PREVALENCE OF HEPATITIS B & C AMONG PEOPLE ATTENDING KIRKUK PUBLIC HEALTH LABORATORY[+]

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Abstract:

The study was carried out on (22912) individuals (17829 males and 5083 females), of different groups of population, who attended Central Public Health Laboratory in Kirkuk city, from beginning of January 1999 to end of June to 2001. The serum sample from each individual was screened for both HBsAg and anti HCV antibody, using the ELISA test.

The overall rate of seropositivity was (1.82) (HBsAg 0.89% and HCV antibody 0.93%). The rate of HBV was highest in 1999 followed by 2000 and 2001. While the rate of anti HCV antibody was highest in 2001 followed by 2000 and 1999.

The rate of seropositivity of both HBV & HCV was highest in males than females. The seropositivity of HBsAg was highest among acute hepatitis patients followed by contacts, midwives, health care workers, blood donors, barbers and new officials.

The rate of anti HCV antibody was highest among thalasemic patients followed by acute hepatitis, contactes, blood donors, new officials and barbers.

المستخلص :

أجريت الدراسة على ٢٢٩١٢ (١٧٨٢٩ ذكور و٥٠٨٣ إناث) من مختلف شرائح المجتمع الذين راجعوا مختبر الصحة العامة المركزي في مدينة كركوك من بداية كانون الثاني ١٩٩٩ إلى نهاية حزيران ٢٠٠١. مسح عينات المصل من كل شخص للتحري عن كل من مستضد التهاب الكبد الفيروسي من النمط B ومضاد لنمط C باستخدام طريقة اختبار ELISA.

إن النسبة الكلية للايجابية المصلية كان (١,٨٢%) (المستضد التهاب الكبد الفيروسي من نمط B كان ٠,٨٩% ومضاد النمط C ٠,٩٣%)وأن نسبة نمط Bكانت أعلى في ١٩٩٩ ويتبعها عام ٢٠٠٠و٢٠٠١ بينما نسبة النمط Cكانت أعلى في ٢٠٠١ يعقبها عام ٢٠٠٠ و ١٩٩٩. نسبة الايجابية المصلية لكل من نوع B و C كانت أعلى في الذكور منه في الإناث.

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نسبة الايجابية المصلية لمستضد نمط B كانت أعلى لدى المرضى المصابين بالالتهاب الكبد الفيروسي الحاد ويتبعها الملامسين ، القابلات العاملين ، بالصحة ، والمتبرعين بالدم ، الحلاقين والمتعينيني الجدد.

نسبة مضاد التهاب الكبد الفيروسي نمط C كانت أعلى لدى مرضى المصابين بفقر الدم البحر الأبيض المتوسط يتبعها التهاب الكبد الفيروسي الحاد ، المتبرعين بالدم ، المتعيين الجدد والحلاقين.

INTRODUCTION:

Viral hepatitis is a systemic disease, primarily involving the liver [1]. It is caused by several viral infections such as A,B,C,D,E,F and G [2].

Hepatitis B virus (HBV) is still an endemic medical problem in many parts of the world despite the universal availability of HBV vaccine [3]. It is transmitted sexually and perinatally and by oral and parentral routes from infected to non-infected individuals [4].It is estimated that 2 billion ofpopulation have been infected world wide [5&6].

The prevalence of hepatitis B surface antigen (HBsAg) positive carriers is around 350 million, 75% of them are Asian, and it is depressing and around 40% of them eventually die of chronic diseases and 5-10% will end hepatocellular carcinoma [5,6,7,8&9]. In Mosul, as a prevalence of 5.9% for HBsAg was found among blood donors [10] and 3.9% were found among similar studies in Baghdad [11] and Mosul [4], using enzyme linked immunosorbent assay (ELISA) method. In Kuwait, it was reported that the rate of HBsAg among healthy individuals was (2.64%), [12].

Hepatitis C virus (HCV) infection is distributed throughout the world, it may lead to acute and chronic hepatitis, liver cirrhosis and hepatocellular carcinoma [13&14].

In Al-Tameem governorate [15] found the prevalence of anti HCV antibodies was (1.6%) among volunteer blood donors and other risk groups who conducted in four main hospitals in Kirkuk city. In Saudi Arabia, the overall prevalence of HCV infection ranged between 0.9% and 5.4% as measured by anti HCV antibody determination [16&17].

In Al-Tameem province, also [18] indicated that the rate of hepatitis B virus (HBsAg) was 1.76% while the rate of anti-HCV was 0.07% among different groups of population , using ELISA technique .

The aim of this study is to elucidate the rate of HBsAg and anti HCV antibody among attenders of Central Public Health Laboratory in Kirkuk city, Al-Tameem province, using ELISA technique.

MATERIALS AND METHODS :

The study was carried out on different groups of population, attended the Central Public Health Laboratory from the first of January 1999 to end of June 2001.The study was cross-sectional and samples were not pooled randomly.

The total number of samples were (22912), (17829) males and (5083) females. The samples were screened for HBsAg and anti HCV.

The study included the following groups. Blood donors who donated blood to the central blood bank of Kirkuk (20108), contacts (433), acute hepatitis cases (875), dialysis patients (95), thalassemia (163), health workers (219), mid wives (196), barbers (566) and new officials (257).

Samples: Five mls of blood samples was drawn from each individual in test tube not containing anticoagulant. The samples were centrifuged and sera were separated and tested for HBsAg and anti HCV antibody.

Method: The ELISA technique, was used for testing the samples in Kirkuk Central Public Health Laboratory using a sandwich principle. The kits were supplied by Biotest-ELISA and United Biomedical Inc. USA. [19&20].

RESULTS AND DISCUSSION:

The outcome results of this study are indicated in tables 1,2&3.

Table 1, shows that the overall rate of hepatitis B&C are (1.82%), (HBsAg 0.89% and anti HCV antibody 0.93%).

The seropositivity rate of hepatitis B virus was (0.89%). The highest rate was in 1999 (1.39%) followed by 2000 and 2001 (0.39% each). The rate of anti HCV antibody was highest in 2001 (2.07%), followed by 2000 (1.03%) and 1999 (0.42%). The difference in the rate of both HBV & HCV between years was statistically significant ($P< 0.05$).

The results of this study indicate that the overall rate of hepatitis (B & C) in Al-Tameem province was (1.82%). This reflects that viral hepatitis is one of common public health problem in this province.

The rate of hepatitis B in the current study was (0.89%), this figure is lower than that reported by [18] who showed the rate of infection was (1.76%) and lower than those reported by [15] and by [21] in Salahaddin province , who showed the rate of infection was (7.2%) and (3%) respectively. The difference in the rate of infection in this study and others might be related to sample size and period of study.

The rate of anti HCV antibody in this study was (0.93%), which is higher than our previous report [18] but was lower than [15] who showed the rate of infection was (1.6%).

Regarding the distribution of seropositive cases of both HBV & HCV. In this study it is revealed that the rate of seropositivity was highest in 1999 and then declined in 2000 and 2001, while the rate of anti HCV antibody was highest in 2001 and followed by 2000 and 1999.

The declined in the rate of HBsAg might be attributed to improvement in hygienic, social and educational conditions [22]. It could also be due to including HBV vaccination among the expanded program of immunization (EPI) as promoted by [23].

The highest rate of anti HCV antibody in 2001 might be related to greater availability of anti HCV antibody kits for defection of positive cases. The increase in anti HCV antibody in 2001, brings the attention of authors to be a ware of increase of risk of disease in future.

As far as the types of hepatitis is concerned, the overall rate of HBsAg was lower than anti HCV antibody, this could be related to availability of kits for screening of both infections. As due to economic and medical sanction against the country, the kits were not available throughout the study.

Regarding the distribution of hepatitis B & C among different groups of population attended Central Public Health Laboratory is indicated in table 2. The seropositivity rate of HBsAg was (0.89%). Its rate was highest in acute hepatitis patients (5.71%), followed by contacts (1.84%), mid wives (1.02%), health care workers (0.91%), blood donors (0.68%), barbers (0.53%) and new officials (0.38%). Statistically there is significant difference between groups ($P<0.05$). No seropositive cases were observed among hemodialysis and thalasemic patients.

The seropositivity rate of hepatitis C among different groups of population was (0.93%). The rate of infection was highest among thalasemic patients (7.97%), followed by acute hepatitis (3.42%), contacts (1.38%), blood donors (0.81), new officials (0.38%) and barbers (0.35%). There was significant difference between groups ($p<0.05$). No positive cases were detected among hemadialysis patients, health care workers and mid wives (Table 2).

Regarding the distribution of HBsAg according to different groups of population, the highest seropositivity was among acute hepatitis, followed by contacts, mid wives, health care workers, blood donors, barbers and new officials. The authors [18] also reported high rate of seropositivity among patients with acute and chronic hepatitis, which reflects the association of HBV with liver disease. High rate of infection associated with chronic liver diseases and hepatocellular carcinoma is reported by [21].

The high seropositivity of HBV among contacts, throw light to carry on restrict investigations to detect positive HBV among contacts and begin early management of cases.

The detection of seropositive cases among health workers, require attention about precaution of staff who were dealing with HBV cases. The finding of seropositive cases among mid wives and barbers, reflects the danger of these groups in disseminating the infection and one of public health hazard, since they appear healthy and they are HBV carriers.

Detection of seropositive cases among blood donors (0.68%), was lower than finding of [18] in Kirkuk city (1.1%) and than [4] in Mosul (3.9%).

Observing of positive cases among new officials throw light to screen all new officials for hepatitis B and others to detect positive cases and take careful measures to prevent spreading of infection.

Concerning the distribution of anti HCV antibody among different groups of population, the highest seropositivity was among thalasemic patients, followed by acute hepatitis, contacts, blood donors, barbers and new officials.

The presence of anti HCV antibody among thalasemic patients may be due to risk of transmission of HCV by blood and blood products. The rate of seropositivity among thalasemic patient (7.97%) was higher than that reported by previous finding (2.44%) in Kirkuk city [18] but lower than that reported by [15] in kirkuk city .

In the present study, hepatitis C virus antibody is observed in (3.42%) of hepatitis patients. It is shown that hepatitis c virus is responsible for significant proportion at hepatitis cases [5].

Contacts with anti HCV positive cases are one of risk factors correlated with hepatitis C. In this study, the seropositivity among contacts was (1.38%) while was lower than finding of [5] who found the rate of infection was (9.6%).

The seropositivity rate of HCV among blood donors in this study was (0.81%). It is higher than that reported by authors [8] who showed the rate of seropositivity among blood donors in Kirkuk city was (0.01%). This might be due to larger sample size used than the previous study. It is also higher than that reported by [15] who found the seropositivity rate was (0.5%) in Kirkuk city .

The presence of hepatitis C virus antibody, in new officials (0.38%) and barbers (0.35%) , required particular precaution measures, as most cases of HCV patients are asymptomatic [24] which play an important role in spreading of infection.

Although the present serosurvey did not reveal anti-HCV antibody among hemodialysis patients and health care workers, but they need particular attention, as they are among the risk groups of HCV. Several investigators reported anti HCV positive cases among hemodialysis patients such as [25] who found that (30.3%) of hemodialysis patients has anti HCV and [15] reported seropositivity rate was (25%) in Kirkuk.

In a study done in Kirkuk Public Health Laboratory it was revealed that the rate of anti HCV antibody was (2%) among health care persons [15]. This is comparable to other studies, who found the rate of anti HCV antibody in health care workers were (1.2%) and (2%) respectively [26&27].

As far as sex is concerned, the overall rate of HBsAg in males (0.96%) was higher than females (0.62) and also anti HCV antibody in males (1.04%) was higher than females (0.57%) (Table 3).

In males, the rate of HBsAg was highest in acute hepatitis (5.89%), followed by contacts (1.89%), health care workers (1.50%), blood donors (0.80%), new officials (0.57%) and barbers (0.52%) respectively.

The rate of anti HCV was highest in thalasemic patients (8%), followed by acute hepatitis (3.31%), blood donors (0.95%), contacts (0.75%), new officials (0.57%) and barbers (0.52%) respectively.

In females, the rate of HBsAg was highest in acute hepatitis (3.61%), followed by contacts (1.77%), mid wives (1.02%), barbers (0.53%) and blood donors (0.20%). The rate of anti HCV was highest in acute hepatitis (15.06%), followed by thalasemic patients (7.93%), contacts (2.36%) and blood donors (0.20%) respectively.

The higher rate of both HBsAg and anti HCV antibodies in males than females, is in contrast to the previous reports of authors [18] who found the rate of seropositivity for both infections were higher in females than males. The higher rate of HBsAg in males than females is also reported in Mosul [4] and in salahaddin province [21]. Similarly the higher rate of anti HCV antibody among males than females was reported in Kirkuk city [15].

Further studies are recommended to carry on in this province and other parts of the country to detect seropositive cases of different types of hepatitis in order that restrict measurement should be taken place to prevent the dissemination of infection.

Table (1). Distribution of hepatitis B&C in Al-Tameem province according to years.

Year	No. examined	No. positive			Positive %		
		B	C	Total	B	C	Total
1999	11350	158	48	206	1.39	0.42	1.81
2000	7022	28	73	101	0.39	1.03	1.43
2001	4540	18	94	112	0.39	2.07	2.46
Total	22912	204	215	419	0.89	0.93	1.82

X^2 B= 64.11 D.F.=2 ($P<0.05$)

X^2 C= 95.85 D.F.=2 ($P<0.05$)

Table (2). The Seropositivity of HBV and HCV among people attending Central Public Health Laboratory.

Group	No. examined	Total positive		Positive %	
		B	C	B	C
Blood donors	20108	138	163	0.68	0.81
Contacts	433	8	6	1.84	1.38
Acute hepatitis 875		50	30	5.71	3.42
Hemodialysis	95	-	-	-	-
Thalasemia	163	-	13	-	7.97
Health care workers	219	2	-	0.91	-
Mid wives	196	2	-	1.02	-
Barbers	566	3	2	0.53	0.35
New officials	257	1	1	0.38	0.38
Total	22912	204	215	0.89	0.93

X^2 B= 5.03 D.F.=1 ($P<0.05$)

X^2 C= 10.2 D.F.=1 ($P<0.05$)

Table (3). Distribution of hepatitis B&C in Al-Tameem province according to sex

Groups	No. examined			Total positive						Positive %					
				Males			Females			Males			Females		
	Males	Females	Total	B	C	Total	B	C	Total	B	C	Total	B	C	Total
Blood donors	16174	3934	20108	130	155	285	8	8	16	0.80	0.95	1.76	0.20	0.20	0.40
Contacts	264	169	433	5	2	7	3	4	7	1.89	0.75	2.65	1.77	2.36	4.14
Acute hepatitis	543	332	875	32	18	50	12	50	62	5.89	3.31	9.20	3.61	15.06	18.67
Hemodialysis	62	33	95	-	-	-	-	-	-	-	-	-	-	-	-
Thalasemia	100	63	163	-	8	8	-	5	5	-	8	8	-	7.93	7.93
Health care workers	133	86	219	2	-	2	-	-	-	1.50	-	1.50	-	-	-
Mid wives	-	196	196	-	-	-	2	-	2	-	-	-	1.02	-	1.02
Barbers	378	188	566	2	2	4	1	-	1	0.52	0.52	1.05	0.53	-	0.53
New officials	175	82	257	1	1	2	-	-	-	0.57	0.57	1.14	-	-	-
Total	17829	5083	22912	172	186	358	32	29	61	0.96	1.04	2.00	0.62	0.57	1.20

X^2 Male B = 147.58 D.F.= 8 ($P<0.05$)

C = 74.75 D.F.= 8 (P<0.05)

X^2 Female B = 52.73 D.F.= 8 (P<0.05)

C = 1390.86 D.F.= 8 (P<0.05)

REFERENCE :

1-Brooks, G.F; Butel, J.S. and Ornston, L.N. *Jawetz, Melnick & Adelberg's Medical Microbiology. 20th . edit., Appleton & Lange, 1995.*

2-Murray, P. R. ; Baron, E. JO, Pfaller, M. A. ; Tenover, F.C. and Yolken, R. H. *Manual of Clinical Microbiology*. 7th. Edit. American Society for Microbiology, 1999.

3-Bonino, F. Hoffman. F. "Chronic hepatitis". *La Roche Consultant Series*, Vol. 1, pp. 5-48, 1992.

4-Mohammed, H. S. "*The prevalence of hepatitis B surface antigen among Mosul blood donors". The Med. J. Tikrit Univ*., Vol. 3, pp. 191-195, 1997.

5-Oon, C. J. "Viral hepatitis from A to F. " *Medicine Digest*, Vol. 21, pp. 5-9, 1995.

6-Szmuness, W., Stevens, C. E., Ikram, H, Much, M. I., Harley, E. J. and Hollinger, B. "*Prevalence of hepatitis B virus infection and hepatocellular carcinoma in Chinese-Americans". J. Infect. Dis*., Vol. 137, p. 827, 1975.

7-Zuckerman, A. j. "*The association of hepatitis B with primary hepatocellular carcinoma". J. Infect*., Vol. 7, (suppl.1), 73-77, 1983.

8-Sung, JL. "*Hepatitis B virus eradication strategy for Asia*". *Vaccine*, Vol. 8, pp. 595-599, 1990.

9-Omer, EE. "*Clinical significance of markers of HBV*". *Med. Digest*, Vol. 21, pp.10-15, 1995.

10-Abdullah ,Z. A., Ahmed , B.H. and Yaseen , S. A. "*Screening of blood donors for hepatitis B virus antigens and antibodies in Mosul ,Iraq*". *Ann. coll. Med., Mosul* ,Vol. 14, pp.109-119, 1988.

11-Omer, A.R. and AL-Doori, S. "*Viral hepatitis in Iraqi normal population"* in: *The Proceedings of the Second National Symposium on Viral Hepatitis*. Baghdad, Iraq. 27-29 Oct., pp. 76-77,1984.

12-AL-Nakib, W. "*Prevalence of hepatitis B surface antigen among healthy blood donors in Kuwait :evaluation of passive haemagglutination (PHA) test". J. Kuwait Med. Assoc.* , Vol., 11, pp. 137-44, 1977.

13-Lwisa, B & Patrizia, P. "*Lack of correlation between hepatitis C virus genotypes and clinical course of hepatitis C virus related cirrhosis*". *Hepatology,* Vol. 25, pp. 211-5, 1977.

14-Al-Ahdal, M. N.; Kessie, G., Rezeig, M. A. et. al. "*Hepatitis C virus detection and genotyping in liver tissues and sera of Saudi patients using PCR and a line probe assay". Saudi Med. J.,* Vol. 19, pp. 182-184, 1998.

15-Al-Shammary, N. A. Z. *Seroprevalence of hepatitis C virus among risk groups in Kirkuk city*. M.Sc. thesis, College of Medicine, Tikrit Univ. Iraq, 1997.

16-Fathalla, SE, Al-Jama. AA, Badawy, M.S. et. al. "*Prevalence of hepatitis C virus infection in the Eastern province of Saudi Arabia by RE-DNA second generation and supplemented EIA test". Saudi Med. J*, Vol. 15, pp. 281-285, 1994.

17-Al-Faleh, FZ, Ramia S. "Hepatitis C virus (HCV) infection in Saudi Arabia". *Ann. Saudi Med*., Vol. 4, pp. 77-82, 1997.

18-Kadir, M. A.; Ismail, A. M. and Tahir, S. S. *"Seropositivity of hepatitis B & C among different groups of population in Al-Tameem province".* Iraqi J. Comm. Med., Vol., 14, pp. 21-24, 2001.

19-Biotest-ELISA. *Biotest-ELISA HBsAg*. Biotest AB-Landsteinerstrass, 1995.

20-UBI-HCVEIA. *Hepatitis C virus*. Beijing United Biomedical Co. Ltd. USA., 1994.

21-Kaitano, A.E. *Prevalence of hepatitis B surface antigen (HBsAg) and hepatitis C (HCV) in Salahadeen province*. A Diploma Dissertation. Coll. Of Med. Tikrit Univ. Iraq, 1996.

22-Fathalla, S. F.; Al-Jama, A. A., Al-Sheikh, I. H. et. al. "Seroepidemiological prevalence of hepatitis B virus markers in Eastern Saudi Arabia". *Saudi Med. J*., Vol. 19, pp. 283-288, 1998.

23-Garman, W.F.; Zanetti, AR, Waters KP., Tanzi, MG et.al. "Vaccine induced escape mutant of HBV". *Lancet,* Vol. 336, pp.325-329, 1990.

24-Jonas, M. M. & Baron, M. J. "Clinical and Virologic features of hepatitis C virus infection associated with intravenous immunoglobulin". *Pediatrics,* Vol. 98, pp. 211-5, 1996.

25-Fujiyama, S. and Kawano, S. "Changes in prevalence of anti-HCV antibodies associated with preventive measures among hemodialysis patients and dialysis staff". *Hepatogastroenterology,* Vol. 42, pp. 162-7, 1995.

26-Campello, C. and Majori, S. "Prevalence of HCV antibodies in health care workers from northern Italy". *Infection*, Vol. 20, pp. 224-6, 1990.

27-Emmet, B. & Keeffe, KG. "Hepatitis A through E. Distinguishing the etiologic agents". 4Modern Medicine of the Middle East, Vol. 2, pp. 48-62, 1993.