

Distribution of HBV among high risk group in AL –Zahrawi hospital and Central health Lab in Mosul city : (presence of HBsAg with anti-HBs)

Israa H. sadoon¹, Nadya.I . Salih², Samer F .AL-Salihi²

¹Dep.of microbiology , college of medicine University of Tikrit , Tikrit , Iraq

²Dep.of pharmaceutical science , college of Pharmacy University of Tikrit , Tikrit , Iraq

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Abstract :

Cross sectional study was performed at Al-zahrawi hospital and Central Health Lab.in Mosul city for the period from the beginning of October 2007 to the end of January 2008 to evaluate the serological response to HBV among high risk group. The study revealed that the HBsAg with anti-HBs was found in 3% of the study group, while anti-HBs alone was found in 18.5% from these 3.5% were vaccinated while 15% were non- vaccinated, the lowest anti-HBs rate 5.4% was found in the group > 49 years, and the higher rate of anti-HBs rate 13% was found in males.

Introduction:

Hepatitis B virus (HBV) belongs to the group hepadna virus family ⁽¹⁾. Hepatitis B virus infection is one of the most common viral infection in humans. There are estimated 350million hepatitis B surface antigen(HBs Ag) carriers in the world⁽²⁾. Hepatitis B virus can cause chronic infection in which the Patient never gets rid of the virus and many years later develops cirrhosis of the liver or liver cancer⁽³⁾. HBV is the most serious type of viral hepatitis and the only type causing chronic hepatitis for which a vaccine is available ⁽⁴⁾. The aim of this study was to determine the serological response to HBs Ag and anti –HBs among high risk group in Mosul City. The virus is divided into four major serotypes (adr, adw, ayr, ayw) based on antigenic epitopes present on its envelope proteins, and into eight genotypes (A-H) according to overall nucleotide sequence variation of the genome . The genotypes have a distinct geographical distribution and are used in tracing the evolution and transmission of the virus. Differences between genotypes affect the disease severity, course and likelihood of complications, and response to treatment and possibly vaccination (5). Several vaccine have been developed for the prevention of hepatitis B virus infection. These rely on the use of one of the viral envelope proteins (hepatitis B surface antigen or HBs Ag). The vaccine was originally prepared from plasma obtained from patients who had long – standing hepatitis B virus infection. However currently, These are more often made using recombinant DNA technology, Through plasma – derived vaccine continue to be used, the two types of vaccine are equally effective and safe (6) .

Materials and Methods:

The tests called assays, for detection of hepatitis B virus infection involve serum or blood tests that detect either viral antigens (protein produced by the virus) or antibodies produced by the host. Interpretation of these assays is complex (7)

The hepatitis B surface antigen (HBsAg) is most frequently used to screen for the presence of this infection. It is the first detectable viral antigen to appear during infection. However, early in an infection, this antigen may not be present and may be undetectable later in the infection as it is being cleared by the host. The infectious virion contains an inner (core particle) enclosing viral genome. The icosahedral core particle is made of 180 or 240 copies core protein, alternatively known as hepatitis B core antigen, or HBcAg. During

this window in which the host remains infected but is successfully clearing the virus , IgM antibodies to the hepatitis B core antigen (anti-HBcIgM) may be the only serological evidence of disease .

Blood samples were collected from risk groups as follows: blood donors (87), Hospitalized pregnant Women (25), patients with history of diabetics (12), acute jaundice cases (13), patients with history of hepatitis (8), diagnosed T.B cases (7), hemodialysis cases (10), and healthy individuals (38), as control group .

Ten ml blood was drawn from Each individual (of the study group) in separate test tube. Each sample was centrifuged and the serum was tested for HBs Ag and anti-HBs IgG by ELISA. the test is an enzyme immunoassay based on (antibody capture sandwich) principle. The procedure and calculation of the results were done according to the instruction of the manufacture (Organon Teknika hepanostika HBs Ag Microelisa system and Randox anti-HBs). All samples giving initially positive results were re –tested to exclude any possibility of false positivity. The result is indicated as positive when the sample absorbance is the cut off value for the above mentioned test ⁽⁸⁾

The results:

Table (1) shows the presence of HBsAg in 3% of the study group . Table (2) shows that anti-HBs alone was found in 18.5% of the study group. The lowest anti- HBs rate(5.4) was found in age group > 49 years. The higher rate 40% was found in age group 30 – 39 years .Table (3) shows that, the higher anti-HBs rate 13% was found in males.

Discussion :

The current cross sectional study demonstrated the presence of HBs Ag in 3% of the study groups. The anti-HBs is rarely detectable in the presens of HBs Ag in patients with acute hepatitis B, but (10-20)% of person with chronic HBV infection may harbour low level of anti – HBs ⁽⁹⁾.

A study by wang etal ⁽¹⁰⁾ in Singaporean HBV carriers revealed that HBs Ag with anti – HBs were found concurrently in 21%. There were no differences in HBs Ag status, as well as HBV-DNA positive status in concurrent HBs Ag/ anti-HBs carriers compared to carriers without anti-HBs.

The majority of carriers of HBV are HBs Ag positive for life, some carriers are eventually cleared of HBs Ag and may develop anti body to HBs Ag ⁽¹¹⁾.

The vaccination stimulates the production of anti-HBs, the duration of this protection varies but probably at least 5 years or more ⁽¹²⁾.

The present study revealed that anti-HBs was found in 18.5% of the study group. Only 3.5% were vaccinated. this means that, the others 15% had previous HBV infection. This also demonstrated that the lowest rate of anti-HBs was found in the age group > 49 years (2%). This result is consistent with a study carried out in Taiwan, which revealed that the low HBV carrier rate and high prevalence of negativity in both HBs Ag and anti-HBs in the people is possibly due to the progressive loss

of HBV markers in the elderly ⁽¹³⁾. It has been shown that HBV-DNA sequences can be detected in some of liver or serum from HBs Ag – negative even in the those with anti – HBs. This suggests that the presence of anti- HBs does not exclude the possibility of chronic HBV infection ⁽¹⁴⁾. The current study revealed that, the higher rate of anti-HBs (13%) was found in male, such finding was also observed by Mohammed⁽¹⁵⁾ and Andre⁽¹⁶⁾ who suggested that, this was due to the greater weight of male and genetic factor. Another study by Kuru et al. (17) shows that, there was lower rate of anti – HBs in males than females.

Table (1): The frequency of HBsAg/ anti-HBs among the study group.

The study group	NO. of sample	NO.(%) of HBs+ ve
Blood donors	87	1(1.1)
Pregnant women	25	2(8)
Diabetic patients	12	2(16.6)
Acute jaundice cases	13	0
Hepatitis cases	8	0
T.B. cases	7	0
Hemodialysis cases	10	1(10)
Control	38	0
Total	200	6(3)
X ²		10.4
P		<0.05

Table(2) : The frequency of anti – HBs and vaccination status according to age.

The age group (yr.)	NO. of sample	NO.(%) of anti –HBs +ve	NO.(%) of vaccinated	NO.(%) of non-vaccinated
< 20	37	3(8.1)	1(33)	2(67)
20-29	44	8(18.1)	3(37.5)	5(62.5)
30-39	50	20(40)	2(10)	18(90)
40-49	32	4(12.5)	1(25)	3(75)
>49	37	2(5.4)	0	2(100)
Total	200	37(18.5)	7(19)	30(81)
X ²		11.3	3.3	12.1
P		<0.05	>0.05	<0.05

Table (3) : The association between the anti-HBs and the age .

The age group	No. of sample	No.(%) of anti HBs + ve	Sex	
			Male	Female
<20	37	3(8.1)	2(67)	1(33)
20-29	44	8(18.1)	6(75)	2(25)
30-39	50	20(40)	14(70)	6(30)
40-29	32	4(12.5)	4(100)	0
>49	37	2(5.4)	0	2(100)
Total	200	37(18.5)	26(70)	11(30)

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انتشار فيروس التهاب الكبد نوع - ب - بين مجاميع الاختطار في مستشفى الزهراوي ومختبر الصحة المركزي في مدينة الموصل (وجود المستضد السطحي مع الاجسام المضادة)

اسراء هاشم سعدون^١ و نادية ابراهيم صالح^٢ و سامر فراح الصالحي^٢

^١ فرع الاحياء المجهرية ، كلية الطب ، جامعة تكريت ، تكريت ، العراق

^٢ فرع العلوم الصيدلانية ، كلية الصيدلة ، جامعة تكريت ، تكريت ، العراق

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المخلص

اجريت دراسة ميدانية في مستشفى الزهراوي ومختبر الصحة المركزي في مدينة الموصل للفترة من بداية تشرين الاول ٢٠٠٧ وحتى كانون الثاني ٢٠٠٨ للكشف عن الاستجابة السيروولوجية لفايروس التهاب الكبد نوع - ب - بين مجاميع الاختطار . اظهرت الدراسة وجود المستضد السطحي مع الاجسام المضادة للمستضد السطحي بنسبة ٣% من مجموعة الدراسة بينما ظهرت الاجسام المضادة للمستضد السطحي وحدها كانت بنسبة ١٨,٥% بينها ٣,٥% كانت في الاشخاص الملقحين، و ١٥% في غير الملقحين النسبة الاوطى للاجسام المضادة للمستضد السطحي ٥,٤% كانت في المجموعة العمرية الاكبر من ٤٩ سنة والنسبة الاعلى ١٣% كانت لدى الذكور .