Frequency of Hepatitis C Virus in People with Tattoos in Diyala Governorate

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Abstract

Hepatitis C Virus remains a significant risk worldwide. Tattooing is one of the routes of transmission of infection from an infected person to another. Tattooing is a method of injection of exogenous pigments into the dermis to produce a permanent design. The study aims to detect the frequency of HCV in people with tattoos in the Diyala governorate Iraq. A cross-sectional study was done in the period from 1st October 2020 until 15th February 2021 in Baquba teaching hospital (premarital screening program, and periodic examination of hairdressing salons within the preventive health affairs and consulting clinic). The study including 100 patients (43 were male and 57 female) aged from (10-65 years old). After the preparation of samples, an enzyme-linked immunosorbent assay (ELISA) test was performed to detect hepatitis C virus antibodies (IgG). The results of this study showed that the frequency of Hepatitis C Virus 17% (17 out of 100) with highly significant differences ($p< 0.05$), for age group HCV positivity, constituted the highest percentage rate of age groups between (31-40 years old) followed by (21-30 years old) with a percentage (58.8% and 41.2%) respectively with no significant differences between age groups and Hepatitis C virus infection on study population ($p> 0.05$). Depending on the gender, it was found that males with HCV formed the highest percentage rate (76.50%) compared to females (23.50%), with highly significant differences ($p> 0.05$). Depending on the education level, it was found the secondary graduated had a higher incidence of HCV (52.9%) compared to primary and college graduates (41.2%) with no significant differences ($p> 0.05$) while for the diseases, it was found that people without diseases formed the highest percentage rate of tattoo carriers (64.9%) as compared to the presence of diseases with significant differences ($p> 0.05$). This study concludes that HCV is transmitted by tattoos, especially not recommended centres, and in salons lacking the minimum hygienic requirements.

Keywords: *Frequency HCV, Tattoo, ELISA, Diyala*

Introduction

The infection of hepatitis C virus is a common cause of acute and chronic liver diseases, is a major cause of liver cirrhosis and hepatocellular carcinoma lead to significant morbidity and mortality in developing and developed countries [1]. In up to 80% of cases, HCV infections are chronic and about 71 million people worldwide suffering from chronic HCV [2]. Hepatitis C virus is commonly transmitted by blood transfusion [1]. The hepatitis C virus was a species of hepacivirus in the Flaviviridae family [3]. The RNA of HCV is a single strand with a positive polarity that encoding a single polyprotein [4]. HCV is classified into 6 genotypes 67 subtypes [5]. Today, sporadic transmission is more prevalent, mostly in drug addicts via needle sharing, and seldom by needle-stick injuries in medical personnel, vertical transmission from mother to baby, tattooing, piercing, or razor share [6]. In the incarcerated population, the prevalence of hepatitis C virus (HCV) is high [7]. Tattooing is one of the routes of transmission of blood-borne infections such as hepatitis B and C, HIV,

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Modern sterile and hygienic standards have dramatically reduced this risk when tattoos are applied by licensed professionals [8]. Tattooing is an ancient artistic practice characterized by the intradermal injection of pigments, and it has increased in popularity over the past 20 years [9]. There are five types of tattoos: professional, amateur, cosmetic, traumatic, and medical[10]. Several Iraqi studies were done in different cities about the frequency of hepatitis C virus among people with tattooing and reported different percentages such as in Baghdad was (0.098%) [11], in Basra (2.8%) [12], in Dohuk0.2% [13], and (13.9%) in Najaf governorate [14].

Methods and Materials

On 100 patients, a cross-sectional analysis was performed. (43 were male and 57 female) with tattooing. HCV in the premarital screening program and periodic examination of hairdressing salons within the preventive health affairs and consulting clinic in Baquba Teaching Hospital in Diyala governorate from 1st october 2020 until 15th February 2021. Approximately 5 ml of blood collected from 100 patients with tattoos put in a test tube without anticoagulant, then, centrifuged for 5 minutes at 3000 rpm, the serum that separated and gathered in another test tube and stored at (-20C°) until be used for detection of HCV antibodies (IgG) by using ELISA technique. Data were collected from patients in this study by a questioner with each patient which including, tattooing, age, gender, occupation, diseases, and Education level.

DETECTION OF HCV BY ELISA TECHNIQUE

All patients were screened for anti-HCV IgG antibodies by third-generation commercial ELISA test according to the manufacturer's instructions of (CTM ELISA kit, Cat. No. 1265, UK) in the laboratory of the blood bank at Baquba teaching hospital used for the qualitative detection of IgG antibodies to HCV in human serum.

Statistical Analysis

All data were analyzed using the Statistical Analysis Program (SAS) - 2012, version 22, number, percentage, and chi-square was used to test the effect of different factors in the study.

Results

The frequency of HCV according to ELISA technique was (17 %) with highly significant differences ($p< 0.05$) (Figure 1).

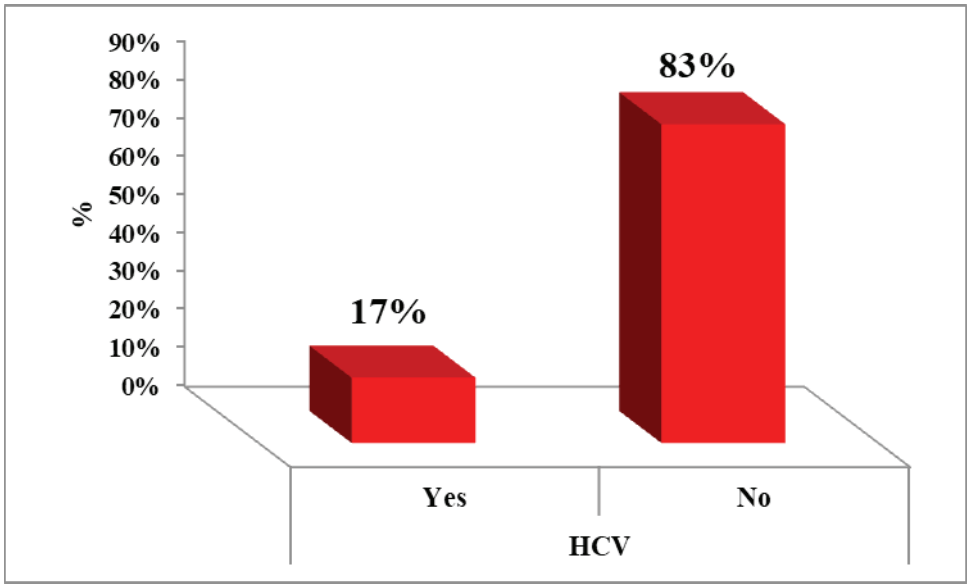

FIGURE 1: Frequency of Hepatitis C Virus Infection in Study Population.

The results of the current study showed that HCV positivity constituted the highest percentage of age groups 21-30 and 31-40 with a percentage (41.2% and 58.8%) respectively, with no significant differences between HCV positivity and age groups (p> 0.05). Depending on the gender, it was found that males with HCV formed the highest percentage (76.50%) compared to females (23.50%), with significant differences (p < 0.05). Depending on the housing, it was found that the infected persons living in the rural the highest percentage (58.8%) compared to the city dwellers (41.2%) with no significant differences (p> 0.05). Depending on the education, it was found the secondary graduated had a higher incidence of HCV (52.9%) compared to primary and college graduates (41.2%) with no significant differences (p> 0.05) (Table 1).

TABLE 1: Distribution of Positive Patients of HCV According to Age, Gender, Residence, Education in Study Population.

			HCV		Total	P value
			Yes	No		
Age periods	≤ 10	n	0	2	2	0.291
		%	0.0%	2.4%	2.0%	
	11-20	n	0	8	8	
		%	0.0%	9.6%	8.0%	
	21-30	n	7	34	41	
		%	41.2%	41.0%	41.0%	
	31-40	n	10	29	39	
		%	58.8%	34.9%	39.0%	
	41-50	n	0	8	8	
		%	0.0%	9.6%	8.0%	
	>50	n	0	2	2	
		%	0.0%	2.4%	2.0%	
Gender	Male	n	13	30	43	0.002**
		%	76.50%	36.10%	43.00%	
	Female	n	4	53	57	
		%	23.50%	63.90%	57.00%	
Living	Rural	n	10	25	35	0.024
		%	58.8%	30.1%	35.0%	
	City	n	7	58	65	
		%	41.2%	69.9%	65.0%	
Education	Primary	n	5	26	31	0.93
		%	29.4%	31.3%	31.0%	
	Secondary	n	9	40	49	
		%	52.9%	48.2%	49.0%	
	College	n	3	17	20	
		%	17.6%	20.5%	20.0%	

Discussion

According to the results of the ELISA technique, the rate of HCV infection among patients with tattoos at Baqubah Teaching Hospital in Diyala Governorate was 17% (Figure 1). The result of this study is comparable to several Iraqi studies conducted in different cities. The frequency of infection was higher than other studies in other governorates such as Baghdad was 0.098% [11], in Basra 2.8% [12], in Dohuk 0.2% [13], and 13.9% in Najaf governorate [14]. These differences may be due to the virus's variability from region to region and year to year, or to the diversity of the research that characterized it, which may contribute to a successful age group, genetic factor, patient immune status, detection technique sort, sample size, and cultural knowledge of exposure to a risk factor, and the phenomenon of tattoos has spread significantly recently. Regarding age, the results of this study showed the greatest numbers of tattooed subjects were found to be between 21-30 and 31-40 years old, which represents 41.0% and 39.0% respectively. These results similar to results conducted in other countries such as in Italy that show the greatest number of tattooed subjects were found within 25-34 and 35-44 years [15]. The regression analysis revealed a weak relationship between getting a tattoo and specific behaviour or lifestyle choices, such as habitual alcohol or drug use [15]. The majority of the previous studies are predominantly among adolescents and young adults of western countries and the prevalence of tattooing ranges from 3-24% [16]. From the study result, it shows that developing country like India also showed an increasing trend of tattooing among the adolescents which is comparable with the western countries [17]. Women are more likely to get tattoos than men, with a prevalence of 55.9% for women and 44.1% for men [15]. These findings were compatible with our results that showed the prevalence of tattoos in women (57.0%) is more than in men (43.0%). According to the literature, there is not yet established a strong correlation between tattoos and sex since there are studies that show men with both higher and lower tattoo rates than women and studies performed exclusively on males [16]. More women than men are now tattooed, and tattooing is associated with important implications for women's health care, including pregnancy, childbirth, and breastfeeding[8]. The prevalence of tattooed people in the city (88.9%) is more than urban (11.1%) with high significant different ($p< 0.05$) [15]. These findings were compatible with our results that showed the prevalence of tattoos in the city (65.0%) is more than urban (35.0%) with high significant different ($p< 0.05$). So, our results were compatible with results that showed a majority of tattooing in the city than rural [19]. Regarding educational qualifications, 55.4 per cent of tattooed people had a high school diploma, 30.8 per cent had a university or master's degree, and 13.8 per cent had some other certification (elementary school certificate, secondary school, or none) [15]. These findings were not compatible with our results that showed the prevalence of tattoos in primary (31%), secondary (49%) and college (20%) with high significant different ($p<0.05$). Tattooing is common among people with a low level of education[20]. Tattooing is closely linked to hepatitis C transmission in all subgroups, according to the findings. Young a dults who are more likely to get tattoos, as well as jail inmates with a high prevalence of hepatitis C infection, should receive relevant education. Our results were compatible with results that showed positivity of HCV in tattoo persons. Because tattooing is more common among youth and young adults, and hepatitis C is very common in the prison population, prevention programs must target youth and prisoners to reduce hepatitis infection spread[21,22]. As a result, tattooing instruments are in direct contact with blood and bodily fluids, and if tattoo needles are used for more than one person without following adequate sterilization and hygiene procedures, blood-borne diseases can be transmitted [22]. However, tattooing as a risk factor for HCV infection has remained a point of contention [23]. Indicates the tattoos made under biosafety conditions in authorized establishments do not seem to increase the risk of hepatitis C infections in people without other risk factors, especially when there have only been a few sessions. Additional studies are required to confirm this hypothesis[24] (figure 1). Indicate the high positivity of HCV in tattooing peoples with age periods more than 40 years and male people

(80.3%) with non-significant different (p> 0.05) [9,25].

Conclusion

From this study we conclude that the HCV is transmitted by tattoos especially not recommended centers and in salons lacking the minimum hygienic requirements.

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Ethical Clearance: Not required

Refereneces

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