The Professional Medical Journal
www.theprofesional.com
DOI: 10.17957/TPMJ/15.2946

ORIGINAL PROF-2946

HCV IN PUNJAB;
ZONAL MOLECULAR DISTRIBUTION

Fouzia Ashraf[1], Amna Rasheed[2], Sajjad Ullah[3], Mahmood Shaukat[4]

1. Dr. A. Q. Khan PCR Lab, Allama Iqbal Medical College/ Jinnah Hospital, Lahore
2. Dr. A. Q. Khan PCR Lab, Allama Iqbal Medical College/ Jinnah Hospital, Lahore
3. Dr. A. Q. Khan PCR Lab, Allama Iqbal Medical College/ Jinnah Hospital, Lahore
4. Dr. A. Q. Khan PCR Lab, Allama Iqbal Medical College/ Jinnah Hospital, Lahore

Correspondence Address:
Fauzia Ashraf
Dr. A. Q. Khan PCR Lab,
Allama Iqbal Medical College/
Jinnah Hospital, Lahore
pcrjinnah@yahoo.com

Article received on:
25/05/2015
Accepted for publication:
06/07/2015
Received after proof reading:
12/10/2015

ABSTRACT… Background: HCV is the foremost cause of liver cirrhosis and hepatocellular carcinoma and its prevalence is increasing in developing countries like Pakistan. Present study is focusing on its frequency in different districts of the Punjab of Pakistan. **Setting:** Different districts of Punjab. **Period:** Jan 2010 to Dec 2010. **Material and methods:** 5ml venous blood was collected from each donor by using disposable syringes. Sample is transferred to vials containing anticoagulant, centrifuged and plasma was separated for further analysis.140 ul plasma of every patient was analyzed for HCV RNA Virus by Real time PCR using Artus HCV Quantification kit (Germany).For statistical analysis SPSS 16 was used. **Results:** A total count of 3262 samples was collected from 32 districts of the Punjab and all these samples were both rapid HCV screening and Anti HCV by Elisa positive. Out of which 2041 (62.57%) patients were detected positive for HCV, 1221 (37.4%) were not detected.49.5%patients were male while50.5% were female. 30.99% males were detected positive including patients with low viral load. 31.58% were detected positive for HCV including low positive female patients.30.71% females were detected positive for HCV, 37.5% were not detected for HCV. **Conclusion:** Highest prevalence of HCV among different age groups is found in age group of 36-40 years with 12.23% and lowest is found in age group > 15 years with 0.31% (p=0.009).

Key words: HCV, Prevalence, Punjab, Distribution,

Article Citation: Ashraf F, Rasheed A, Sajjad Ullah, Shaukat M. HCV in Punjab; zonal molecular distribution. Professional Med J 2015;22(10):1268-1272. **DOI:**10.17957/TPMJ/15.2946

INTRODUCTION

Hepatitis C virus (HCV) is a member of the genus Hepacivirus, in the family FlaviviridaeandHCV genome is comprised of linear single stranded RNA molecule of positive polarity of ~9.6 kb.[2] It is a leading cause of chronic liver disease, cirrhosis, and hepatocellular carcinoma.[30,17] HCV also affects a variety of other organs and may direct to considerable morbidity and mortality.[1] Waheed *et al* .(2009) reviewed ninety one different studies conducted from 1994 to May 2009 and reported that more than 10 million people are living with Hepatitis C virus (HCV) in Pakistan, with high morbidity and mortality. HCV prevalence was found to be moderate in the general population but high rates of HCV infection were reported injecting drug users and multi-transfused populations.[6]

Transmission of HCV is mainly by parental pattern however 90% intravenous drug users are at greatest risk. Interferon and ribavirin is a standard therapy for chronic HCV and have 38-43% sustained virological response.[3]

MATERIALS AND METHODS

3262 samples were collected from different districts of Punjab from January 2010 to December 2010. Patient information including study number, name, age, sex and address was recorded. All the patients selected for the study were positive for HCV by rapid screening and Anti HCV by Elisa.

5ml venous blood was collected from each donor by using disposable syringes. Sample is transferred to vials containing anticoagulant, centrifuged and plasma was separated for further analysis.

140 ul plasma of every patient was analyzed for HCV RNA Virus by Real time PCR using Artus HCV Quantification kit.

Data were analyzed by the programs Microsoft Excel 2007 and SPSS version 14.0. To compare the prevalence rates were calculated used the chi-square and significance level was $p < 0.05$.

RESULTS

A total count of 3262 samples was collected from 32 districts of the Punjab and all these samples were both rapid HCV screening and Anti HCV by Elisa positive. Out of which 2041 (62.56%) patients were detected positive for HCV, 1221 (37.4%) were not detected (Fig-1).

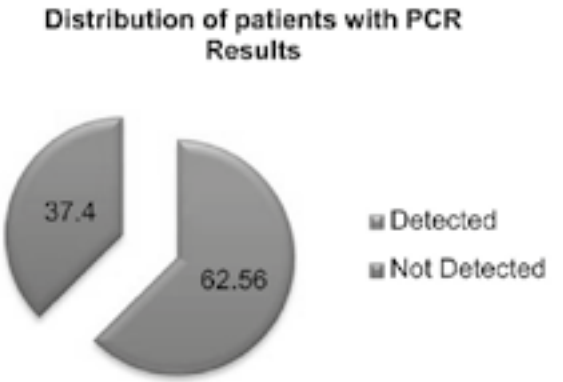

Fig-1. Distribution of PCR positive Patients

Out of 3262 samples 1614(49.5%) were male and 1648(50.5%) were female. Out of 1614 males1011 (62.63%) males were detected positive for HCV, 603(37.36%) were not detected for HCV Fig-2.

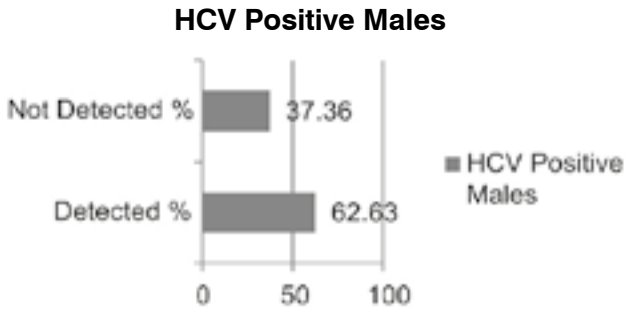

Fig-2. Distribution of HCV Positive Male Patients

Out of 1648 females 1030 (62.5%) females were detected positive for HCV, 618 (37.5%) were not detected for HCV (Fig-3).

Prevalence of Hepatitis C in males is 30.99% while in females is 31.57%. 19 (0.6%) samples were

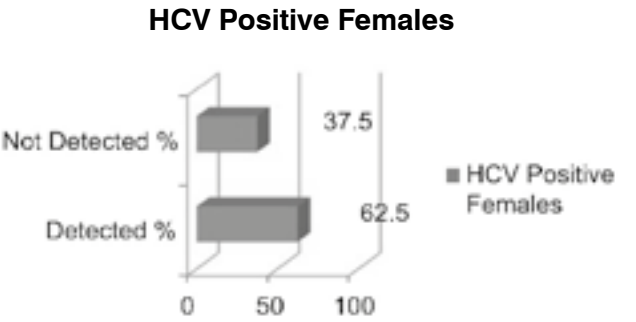

Fig-3. Distribution of HCV Positive Female Patients

from age group of <15 years out of which 10 were detected 09 were not detected, 140(4.3%) were from 15-20 years out of which 86 were detected, 54 were not detected and only, 388 (11.9%) were from 21-25 years out of which 212 were detected positive for HCV, 176 were not detected, 588 (18.0%) samples were from 26-30 years out of which 347were detected positive for HCV, 241 were not detected, 526 (16.1%) were from 31-35 years out of which 342 were detected positive for HCV, 184 were not detected, 642 (19.7%) were from 36-40 years out of which 402 were detected positive for HCV, 240 were not detected, 370 (11.3%) were from 41-45 years out of which 236 were detected positive for HCV, 134 were not detected, 446 (13.7%) were from 46-50 years out of which 298 were detected positive for HCV, 148 were not detected, 84 (2.6%) were from 51-55 years out of which 62 were detected positive for HCV, 22 were not detected, 39 (1.2%) were from 56-60 years out of which 27 were detected positive for HCV, 12 were not detected and 20 (0.6%) were above 60 years of age out of which 19 (95%) were detected positive for HCV and 01(05%) were not detected (Fig-4).

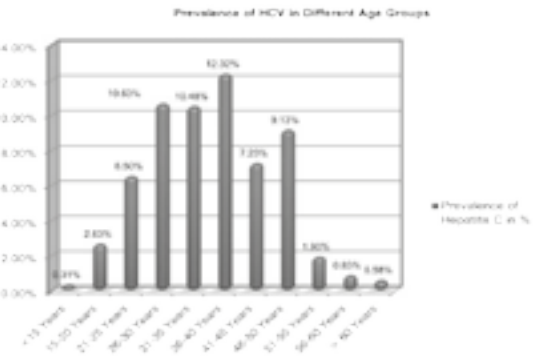

Fig-4. Frequency of HCV in Different Age Groups

Prevalence of Hepatitis C in age group of < 15 years in 0.31%, in 15-20 years is 2.63%, in 21-25 years is 6.49%, in 26-30 years is 10.63%, in 31-35 years is 10.48%, in 36-40 years is 12.32% in 41-45 years is 7.23% in 46-50 years is 9.13%, in 51-55 years is 1.90%, in 56-60 years is 0.83% and in >60 years is 0.58%.

Out of 3262 samples 9 (0.3%) samples were received from Bahawal Nagar form Bhakkar 2 (0.1%),from Chakwal 5 (0.2%) samples were received, form D.G. Khan 01 (0%), from Faisalabad 42 (1.3%) were received, 67 (2.1%) samples from Gujranwala were received, 9 (0.3%) samples from Gujarat, 20 (0.6%) samples from Hafizabad, 2 (0.1%) samples from Jaranwala, 3 (0.1%) samples from Jehlum, 16 (0.5%) samples from Jhang, 338 (10.4%) were from Kasur, 9 (0.3%) samples were from Khanewal, 1720 (52.7%) were from Lahore, 7 (0.2%) samples were from Layyah, 1 (0%) sample from Mianwali and Lodhran each, 7 (0.2%) samples from MandiBahauddin, 10 (0.3%) samples from Multan, 2 (0.1%) samples from Muzaffargarh, 23 (0.7%) from Nankana Sahib, 17 (0.5%) samples from Narowal, 183 (5.6%) samples from Okara, 160 (4.9%) samples from Pakpatan, 4 (0.1%) samples from Rahim Yar Khan and RajanPur each,7 (0.2%)samples from Rawalpindi, 367 (11.3%) samples from Sahiwal, 22 samples from Sargodha (0.7%), 136 (4.2%) samples from Sheikhupura, 21 (0.6%) samples from Sialkot, 21 (0.6%) samples from Toba Tek Singh, 26 (0.8%) samples from Vehari were received (Table-I).

DISCUSSIONS

Hepatitis C virus (HCV) is the major etiological agent of hepatitis.[3] In the present study 3262 HCV rapid screening and anti HCV by Elisa positive samples were tested for HCV RNA by Real Time PCR. Prevalence of HCV in the district of Punjab of Pakistan is found to be 62.6% (including patients with low viral load)in the year of 2010. It is estimated recently that 200 million individuals are infected with HCV worldwide including approximately 17 million in Pakistan.[23,12] Hospital- based studies revealed prevalence rates of 5.31% (Islamabad), 2.45% (Rawalpindi), 4.06% (Multan), 20.89% (Faisalabad), 4-6% (Karachi), 9% (Mardan), 5% (Buner, NWFP) and 25.7% (Northern Areas).[14,15,25,26,19,17,31]

Districts	Frequency	Percent
Bahawal Nagar	9	0.3
Bhakkar	2	0.1
Chakwal	5	0.2
DG Khan	1	0
Faisalabad	42	1.3
Gujranwala	67	2.1
Gujarat	9	0.3
Hafizabad	20	0.6
Jaranwala	2	0.1
Jehlum	3	0.1
Jhang	16	0.5
Kasur	338	10.4
khanewal	9	0.3
Lahore	1720	52.7
Layyah	7	0.2
Lodhran	1	0
MandiBahauddin	7	0.2
Mianwali	1	0
Multan	10	0.3
Muzzafargarh	2	0.1
nankanaSahab	23	0.7
Narowal	17	0.5
Okara	183	5.6
Pakpatan	160	4.9
Rahim Yar Khan	4	0.1
Rajanpur	4	0.1
Rawalpindi	7	0.2
Sahiwal	367	11.3
Sargodha	22	0.7
Sheikhupura	136	4.2
Sialkot	21	0.6
TobaTek Singh	21	0.6
Vehari	26	0.8
Total	3262	100

Table-I. Distribution of patients according to the Districts

Present study reveals that prevalence of HCV in the Punjab is slightly higher in females with (31.57%) as compared to males with (30.99%) ($p = 0.279$) but according to a previous study higher anti-HCV

prevalence in males compared to females could be due to this additional exposure to used and non-sterile shaving blades.[7]

In present study highest prevalence among different age groups is found in age group of 36-40 years with 12.32% and lowest is found in age group > 15 years with 0.31% (p=0.009).In a similar study it has been observed that the prevalence of HCV increases with age which may be due to increasing exposure to risk factors. HCV may be different in different regions and various groups of the same community.[8]

REFERENCES

1. Ko HM, Hernandez-Prera JC, Zhu H, Dikman SH, Sidhu HK, Ward SC, Thung SN. **Morphologic features of extrahepatic manifestations of hepatitis C virus infection.** ClinDevImmunol. 2012;2012:740138.

2. Safi SZ, Badshah Y, Waheed Y, Fatima K, Tahir S, Shinwari A, Qadri I: **Distribution of hepatitis C virus genotypes, hepatic steatosis and their correlation with clinical and virological factors in Pakistan.** Asian Biomedicine 2010, 4(2):253-262.

3. Munir S, Saleem S, Idrees M, Tariq A, Butt S, Rauff B, Hussain A*et al*. **Hepatitis C treatment: current and future perspectives.** Virol J 2010;7:296.

4. Akbar H, Idrees M, Manzoor S, Rehman ur I, Butt S, Yousaf ZM, Rafique S, *et al*. **Hepatitis C virus infection: A review of the current and future aspects and concerns in Pakistan.** Journal of General and Molecular Virology 2009; 1 (2); 012-018.

5. Idrees M, Riazuddin S. **A study of best positive predictors for sustained virological response to interferon alpha plus ribavirin therapy in naïve hepatitis C patients.** BMC Gast. 2009; 9-5.

6. Waheed Y, ShafiT, SafiSZ, Qadri I. **Hepatitis C virus in Pakistan: a systematic review of prevalence, genotypes and risk factors.** World Journal of Gastroenterology2009; 15(45): 5647-5653.

7. Idrees M, Riazuddin S. **Frequency distribution of hepatitis C virus genotypes in different geographical regions of Pakistan and their possible routes of transmission.** BMCInfect Dis 2008; 8-69.

8. Idrees M. **Development of an improved genotyping assay for the detection of hepatitis C virus genotype and subtypes in Pakistan.** J Virol Method 2008; 150: 50-56.

9. Farhana M, Hussain I, Haroon TS. **Hepatitis C: the dermatologic profile.** J Pak AssocDerm 2009; 18: 171-181.

10. Khan S, Rai MA, Khan A, Farooq A, Kazmi SU, Ali SH. **Prevalence of HCV and HIV infections in 2005-Earthquak areas of Pakistan.** BMC Infect Dis 2008; 8-147.

11. Khan UR, Janjua NZ, Akhtar S, Hatcher J. **Case-control study of risk factors associated with hepatitis C virus infection among pregnant women in hospitals of Karachi-Pakistan.** Trop Med Int Health 2008; 13(6): 754-61.

12. Koop CE. **Hepatitis C: An epidemic for anyone, worldwide prevalence.** DHMC 2008.

13. Abdel-Hamid M, El-Daly M, Molnegren V, El-Kafrawy S, Abdel-Latif S, Esmat G, Strickland GT, et al. **Genetic diversity in hepatitis C virus in Egypt and possible association with hepatocellular carcinoma.** J Gen Virol 2007; 88: 1526–1531.

14. Chaudhary IA, Samiullah U, Khan SS, Masood R, Sardar MA and Mallhi AA. **Seroprevalence of hepatitis B and C among the healthy blood donors at Fauji Foundation Hospital, Rawalpindi.** Pak J Med Sci 2007; 23: 64-7.

15. Jehangir W, Ali F, Shahnawaz U, Iqbal T, Qureshi HJ. **Prevalence of hepatitis B, C and HIV in blood donors of South Punjab.** Esculapio 2006; 2: 6-7.

16. Khan MA, Chaudhary GM, Fayyaz M, Qazi MA, Ahmed G. **Hepatitis B, C & HIV; seroprevalence of infection in blood donors.** Professional Med J 2006; 13(4), 632-636.

17. Muhammad N, Jan MA. **Frequency of Hepatitis C in Buner, NWFP.** JCPSP 2005; 15(1): 11-14.

18. Shepard C, Finelli I, Alter M. **Global epidemiology of hepatitis C virus infection.** Lancet Infect Dis 2005; 5: 558–567.

19. Khan MSA, Khalid M, Ayub N, Javed M. **Seroprevalence and risk factors of Hepatitis C virus (HCV) in Mardan, N.W.F.P.** Rawal Med J 2004; 29: 57-60.

20. Narendra M, Dixit Jennifer E, Layden-Almer, Layden TJ, Perelson AS. **Modelling how ribavirin improves interferon response rates in hepatitis C virus infection.** Nature. 2004; 432: 922-924.

21. World Health Organization, **The global burden of diseases: 2004 update.** 2010, Annex A. Deaths and DALYs 2004. Geneva.

22. Ali N, Nadeem M, Qamar A, Qureshi AH, Ejaz A. **Frequency of Hepatitis C virus antibodies in blood do-**

nors in Combined Military Hospital, Quetta. Pak J Med Sci. 2003; 19: 41-44.

23. **World health Organization (WHO) Hepatitis C - global prevalence.** WklyEpidemiol Rec, 75, pp.18–19, 2000.

24. Alter MJ, Kruszon Moran D, Nainan OV. **The prevalence of hepatitis C virus infection in the United States, 1988 through 1994.** N Engl J Med 1999; 341: 556–562.

25. Hashmie ZY, Chaudhary AH, Ahmad M, Ashraf M. **Incidence of healthy voluntary blood donors at Faisalabad.** Professional 1999; 6: 551-555.

26. Kazmi K, Sadaruddin A, Dil AS, Zuberi SJ. **Prevalence of HCV in blood donors.** Pak J Med Res 1997; 36: 61-2.

27. National Institutes of Health consensus Development conference Panel Statement: management of hepatitis C,Hepatology 1997; 26:2S-10S.

28. Alter MJ. **Epidemology of Hepatitis C in the west.** Semin Liver Dis 1996; 15: 5-14.

29. Esteban JI, Gómez J, Martell M, Cabot B, Quer J, Camps J, González A, *et al*. **Transmission of hepatitis C virus by a cardiac surgeon.** N Engl J Med 1996; 334(9): 555-560.

30. Al-Faleh FZ, Ramia S, Arif M, Ayoola EA, al-Rashed RS, al-Jeffry M, Hossain A, *et al*. **Profile of hepatitis C virus and the possible modes of transmission of the virus in the Gizan area of Saudi Arabia: a community-based study.** Ann Trop Med Parasitol1995; 89:431–437.

31. Madhava V, Burgess C, Drucker E. **Epidemiology of chronic hepatitis C virus infection in sub-Saharan Africa.** Lancet Infect Dis 2002; 2: 293–302.

32. Malik IA, Tariq WUZ. **The prevalence and a pattern of viral hepatitis in Pakistan.** Pak. JCPSP. 1995; 5(10): 2.

33. Harrison PM, Lau JYN and William R. **Hepatology.** Post grad Med J 1991; 67: 719-774.

PREVIOUS RELATED STUDY

Muhammad Shahid, Tanzeela Khalid, Muhammad Azam Bokhari. HCV SEROPOSITIVITY; PATIENTS WITH LICHEN PLANUS (Original) Prof Med Jour 14(2) 193-198 Apr, May, Jun, 2007.

Muhammad Naeem, Ameer Ahmad, Imran Qaisar, Fiaz Ahmad. STATUS OF HEPATITIS C VIRUS (HCV) INFECTIONS; CHILDREN ADMITTED IN PEDIATRIC WARD OF BAHAWAL VICTORIA HOSPITAL BAHAWALPUR (Original) Prof Med Jour 18(3) 445-449 Jul, Aug, Sep 2011.

Sajjad Iqbal, Rashid Ahmed, Muhammad haroon Yousaf, Asim Mumtaz, Dawood Amin, Ghulam Rasool, Azmat Manzoor. HCV INFECTED PATIENTS; ASSESMENT OF MAJOR GENOTYPES AND SUBTYPES OF HEPATITIS C VIRUS (Original) Prof Med Jour 14(2) 266-271 Apr, May, Jun, 2007.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Fouzia Ashraf		
2	Amna Rasheed		
3	Sajjad Ullah		
4	Muhammad Shaukat		