



Occurrence of Genotypes of Hepatitis C Virus in Hepatitis C Patients at Civil Hospital Khairpur, Sindh, Pakistan

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Authors' contributions

This work was carried out in collaboration among all authors. Author SA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors IAT, RF, MSR, QS, SAJ and AA managed the analyses of the study and managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Objective: To evaluate frequency of Hepatitis C virus Genotypes in Hepatitis C patients reported at Civil Hospital Khairpur, Sindh, Pakistan.

Methodology: A descriptive cross sectional study was conducted on 223 hepatitis C patients who fulfilled the criteria at hepatitis OPD of Civil Hospital Khairpur, Sindh, Pakistan. After taken Patient

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consent, blood sample were collected for HCV genotyping, which were performed by a qualified pathologist. The collected data statistically analyzed by using SPSS version 22 software.

Result: Out of 223 patients, male patients were 167 and females patients were 56, rural patients were 130 where as 93 patients were from urban area, 30 patients were of age from 20-25 years, 41 were of age from 26-30 years, 60 were of 31-35 years, 54 were of 36-40 years, 16 were of 41-45 years, 13 were of 46-50 years, 7 were of 51-55 years, 2 were of 56-60 years, out of total n=11 patients have genotype1, n=4 have genotype2, n=204 have genotype3, n=3 have genotype4, n=1 have genotype5, whereas no any patient have genotype 6.

Conclusion: This study concluded that genotype 3 is most dominant among other genotypes in reported patients of hepatitis c virus infection at civil hospital Khairpur.

Keywords: Hepatitis C; genotype; occurrence; Pakistan.

1. INTRODUCTION

When the inflammation of the liver occurs due to the Hepatitis C Virus (HCV), family Flaviviridae then the condition is known as hepatitis C. It may be mild, moderate or severe. Its cure may require few days, few weeks, few months, or even years are required to cure it [1,2]. The causative agent of this disease is present in the blood of a hepatitis c + ve patients, so if a normal healthy person is exposed even to a small quantity of that blood then the virus may be transferred to healthy person where it grow and multiply and causes infection [3,4].

Hepatitis C is one of a few infections that can cause hepatitis. It is inconsequential to the next normal hepatitis infections (for instance, hepatitis A or hepatitis B). Hepatitis C is an individual from the Flaviviridae group of infections. Different individuals from this group of infections incorporate those that reason yellow fever and dengue fever [5].

Vitamin D shows a direct antiviral effects in an in-vitro infectious virus production system. Vitamin D acts as a natural antiviral mediator, by showing its interferon sparing effects, therefore used in the treatment of hepatitis c patients [6]. Vitamin D produces its antiviral effects by regulating immune system, although it is not fully established researchers linking the ability of vitamin d in regulating antimicrobial peptides LL-37 and human beta defensin2 in such effects [7]. Vitamin D also plays a role In treatment of HIV by regulating immune system [8]. The signs and symptoms are: Draining viably, Bruising easily, Fatigue, Poor yearning, Yellow discoloration of the skin and eyes (jaundice), Dark-tinted pee, Fluid accumulation in the liver (ascites) etc [9]. A couple of individuals clear HCV from their bodies after the exceptional stage, an outcome known as unconstrained viral elbowroom. In examinations of people resolved to have extreme

HCV, paces of unconstrained viral opportunity have changed from 14 to 50 percent. Extraordinary hepatitis C furthermore responds well to antiviral treatment [10].

Hepatitis C can be occurs when the blood of hepatitis c positive people is transfused or direct contact with that blood. Percutaneous means the tainted blood must be retained through the skin and enter the circulatory system of person, blood-to-blood. Hepatitis C is roughly seven times more irresistible than HIV [11].

Hepatitis c virus can be transferred from one person to another person through the following ways such as Use of contaminated disposable syringes, Barber shops who use same blades or raser of HCV positive person to normal person, Hemodialysis, Organ Transplants, Transfusion of blood and blood products, Inking and Body Piercing, Social insurance and Occupational Exposure (needle-stick wounds), Intranasal Drug Use (grunting drugs through a straw), Birth to a HCV contaminated mother, Un protected sex, Sharing of individual things, for example, razors, toothbrushes, scissors and manicuring gear inside a similar family [12,13]. Hepatitis C virus is not transmitted by easygoing contact like embracing or kissing, it is not transmitted through bosom drain, nourishment, water or imparting sustenance or water to a contaminated individual [14]. The genotype is the bit of the innate beauty care products of a cell, and thus of any individual, which chooses one of its properties (phenotype) [15]. It is a key to know and handle HCV genotypes considering the way that obvious genotypes react contrastingly to arrangements that treat and fix HCV. HCV has six genotypes, named 1 through 6 [16]. There are in like way subtypes set apart with letters, for instance, genotypes 1a and 1b. A huge number people are corrupted by a solitary, winning genotype, yet it is conceivable to have more than one in the mean time (called a blended ailment) [17].The

circulation of HCV genotypes is profoundly factor. Genotypes 1-3 are appropriated all inclusive, though genotypes 4 and 5 are limited to the Middle East and Africa, and genotype 6 happens overwhelmingly in south-east Asian countries [18]. HCV genotype 3 is endemic on the Indian subcontinent [19]. Different investigations have distinguished subtype 3a as the most pervasive HCV variation in Pakistan [20-22]. However, recent information propose that, in spite of the fact that genotype 3a may in any case be the transcendent HCV subtype in Pakistan, the epidemiological example and relative recurrence conveyance of different genotypes have experienced considerable change [23,24]. These investigations have demonstrated an ascent in the rate of genotype 2a, especially in the north-western region Khyber Pakhtunkhwa (KPK) [25].

Genotype by and large has not been found in epidemiological appraisals to acknowledge a general part in liver illness improvement due to HCV. Or then again maybe, genotype is of clinical criticalness essentially as a factor considering HCV solutions. With all medications endeavored to date, patients with genotypes 2 and 3 are more than twice as likely as patients with genotype 1 to accomplish a kept up virological reaction to therapy.(2, 3, 4 ,5, 7) also, when utilizing blend treatment in with interferon and ribavirin, patients with genotypes 2 or 3 by and large are overseen for just 24 weeks, anyway it is embraced that patients dirtied with genotype 1 get treatment for 48 weeks .

2. METHODOLOGY

A descriptive cross sectional study was conducted at hepatitis OPD of civil hospital Khairpur from September 2019 to February 2020. A total number of 223 hepatitis C patients were selected which fulfilled the criteria. After taken Patient consent, blood sample were collected for HCV genotyping, which were performed by a qualified pathologist. The

sampling technique was non probability consecutive. Both genders were selected. Patients whose age less than 25years and above 65 years were excluded from study. Patients having hepatitis B or HIV along with hepatitis C were excluded from study. The collected data statistically analyzed by using SPSS 22 version software.

3. RESULTS

In Table 1, study subjects were divided in 08 groups, group 1 comprises on patients whose age from 20-25years, group 2 patients have age from 26–30 years, group 03 from 31-35 years, group 04, from 36-40 years, group 05 from 41-45 years, group 06 from 46-50 years, group 07 from 51-55 years, group 08 from 56-60 years of age.

In Table 2, study subjects were divided on the basis on gender, out of 223 patients, 56 were females where as 167 patients were male, while there was no any transgender.

In Table 3, patients were divided on the basis of locality, out of 223 study subjects, 58.3% patients were belongs to rural area, while 41.7% patients were belongs to urban areas.

In Table 4 patients were divided according to genotype of hepatitis c virus. Out of 223 study subjects, 11 patients were of genotype 1, 4 were of genotype 2, 204 patients were of genotype 3, 3 patients were of genotype 4, 1 patients was of genotype 5, where as no any patient of genotype 6 was reported.

In Table 5, On applying Chi-Square Test result shows that genotype 3 was more in patients whose age from 36-40 years.

In Table 6, on applying Chi-Square Test result shows that both variables are independent on each other.

Table 1. Age wise distribution of the patients

Age (years)	Frequency	Percent	Valid Percent	Cumulative Percent
20-25	30	13.5	13.5	13.5
26-30	41	18.4	18.4	31.8
31-35	60	26.9	26.9	58.7
36-40	54	24.2	24.2	83.0
41-45	16	7.2	7.2	90.1
46-50	13	5.8	5.8	96.0
51-55	7	3.1	3.1	99.1
56-60	2	.9	.9	100.0
Total	223	100.0	100.0	

Table 2. Gender wise distribution of the patients

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	56	25.1	25.1	25.1
Male	167	74.9	74.9	100.0
Transgender				
Total	223	100.0	100.0	

Table 3. Locality wise distribution of the patients

Residence	Frequency	Percent	Valid Percent	Cumulative Percent
Rural	130	58.3	58.3	100.0
Urban	93	41.7	41.7	100.0
Total	223	100.0	100.0	

Table 4. Genotype wise distribution of the patients

Genotype	Frequency	Percent	Valid Percent	Cumulative Percent
G1	11	4.9	4.9	100.0
G2	4	1.8	1.8	100.0
G3	204	91.5	91.5	100.0
G4	3	1.3	1.3	100.0
G5	1	.4	.4	100.0
G6	0	0	0	100.0
Total	223	100.0	100.0	

Table 5. Statistical analysis

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.715 ^a	7	.459
Likelihood Ratio	5.937	7	.547
N of Valid Cases	223		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .17

Table 6. Statistical analysis

Chi-Square Tests					
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.960 ^a	1	.327		
Continuity Correction ^b	.494	1	.482		
Likelihood Ratio	1.052	1	.305		
Fisher's Exact Test				.416	.248
N of Valid Cases	223				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.77; b. Computed only for a 2x2 table

4. DISCUSSION

Hepatitis c is a hot issue in Pakistan. Mostly hepatitis c patients are treated according to genotype. Tanweer kumar *et al* in 2017 conducted a study in Peshawar KPK, Pakistan to obtain up-to-date picture of hepatitis c virus infection and its genotypes distribution in KPK,

Pakistan, they concluded that genotype is dominant among all reported patients and it was more common in age from 41-50 years, it is similar with current study, because in current study 91.5 % genotype 3 was observed, where as in present study genotype 3 was more common in age from 31-35 years[21]. Sobia Attaullah *et al* in 2011 conducted a systemic

review to analyze Hepatitis C virus genotypes in Pakistan, they concluded that Genotype 3 happened predominately in all the areas of Pakistan. Second more as often as possible genotype was genotype 1 in Punjab region and untypeable genotypes in Sindh, Khyber Pakhtunkhwa and Balochistan regions, it is similar with current study because in current study genotype 3 observed in 2014 patients out of 223[22]. ShamimSaleha *et al* 2014, conducted a study to investigate the prevalence of HCVgenotypes in HCV infected patients of district Bannu in Khyber Pakhtunkhwa re gion of Pakistan, they found that genotype 3 was more prevalent among other types, similar with current study [25]. Muhammad Umer *et al* 2015, conducted a review on Hepatitis C infection commonness and genotype appropriation in Pakistan, they reasoned that HCV genotype 3a keeps on being the most predominant subtype tainting individuals in Pakistan (61.3%), similar with present study [26]. Sohail baig *et al* 2014, conducted a descriptive cross sectional study to assess the frequency of different genotypes of Hepatitis C virus in patients attending LUHMS Jamshoro Sindh, they concluded that HCV genotype 3 was observed in 72.9% study subjects, it was similar to current study because in district Khairpur genotype 3 is more common i.e 91.5% [27].

5. CONCLUSION

This study concluded that out of 223 patients 167 patients were male and 56 were females, majority of the patients were belong to rural areas as compared to urban areas. Genotype3 of hepatitis c virus becomes more prevalent as compared to others, out of 223 cases 204 cases were only of genotype3, on second genotype1 was observed out of 223 cases 11 cases were of genotype1. Genotype3 was more common in age from 31-35 years, secondly from 36-40 years of age.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline Patient's consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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