

Assessment of the Prevalence and Risk Factors of Viral Hepatitis B & C among patients attending gastrointestinal center in Kirkuk City, Iraq

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ABSTRACT

Background: Hepatitis is defined as an inflammatory liver disease. It's mainly due to a viral infection, but other causes of hepatitis. are recorded due to autoimmune and secondary to drugs and toxin and alcohol.

Aim: To assess the prevalence and risk factors of viral hepatitis B&C among patients attending gastro- intestinal center in Kirkuk city/ Iraq and benefits of their record.

Methods: A Retrospective study were done among 299 patients attending gastrointestinal center in Kirkuk city referred from primary health care center, blood banks and private clinics.

Medical questionnaire was prepared for each patient including: demographic information (age, gender address,) type of virus, risk factors, associated disease, family history, pattern of presentations, needs and benefits from treatment.

Results: The study results show that there is a statistical correlation between educational level among illiterate patients and viral hepatitis with p value=0.692. There is a significant relationship between pre- operative investigation as a diagnostic method declaring type of viral hepatitis with p value = 0.086. Cupping therapy is a significant cause of hepatitis with p value =0.715.pattern of record helps in assessment the demand of requested drugs according to clinical presentations.

Conclusions: viral hepatitis is an important cause of liver disease in patients consulting Kirkuk GIT center and this study declared different effective diagnostic methods used and revised risk factors and availability of treatment and whether it is cost effective or not in the city .

Keywords: Hepatitis, Gastro – intestinal center , Kirkuk, Assessment

INTRODUCTION

Hepatitis is regarded as one of the important health problems all over the world. Both viral hepatitis from two types B and C (HBV and HCV) are the most prevalent type worldwide which are causing a high rate of mortality and morbidity in the developing countries¹.

Antigen (HBsAg) indicates hepatitis B viral infection, with variable presentation ranging from acute infection to chronic liver disease involving asymptomatic and carrier patients. The prevalence of HCV infection was much lower than HBV infection among blood donors; anti-HCV rate was found to be 1.2% in Baghdad in year 2009. ⁽⁴⁾ .other study was showing much higher prevalence of HCV among other population than hepatitis B⁵.

The World Health Organization (WHO) reported hepatitis because 563 000 deaths / years and 350 million carriers^{5,6}. Hepatitis B virus is mainly transmitted through direct contact with body fluids or contaminated blood or body fluids of an infected patients. The chronic infection documented in about 90% of children who were aged less than 5 years. However, adults who were exposed become chronic carriers in only 2 to 5% of cases of HBV⁷.

According to the prevalence of chronic carriers of HBV (including persons who are positive for hepatitis surface B antigen, HBsAg) between adults in all population, Countries are then classified as

1. low endemicity which mean (< 2%).
2. intermediate endemicity (2%–5%).
3. high endemicity (> 5%) of infection⁸.

Hepatitis B virus is usually of moderate endemicity in Iraqi people with a rate ranging of 3%⁹. The most important root of infection is blood and blood derived preparation and other body fluids derived body fluids, i.e., saliva and semen¹⁰. It was found that during 2002, hepatitis B virus can survive for many days on table surfaces, syringes, needles, and dried blood⁸.

Hepatitis mainly manifested as features ranging from simple illness to fetal outcome or chronic state ie can be asymptomatic or deteriorated to chronic hepatitis with cirrhosis as end sequel¹¹. The hepatitis B prevalence differs from one city to another which depends upon more complicated mixture of host factor, environmental, and behavioral. The positivity of HBs antigen (HBsAg) prevalence in varies population ranges from 0.5% to 20%. Little studies were conducted to diagnose the prevalence of HCV and HBV in Iraq which show a different rate of prevalence.

Iraq which is one of middle east countries shows prevalence of hepatitis B is ranged from 4% to 5% during the years 1995 (and 1997 respectively) (12) (13). On the other hand, similar study was revealed that the prevalence of HBsAg among Iraqi blood donors was 2.48% in Baghdad during 2000. ⁽¹⁴⁾ In spite of that Iraq was reported to have high level of endemicity in years 2000 -2010^{15,16}.

In above study percent of patients in need of treatment or not and whether its cost effective evaluated. (?)

METHODOLOGY

Ethical consideration: All the participants conducted into the study after receiving verbal approval consent from them and free withdrawal agreements was given at any stage of the study with full complete information were given about the study aim.

Study setting and design: A Retrospective study were done among patients attending Kirkuk gastrointestinal center referred from primary health care center, blood banks and private clinics. Medical questionnaire was prepared for each patient and the data were placed electronically according to the Iraqi ministry of health program that is practiced in all Iraqi governorate as a base data for all hepatitis patient in the governorate and that's including: demographic information (age, gender address,) type of virus, risk factors, associated disease, family history, pattern of presentations.

The study was prepared according to approval of Institutional Review Board and ethical agreements was taken before establishing the study.

Study period: The study was conducted during the period from 29th January 2020 till 29th August 2020

Sampling method and sampling techniques: The total sample was 299 classified according to type of hepatitis Ag, 175 were detected +ve for HBs Ag and indications of oral antiviral therapy in following table

The study was prepared according to approval of Institutional Review Board and ethical agreements was taken before establishing the study.

A standard diagnostic laboratory testing which was conducted for all patients who were admitting to the program includes:

1) 3rd type of generation enzyme-linked immunosorbent assay (ELISA) for assessing hepatitis B surface antigen (HBsAg), HBcAB, HBeAg, and PCR which is a quantitative test

2) In order to testing HCV antibodies (anti-HCV) through the using of 3rd type of generation assays, and serum alanine transaminase (ALT) using special methods which are enzymatic methods by special machine called (automated Hitachi 902 machine). The test of PCR quantitative data analysis was taken and according to EASL guide line 2019, tables were prepared and analyzed regarding hepatitis B and C infection.

Statistical analysis: All the data are collected and tabulated according to the aim of the study, each patient was given a code and entered a statistical program using a Min tab/ 2016

Descriptive statistic was used for statements with yes and no.

A good appropriate statistical test used to detect the relationship between the studied variables which is chi-square

RESULTS

Table 1 show that most of the studied sample were male (51.5%), from the age group more than 40 years of age (40.1%), living in urban area (83.3%), and unemployed (58.2%).

Table 2 presents that there was statistical association between educational level and disease presence because 25.1% of study sample were from illiterate group with a p value = 0.692, on the other hand 13.7% from the sample were from secondary educational level with p value = 0.867.

Table 3 show that there was a statistical relation between indication of testing and prevalence of disease as 8.7% of patients were diagnosed by screening of family history with p value = 0.273, while 4 % from the study sample diagnosed by pre-operative investigation with p value = 0.086.

Table 4 show that there was a statistical relation between disease causation and the its prevalence among the studied group because majority of them without any known cause (163-54.5%), on the other hand 7.0% of the them having the cupping therapy as a causative agent for the disease with p value = 0.715.

The percent who need treatment is 15.4% of all patients with HBV infection & according to EASL 2019 guidelines where the duration of treatment extended at least from 52 to 156 weeks according to health plan published whole sale acquisition, the cost of oral antiviral therapy was 1200-3600\$ respectively. The percentage for how much medication is needed = 15.4%

The prevalence use of new oral antiviral drugs in chronic HCV infection. The percent who need treatment is 56% of all patients who were HCVAB+ & according to EASL 2019 guidelines where the duration of treatment can be extended from 12 weeks to 24 weeks according to health plan published whole sale acquisition the cost of medication was 94.500\$-180.900\$ % respectively.

Table 5 show that there was (296- 98.9%) of the studied sample have a chronicity of the disease with a p value = 2.147 *

Table 1 Characteristic features of the studied patients (n=299)

Socio demographic parameter		Total study sample	
		No.	%
Gender	Male	154	51.5
	female	145	48.5
Age group (in years)	< 20	30	10.0
	20-29	83	27.8
	30-39	66	22.1
	>=40	120	40.1
Residence	Urban	249	83.3
	Rural	50	16.7
Occupation	Employed	125	41.8
	unemployed	174	58.2

Table 2: Relation between types of hepatitis and educational level.

Educational level	HBV N=175	HCV N=122	HBV+HCV N=2	Total N=299	p- value.
illiterate	43 24.6%	31 25.5%	1 50.0%	75 25.1%	0.692
Primary	98 56.0%	64 52.4%	0 0.0%	162 54.2%	2.537
Secondary	22 12.6%	19 15.6%	0 0.0%	41 13.7%	0.867
University	12 6.8%	7 5.7%	1 50.0%	20 6.7%	6.196
Post Grad	0 0.0%	1 2.8%	0 0.0%	1 0.3%	1.456

Chi- square was used

Table 3: indications of testing for viral hepatitis B and C.

Diagnostic method	HBV N=175	HCV N=122	HBV+HCV N=2	Total N=299	p- value
Pre-marital screening	133 76.0%	74 60.7%	2 100.0%	208 69.6%	8.911
Pre-operative investigations	7 4.0%	5 4.1%	0 0.0%	12 4.0%	0.086
Blood donation	3 1.8%	7 5.7%	0 0.0%	10 3.3%	3.669
Screening of family history	16 9.1%	10 8.2%	0 0.0%	26 8.7%	0.273
Investigation of symptomatic patients	16 9.1%	26 21.3%	0 0.0%	43 14.4%	9.145

Chi- square was used

Table 4 correlation of risk factors with types of viral hepatitis B and C

Disease cause	HBV N=175	HCV N=122	HBV+HCV N=2	Total N=299	P value
Dental procedures	31 17.7%	11 9.1%	1 50.0%	43 14.4%	6.491
Surgery	12 6.9%	13 10.7%	0 0.0%	25 8.4%	1.537
Multiple blood transfusion	13 7.4%	7 5.7%	1 50.0%	21 7.0%	6.010
Cupping therapy	14 8.0%	7 5.7%	0 0.0%	21 7.0%	0.715
Hemo dialysis	12 6.9%	14 11.4%	0 0.0%	26 8.7%	2.123
(unknown)	93 53.1%	70 57.4%	0 0.0%	163 54.5%	2.933

Chi- square was used

Table 5 relation of viral hepatitis with the chronicity of disease (n=299)

Chronicity of disease	HBV N=175	HCV N=122	HBV+HCV N=2	Total
Positive	172(98.3%)	122(100%)	2(100%)	296(98.9%)
Negative	3(1.7%)	0	0	3(1.1%)

P value 2.1478, Chi- square was used

Table 6: The prevalence use of oral antiviral medication in chronic HBV infection.

HBsAg+	NO. 175	Indication of oral antiviral
Chronic HBV.HBeAg- Undetected viral load	115	No
Response to interferon therapy	17	No
Low viral load. normal liver enzyme	16	No
Relapse after interferon treatment	14	Yes
Naïve with high viral load high liver enzyme	10	Yes
Patient on chemotherapy	3	Yes

Table 7: Indications of oral antiviral therapy in HCVAB+ recorded patients

HCVAB+	122	Indication of oral antiviral
Viral load not detected	54	No
Naïve with detected viral load	29	YES
Relapse after interferon –ribavirin therapy	26	YES
Chronic renal failure	13	Yes

There are 2 patients diagnosed as HbsAg + and HCVAB +

DISCUSSION

Hepatitis is a common health problem. Yearly, Hepatitis causes 1.5 million deaths. It occurs due to inflammation of the liver tissues leading to morbidity and mortality all over the world¹⁷.

The study shows that 120 patients (40.1%) are 40 years and above, which could be due to the HBV vaccination program that is used in Iraq. HBV and HCV incidence were 154(51.5%) in males and 145(48.4%) in females. This may be because males are more susceptible to infection because of their work. These results are consistent with a previous study¹⁷. A study done in Riyadh found that the prevalence was 2.1% in males and 1.5% in females, 249(83.3%) patients living in an urban area and 50(16.7%) were in a rural area¹⁷.

Concerning table 2 about the education, our data show that there is statistical relation between the educational level of the patients and the type of hepatitis that may be due to small sampling size in contrary to other studies that revealed the people who have high education are know how the disease is occurring and great much data about the disease, therefore, the people with a lower education should improve their knowledge¹⁸.

Another study concluded that one explanation could explain the great role of education in socioeconomic status. The social rejection and treatment charges result in less concern regarding if the result of the test was positive. The people who have high education reflect indirectly the patient knowledge of many routes of transmission, and effective treatment⁽¹⁹⁾.

For table 3 about the method of diagnosis, the study data revealed that screening of family history investigation has the priority of the highest risk (p-value = 0.273) which is near to the significant value, this is compared to a new study are included (142) patients submitted to the screening before surgery demonstrate that HCV was 11.26% while HBsAg was 2.11%²⁰.

In our study, there is no significant association between pre-marital screening and risk of infection with HBV and HCV infections although the presence of national premarital screening programs in our country. A study in Iranian population reveals that the HBV testing has high acceptability before the marriage, but positive test result, emotional stress, and the partner's reaction was more than the expected percentage¹⁹.

Another important point to be noticed is that a higher number of patients with hepatitis B and C were diagnosed during pre-marital screening as part of the Iraqi ministry of health program done as a requirement for the couple to get married.

Other studies in tertiary care public hospitals of Karachi, screening of 387 patients admitted for elective surgical

procedure HBs Ag percentage was 6.5% and the anti-HCV percentage was 11.3% while the percentage of HbsAg and anti HCV together were 1.5%²¹.

Regarding table 4 about the main causes, our study concluded that the major risk factor that is associated with hepatitis is visiting a dental clinic, apart from causes under the title of (unknown) that may include (visiting a dental clinic, cupping, hemodialysis) and found to be not significant that may be due to poor registration technique by the staff.

Equipment and needles contamination help to transfer the infection even after months by the virus²². The mean risk of transmission of HCV by needle injury is 1.8%²³. Parenteral drugs are considered one of the reported causes of transmission of the HCV²⁴. Transmitting of Hepatitis B and C virus is done by blood products. Many studies in Pakistan showed that prevalence of HBsAg and Anti HCV in blood donors ranging from 3.4% to 14%^{25,26}.

The current study calculated that 21 patients (13 patients with HBV, 7 patients with HCV, and 1 patient with HBV+HCV) of the total sample have a history of blood transfusion.

In Jazan Region, Saudian Arabia, a study showed that HBV was more common in replacement blood donors more than the voluntary donors, and that agreement with (WHO) viewpoint that found blood donors, and familial replacement donors are more in transmission of infections when compared with the voluntary donors.⁽²⁷⁾

History of blood transfusion was not statistically significantly associated with HBV and HCV infection in our study, the transmission of hepatitis B and C is done by using of the unsterilized syringes, or unscreened blood and that agree with many studies results. The individuals who make cupping, shaving by barbers, dental treatment, have a high risk as compared with others. The traditional behavior that health care workers make it at careless, should be changed, and give great attention to the sterilization methods of the used tools²⁸.

Blood of the donors should be screened for anti-HCV and HBsAg levels for preventing HBV and HCV occurrence by blood transfusion. The blood of the donors should be negative for HBV and anti-HCV. Therefore, we need a highly specific and sensitive test for examination of the blood of donors²⁹.

A similar study was done in Karachi, the blood transfusion was done by 84% of patients with HBV and 50% of patients with HCV that is quite high than 0.01-0.02% found in Northern Europe and the UK, so the surgeons, nurses, and health care staff have a greater risk²⁰.

In our study, previous surgical history found that HBsAg prevalent in 12(6.9%) patients and AntiHCV positive in 13(10.7%) patients. Ag to our study, who have a history of dental operation was 31(7.7%) and 11(9.1%),

and 1(50%) of B, C, and B+C hepatitis patients as compared with a study were done in the Istanbul³⁰.

For table 5, the present study revealed that 296 of our patients are chronic. Chronic HBV Complications are involved as a liver tumor, liver transplant, some liver diseases, and death. Yearly, 650,000 cases die due to chronic HBV complications³¹. HCV infection develops and becomes chronic in (70%) of patients. Based on (WHO) report, showed (130-150) millions chronic case of HCV. Epidemiology of HCV is varied and different depending on the regions. In the Middle East, Northern Africa, and Center and East of Asia, more than (3.5%) of the peoples have chronic HCV infection have high endemicity³².

Many countries in sub-Saharan Africa, South of Asia, the Andean, south and center America, Oceania, the Caribbean, east and center of Europe, and Australia have moderate endemicity at (1.5%-3.5) % of HCV infection. Some of the countries, Pacific and Asia region, Europe west, North America, and Latin America have low endemicity with < 1.5% of HCV chronic³².

Our study examined prevalence of HBV and HCV infection, and estimated the required high effective but costly oral antiviral medication, uptake increased following availability of new drugs which showed highly sustained viral response rate and improved tolerability and safety compared with old medications which were associated with low risk of liver cancer and reduction in longer term liver related morbidity including liver transplantation and death due to liver cancer^{33,34}.

According to previous results the estimated annual requirement for requested drugs will be estimated & according to quantities required, the essential steps in ensuring the adequate supply for recorded patients ensured to avoid shortage, and decrease cost. Over estimation can lead to surpluses, wasting and increases risk of diversion of controlled substances^{35,36}.

Proper estimation should be based on proper data arranged by well-established organized statistic method of collection information with proper intranet between different hepatological centers.

CONCLUSION

Hepatitis B and C are important causes of liver disorders in Kirkuk city. the prevalence of disease varies according to group studied and method of transmission and indications for screening program. the need of treatment and percent of patients responded is widely different. This study opens the door to upcoming future studies with other inclusion criteria, most of our data were comparable with surrounding countries

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