added to that needing to transport large quantity of blood to areas of battle or war daily and not forget the immigration due to terrorism in Syria and north of Iraq , all these reasons lead to entrance of diseased persons to Iraq in general and Thi-Qar province especially . The result of study which appears increasing of HBv infection between blood donors agreed with previous studies in world in case of HBs Ag detection in Ghana (10.5%) and large proportion in case of Japan (16.2%) also, this result agreed with reported result in American united states (5%) (16) . Also, in this study table (4) showed a significant relationship between HBv infection and age group agree with the previous study in New York city which found the same result. Table (6) showed infected male more than female, so that disagree with Turkish study which found females more than males because of high sexual activity in females (17). Tables (4,5) showed no significant relationship between residence and ages with infection and this result disagree with other studies in India and Nigeria which consider age and residence essential factors in prevalence of HBv spreading so that reported high ratio in younger age group because of high sexual activity (18) , while our study disagree with other studies in India and Nigeria in case of residence which appears high prevalence of infection in urban regions because of overcrowding with population density which lowered in rural areas (15) . Conclusion HBs Ag ELISA kit not enough to diagnose HBv infection and need to entrance of other techniques to confirmed infection.

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