PREVALENCE OF THE HCV INFECTION AND AGE OR GENDER RELATED ASSOCIATION IN HCV-POSITIVE PATIENTS FROM GENERAL POPULATION OF LAHORE PAKISTAN

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ABSTRACT

Objective: To present up-to-date information on the prevalence of the HCV infection and to see any age or gender related association in a group of HCV positive patients from general population in suburbs of Lahore.
Study Design: Cross-sectional analytical study.
Place and Duration of Study: This study was carried out on general population in Shahdara, Basi Mor and Mehmood Booty areas, from 1st May to 31st Aug 2018.
Material and Methods: Blood samples of individuals from general population were collected for HCV screening during free medical camps arranged for community welfare. Testing was done using special screening kit for presence or absence of Anti-HCV. Data analysis was done by SPSS 20.
Results: A total of 429 individuals were screened, out of which 58.3% were males while 41.7% females; mean age being 36.15 years. Overall prevalence of HCV was 8.2%. Association of HCV prevalence in this study was statistically significant with advanced age but not with gender. Major mode of transmission was unhygienic medical practices.
Conclusion: High prevalence of hepatitis C was observed in the population which showed statistically significant association with advanced age.

Keywords: Hepatitis C, Prevalence, Screening.

INTRODUCTION

The WHO estimates that approximately 3% of the world population have been infected with HCV so far. In one of the studies done in Americain 1994 HCV prevalence of ~1% was found (around 2.7 million people)[1].

Although HCV is endemic worldwide, there is a large degree of geographic variability in its distribution. Countries with high reported prevalence rates are located in the African and Asian regions, while those in the developed world have been found to have low rates of prevalence of this infection[2-4]. But there are some other studies done in the African region and the Australia showing more prevalent of this disease in the developed countries rather than the poor countries in the African region[14,15].

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Historically the main mode of transmission of this disease was transfusion of blood components, which is less frequent in advanced countries like America because of better screening facilities but this is not the case in other countries especially those which are under developed where this is still one of the major mode of transmission of this infection[19,20]. Another common mode of spread of this disease is dialysis machine, which is mainly seen in hospitals having poor maintenance and cleaning services of dialysis machines and practicing unsterile techniques. The studies show that transmission through this mode is less common in patients with no other risk factors for transmission especially in hospitals providing quality services[24].

This disease is becoming a major health problem for developing countries, including Pakistan that has the second highest prevalence rate of hepatitis C ranging from 4.5% to 8% especially in rural areas. It is worrisome to know

that 66% population of Pakistan is living in the rural areas where general public either carries the burden of the disease or they are at a high risk of contracting the disease due to several malpractices and misperceptions. It includes unavailability of proper health care delivery system, unscreened blood transfusions, lack of education, poverty, and above all, misuse of drugs. Studies in Pakistan on small targeted groups including blood donors, health professionals, drug abusers and chronic liver disease patients indicate that the prevalence of hepatitis C is as high as 40%[6].

It was discovered in late eighties and after that it has become the leading issue as far as liver related morbidity and mortality is concerned[7]. In the developing world, unsafe therapeutic injections and transfusions are likely to be the major modes of transmission, especially in countries where age-specific seroprevalence rates suggest ongoing increased risk of HCV infection[16]. In developed countries with high seroprevalence in older age groups, unsafe therapeutic injections probably had a substantial role in HCV transmission 30-50 years ago, and may persist as an important cause of transmission in isolated, hyperendemic areas[16].

Injection drug use is the main mode of transmission for HCV infection in the developed world. The prevalence of HCV infection among long-term injection drug users (IVDU) is as high as 64-94% among those with a duration of injecting of 6 years or more[17]. This research work was planned in presumably one of the highly HCV prevalent areas of Pakistan.

MATERIAL AND METHODS

This was cross-sectional analytical study, which was carried out in suburbs of Lahore city (Shahdara, Basi Mor and Mehmood Booty) from May 1, 2018 to August 31, 2018 to provide up-to-date information on the prevalence of the HCV infection and any age or gender related association in a group of HCV positive patients in study population (n=429).

Individuals participated in this study after visiting screening camps established for welfare of general public after a campaign was run through announcement in areas and by displaying posters at public places to encourage general public to test for HCV. Sampling technique used in our study was non-probability consecutive sampling. Blood samples of individuals were collected for HCV screening by finger prick method.

People aged >12 years and from both genders were included in the study. Those having prior history of hepatitis C-related liver disease/cirrhosis or with history of treatment for hepatitis C were also included in this study. Patients who refused to consent were excluded from the study.

Patient's demographic data was entered in a special proforma designed for study. After informed consent samples were collected for HCV screening by onsite finger prick methods. Blood testing was done using special screening kit Accurate@ (Wen'an County Wantong Medical Instrument Co. Ltd)with sensitivity~100% and specificity >99%,for presence or absence of viral hepatitis C infection (Anti-HCV detection). This kit has been designed to detect the presence of anti-HCV Ab through visual interpretation of colour development in internal strip.

Presence of 2 lines (bands) in the test result was considered positive for HCV infection while single line was considered as negative result.

Test results of the patients regarding hepatitis C status and possible mode of transmission were also entered in study proforma.

All data was entered and analysed on Statistical Package for Social Sciences SPSS 20.

Study population was divided into two major groups based on age below and above 45 years. Mean ± SD was calculated for quantitative variables like age. Data was stratified for age groups and gender. Prevalence was measured as proportion of people in the study population who had disease during this particular study time and

was expressed as percentage. Association of HCV prevalence with gender and different age groups was calculated for statistical significance (*p*-value ≤0.05) using chi-square test.

RESULTS

A total of 429 individuals were screened through blood samples for Hepatitis C status (n=429), males were 250 (58.3%) while females

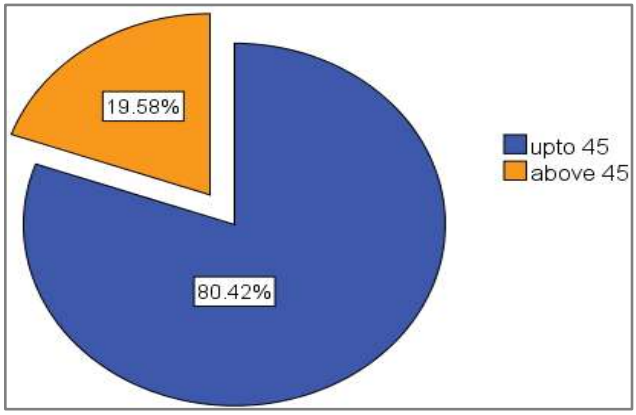

Figure-1: Age groups of study population (n=429).

179 (41.7%). Mean age (years) with SD (standard deviation) of the screened population was 36.15 ± 10.9 years.

43.4% individuals out of total 429 were tested at Basi Mor and Mehmood Booty areas and 243 (56.6%) at Shahdara area in suburbs of Lahore.

Study population was stratified into two major groups based on age parameter i.e below and above 45 years (fig-1).Majority of the people in study population were young <45 years (80.4%).

Thirty five out of 429 were found to be positive for Hepatitis C virus infection (Anti-HCV positive) in this study. Thus in screened population theoverall prevalence of HCV infection was 8.2% (fig-2).

There was statistically significant association seen between prevalence and age in this study (table-I). But association of HCV prevalence with gender was not found to be statistically significant in the study population (table-II).

As far as area of screening is concerned, slightly more prevalence of HCV was foundin study the group (n=429) in the Basi Mor and Mehmood Booti area 186 (9.6%) areas as compared to the Shahdara area 243 (7.5%).

In this particular study the likely mode of transmission in majority of the patients was unhygienic medical practices and re-use of unsterile syringes followed by vertical transmission (fig-3). Around ¼th patients did not know their mode of getting HCV infection.

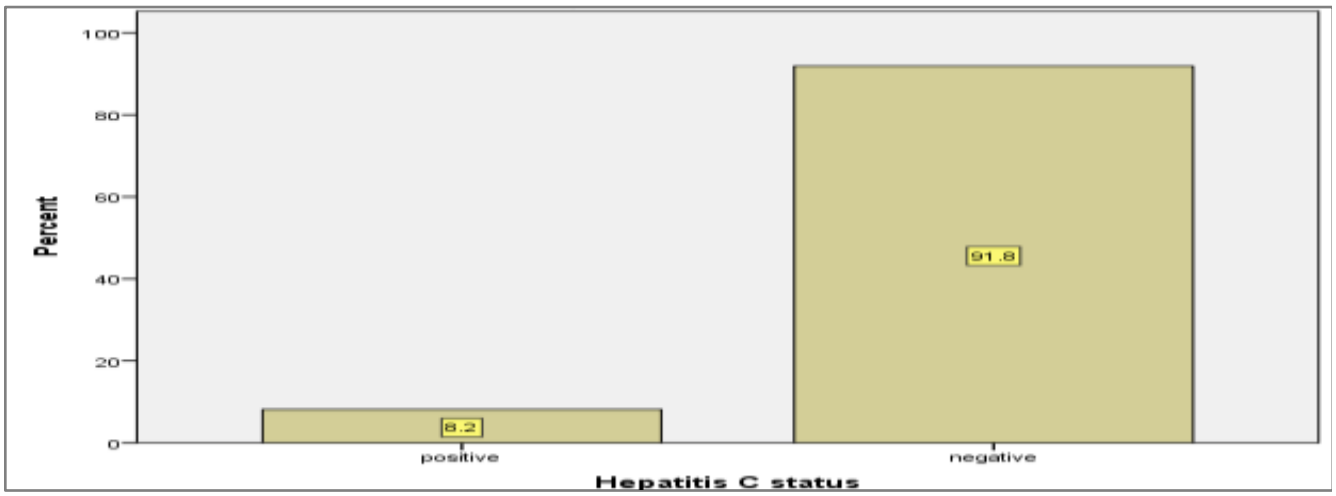

Figure-2: Overall prevalence of HCV infection (n=429).

DISCUSSION

Although the magnitude of problem caused by the hepatitis C infection is a known fact but,

most of the research work done in this regard used blood donors to find out its prevalence but since the blood donors are highly selected people, so such research might miss other vulnerable population and may not actually provide true picture as far as prevalence of this disease was concerned. That was the reason we planned this research in general and more vulnerable population in suburbs of Lahore (Punjab). Majority of the people in our study were young adults <45 years (80.4%) while the males dominated the study population (58.3%).

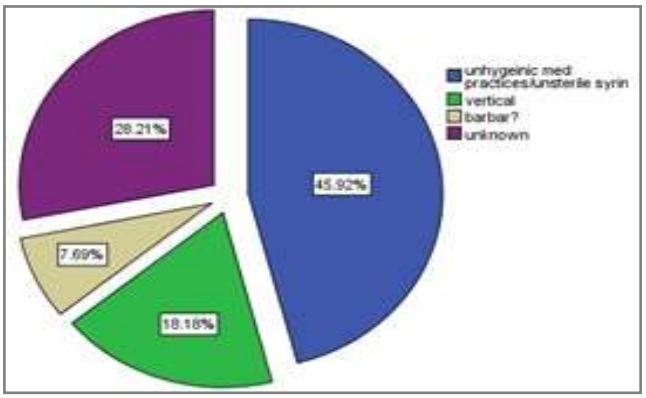

Figure-3: Likely mode of transmission of HCV (n=429).

The overall prevalence of hepatitis C virus infection in this the particular study was found to be 8.2%. This result was comparable with established world data especially the local studies.China, whose citizens account for one fifth of the world's population, has a reported seroprevalence of 3.2%[7,8]. Similar results were seen in one the studies done in America where the prevalence was found to be 6.3%[11]. Results in the United Kingdom and the European countries were not consistent but vary among different countries. For example most studies in the Europe show prevalence of ~1% in contrast to 3.2% seen in one the studies done in Italy[12,23].

Pakistan has reportedly high prevalenceof this infection ranging between 2.4% and 6.5%[9]. Several studies indicate that the rate of positivity for HCV is much higher in rural areas than the urban areas of Pakistan. A national survey conducted in 2007 shows ~ 7% prevalence in the Punjab and ~ 5% in the entire country. Egypt, with an estimated population of 73 million, has the highest reported seroprevalence rate 22%[9].

We found statistically significant association between HCV prevalence and age in our study group. Prevalence in above 45-year group was very high (14.2%) as compared to 6.25% in below 45-year age group. Similar results were seen in many studies done worldwide likefew studies done in parts of Italyshowing a prevalence of 8.4%-22.4% in the older population[12]. Further studies are needed to collect a large number of samples to estimate the different epidemiology of the HCV especially in relation to age and gender distribution.The most likely reason, perhaps, the disease was found to be more prevalent in advanced age wasthe fact that the elderly population, seeking more medical advice because of age-related comorbidities, is more exposed and vulnerable to disease transmission if the facilities are unsafe, unhygienic and unsterile.

Improper disposal of hospital wastes is one of the most common contributing factors associated with the spread of hepatitis C[17]. A

Table-I: HCV prevalence vs Age groups (n=429).

Age groups	Hepatitis C status		*p*-value
	Positive n (%)	Negative n (%)	
Upto 45	23 (6.7)	322 (93.3)	0.02
Above 45	12 (14.3)	72 (85.7)	

Table-II: HCV prevalence vs Gender (n=429).

	Hepatitis C status		*p*-value
	Positive n (%)	Negative n (%)	
Male	24 (9.6)	226 (90.4)	0.197
Female	11 (6.1)	168 (93.85)	

study from Karachi found that, the young boys who collect waste products, sell 20 to 25 syringes per day to the health care waste dealers against money and the same boys get needle stick injury around one to three times per week[18]. Terribly, in study from Gujarat, Pakistan shows about 93% of the barbers were unaware of the potential hazards of consuming used blades on several customers and 48% of them were reusing unsterile equipment among several clients. Additionally, they were also performing tasks like circumcision and minor abscess drainage[19]. Occupational transmission of HCV infection is mainlyseen in health-care workers who have sustained an infected needlestick injury, and observed infection rates under such circumstances are as low as 0.3%[21]. Acquisition of this infection through perinatal transmission is estimated to occur in 2.7-8.4% of infants born to HCV infected mothers, and a higher proportion of infants born to HIV/HCV co-infected mothers[22]. In the one of the studies strong association was seen between HCV infection and multiple partners and age at first intercourse[23]. However, sexual transmission of HCV is not as efficient as other sexually transmitted viral illnesses. Among people in long-term monogamous relationships particularly, thesexual risk of HCV transmission is extremely low[24].

The main modes of transmission of hepatitis C virus infection in this particular study were found to be unsafe medical practices i.e use of unsterile or used syringes, needles, razors, blades followed by mother to child (vertical) transmission and unhygienic practices by the barbers. Interestingly 1/4th of the HCV positive patients in our study did not know how did they get this infection. However the risk of transmission in population of intravenous drug users is very high as seen world over[16]. Similar results were seen in a study done in Khyber Pakhtunkhwa (KPK) Pakistan, all HCV positive patients used injections[17]. Studies in Pakistan have cited, exposures to unsafe practices such as reuse of blades for shaving and arm pit shaving by barbers, unsafe dental and cosmetic procedures[5]. Pakistanis receive a lot of injections and a lot of injections in Pakistan are unsafe. A population based study in rural Pakistan calculated that the number of injection per person per year was 13.6. The same study documented that only half of the injections were provided with a new syringe meaning that 50% injections were unsafe[6,25].

It is pertinent to note that in countries like Pakistan when an individual acquires hepatitis C, it brings a number of challenges that are not only limited to the physical suffering but also affect the psychological, social, sexual and financial issues throughout his life. Therefore health care professionals will have to play a very significant role in alleviating the prevalence and burden of hepatitis C from Pakistan. This is really important that health professionals acquire and disseminate proper knowledge about the causes and treatment of hepatitis C among general public. This will not only lessen stigma pertinent to the disease but may also lessen the prevalence of disease in the future. Medical and nursing schools must provide proper knowledge about the disease and emphasize on quality practice. Also, proper checking and monitoring is highly essential in order to alleviate harmful practices from health care settings.

CONCLUSION

This study concluded that hepatitis C was highly prevalent in general population in suburbs of Lahore. Statistically significant association of HCV prevalence was noted with age but not with gender. Unsafe medical practices including use and re-use of infected needles, syringes, instruments, shaving razors and unsterile medical procedures are main reasons of disease transmission followed by mother to child transmission probably because of poor knowledge regarding the disease and insufficient quality healthcare facilities.

LIMITATION OF STUDY

The main limitation of the study was that the study population only represented patients reporting to our medical camp for routine testing.

Further studies are needed to collect a large number of samples from different areas of the country to estimate the different epidemiology of the HCV especially its association with age and gender including with different genotypes, as genotype testing is not cost effective in our setup.

Disclosure

Part of this research was presented in SGIC (Surgeon General International Conference) last year.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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