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Research Article

**RATE OF OCCURRENCE OF INFECTION OF HCV AND  
DISTRIBUTION OF ITS GENOTYPES IN NON-URBAN AREAS  
OF NAROWAL, PAKISTAN**<sup>1</sup>Dr Zia Ul Mustafa, <sup>2</sup>Dr Muhammad Ali, <sup>3</sup>Muhammad Aleem Uddin<sup>1</sup>Assistant Professor of Medicine Sahara Medical College Narowal; <sup>2</sup>Senior Registrar Fatima Memorial Hospital Shadman Lahore; <sup>3</sup>Assistant Professor of Medicine Sahara Medical College Narowal**Article Received:** June 2019**Accepted:** July 2019**Published:** August 2019**Abstract:**

**Objectives:** The aim of this research work is to find out the rate of occurrence of infection because of HCV and distribution of its genotypes in the non-urban remote areas of Narowal, Pakistan.

**Methodology:** Retroactive research on the patients visiting the for free liver tests and examined for the identifiable antibodies of HCV and patients who screened for the infection of HCV prior to the donation of the blood in Sughra Shafi Medical Complex Narowal. Elisa was in use for the testing of the antibodies of HCV. A sum of 900 patients tested reactive to antibodies of hepatitis C virus & who could economically afford to get HCV-RNA tested by the PCR, were present with their analyzed results. 190 patients were also present with their genotyped HCV.

**Results:** Patients visiting for free liver tests were present with high chance to be reactive for the antibodies of HCV in comparison with the willing blood donors (18.0% versus 12.0%). HCV-RNA was identifiable in 700 patients out of 900 with 86.0% patients. In typable genotypes, total 100 out of 130 (73.0%) patients were present with a single genotype & seven (2.0%) patients were present with infection of genotype-1, either alone (4) or with the combination of 3A.

**Conclusions:** One patients among 5 tested for liver tests and 12.0% of the healthy donors of blood were present as positive for antibodies of HCV. Genotype-1 is not common in our areas.

**Key Words:** Chronic Hepatitis, Antibodies, HCV, Infection, Genotype, Donors, (Polymerase Chain Reaction).

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**INTRODUCTION:**

Infection due to HCV is very common issue of health. WHO provided an estimation that three to four million are the new victims of this disease every year [1]. In United States of America, it is responsible for the 13.0% acute hepatitis, 58.0% to 68.0% chronic hepatitis & up to 48.0% liver cirrhosis, end-stage diseases of liver & cancer of liver [2]. In our institute, it is accountable for 67.0% of all medical admissions in intensive care units & also for 67.0% of all mortalities [3]. After the early exposure, 58.0% to 83.0% patients develop the chronic disease infection [4]. Hepatitis C virus has six main genotypes. They do not have the ability for the determination of the infection outcome, but they can have influence on the outcome of the treatment and the treatment duration [5].

Important instructions in various countries recommend that it is necessary to determine the genotype before the start of the treatment for HCV infection [6]. The data from our country showed that most of the patients have infection of genotype three of hepatitis C virus, so the determination of the genotype before the treatment is not much necessary for our patients [7]. They are large difference in the prevalence of the genotype one in various parts of this region [8].

**METHODOLOGY:**

This is retroactive research work on the data of the patients visiting free liver tests held by the Sughra Shafi Medical Complex Narowal particularly for the patients from non-urban remote areas. We collected the data of three years from June 2016 May 2019. We obtained the data of the willing blood donors for the same duration. ELISA was in use for the serological testing of the samples in the laboratory of the hospital. PCR (polymerase chain reaction) was in use for the

testing of HCV-RNA for 900 patients in another laboratory. These participants were available to be reactive for anti-HCV. Extraction of the HCV-RNA carried out from sample and amplification carried out with the real-time amplification & identified with the utilization of the fluorescent reporter dye-probes in Smart Cycle. The sensitivity & specificity of assay was 96.0% & 95.0% accordingly.

Patients available with HCV-RNA identified by the PCR, two hundred patients were willing to have their genotyped HCV. We performed the Chi square test for the significance of the test & P value of <.048 was significant. We calculated the odd ratios with 93.0% CI (confidence interval).

**RESULTS:**

Total 900 patients underwent investigation for the availability of the antibodies of HCV during free liver tests. Among these, 18.0% patients tested reactive with male patients as 63% percent with an average age of 32 years (Table 1). Additionally, we carried out the screening of 700 willing blood donors for the antibodies of HCV, among these 12.0% were available as reactive. Chi square test discovered an association among reactive for hepatitis C infection among patients of both groups. Odds ratio was 1.398 with confidence interval of 93.0%. Among total 900 tested patients, 86.0% were present with HCV-RNA identified with the help of PCR. Out of total 198 patients who underwent further investigation, 130 patients discovered with type-able genotype of HCV. Among these, 100 out of 130 (73.0%; 93.0% CI = 66.68%-79.98%, estimated odds=3.048) patients had the infection due to single one genotype. Among these, 90 out of 100 patients, 90.0% were present with Type-3A, 4 out of 100 (3.0%) had Type-3B & 2 out of 100 (5.0%) were present with Type-1A.

**Table-II: Relation of BMI with fatty liver.**

BMI		Units	Fatty Liver		Total
			Yes	No	
BMI Categories	Less than 18.5	Count	7	28	35
		Percent	3.80%	6.30%	4.50%
	18.5 - 24.99	Count	127	223	332
		Percent	51.80%	55.50%	54.00%
	25 - 29.99	Count	82	146	200
		Percent	33.00%	31.30%	32.00%
	More than 30	Count	16	3	19
		Percent	5.50%	0.80%	3.50%
Total	Count	Count	232	400	586
	Fatty Liver (%)	Percent	99.00%	97.00%	100.00%

Of these 130 type-able genotypes, 39 patients (23.0%; 93.0% CI= 16.8% -29.28% estimated odds = 0.3078) discovered to have infections with mixed genotype. Among these, 30 out of 36 (83.0%; 93.0% CI=77.78%-89.89%, estimated odds=3.638) were available with infection of types 3A/3B. Total 3 patients each were present with infection of type 3A/2A & 3A/1A. Total 139/146 (94.0%) were present with infections of only “Non-1” genotypes (approximate 93.0% CI=90.68%–96.78%) and estimated odds as 20.68. We found only 2.0% patients with infection of genotype-1, either single (4) or with combination of 3A (approximate 93.0% CI=1.18%-5.28%), with estimated odds of having infection with this with genotype being as 0.0438.

### DISCUSSION

This is the first study of this nature in our country Pakistan. A recent published data displayed that the information of last five years from the whole country described a difference in the prevalence of HCV infection with a range from 2.18% to 13.50% in different cities of the country [9]. About two third population of the country is living in the non-urban areas of the country [10]. The occurrence of this complication is more in the non-urban areas as compared to the urban areas. There are many reasons of the high occurrence as deficiency of the education & poverty [9]. These factors are much prevalent in the non-urban areas. The important transmission mode of hepatitis C virus in the countries which are under development appears to be infected medical equipment & transfusion of blood without screening [1, 8]. Our non-authentic data displayed the rate as 67.0% & 8.0% correspondingly.

We discovered in this research work that the prevalence of the HCV is very high in the male gender (63.0%). This finding is similar with the studies of the past [8, 9]. Male are available with high danger of acquiring infection due to shaving from barbers infected razors and free style of life. The participations of the males in the sports and other activities which cause injuries and requiring other facilities of health which can increase the danger of acquiring this complication. The occurrence of the disease in the patients appeared for free liver tests was much high as compared to the infection rate in the blood donors. It is clearly visible from the findings that willing blood donors have low danger to acquire infection than those who are in need of the health care facilities or care for some duration [11].

One national survey in the country about the occurrence of the HCV and HBV stated in the year of

2013 that the overall occurrence of the HCV is 4.90% and prevalence of HBV is 2.50. This survey also emphasized the cities which were present with high danger of acquiring the infection. Genotype-3 (A or B) was about ninety-six percent in this research work and remaining 4.0% were present with genotype-1. This is opposite to the findings of the works of the past which displayed occurrence of genotype-1 alone to be more than 11.50% in our country Pakistan, overall-alone or in combination with some other genotype. This highly prevalent genotype requires very short duration of treatment in comparison to the genotype-1, with its association to the decreased cost & some severe side effects.

### CONCLUSION

The findings of this research work concludes that 18.0% patients appearing for free liver tests and 12.0% willing blood donors were available as seropositive for the antibodies of HCV which is very high rate in our country Pakistan. In these areas, genotype-3 is much prevalent as compared to the other areas of the country.

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