

Magnitude of Hepatitis C Virus Infection among Asymptomatic Pakistani children

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ABSTRACT

Background: In the current era, viral hepatic infection HCV has become widespread and is the most important reason of liver disease, worldwide.

Aim: To determine the frequency of hepatitis C virus (HCV) infection in asymptomatic patients admitted in children ward and presenting at children outdoor at Akhtar Saeed Hospital, Lahore (a teaching trust hospital).

Methodology: In this cross-sectional descriptive study, 1556 asymptomatic patients attending department of Pediatrics were selected non-randomly. The age ranged from 6 months to 14 years. Screening for antibodies against HCV (anti-HCV) was performed through Kit method and positive cases were confirmed by ELISA. Informed verbal consent was taken. Data was analyzed by using SPSS 16.0

Results: During this study, blood specimens of 1556 participants were screened for hepatitis C. Female participants were 602 and males 954 of the studied population. After screening, 0.321% (5/1556) was found to be sero-positive anti-HCV.

Conclusion: Data showed 0.32 asymptomatic patients had Anti HCV positive. These undiagnosed asymptomatic patients may be a basis of infectivity in the population. Evading unnecessary blood transfusion and injections and execution of strict infection control measures are highly recommended to trim down the frequency of spread of HCV infection.

Keywords: Hepatitis C, asymptomatic children

INTRODUCTION

Hepatitis C virus (HCV) infection is a major global health care dilemma. The World Health Organization (WHO) estimates that up to 3% of the world's population has been infected with this virus¹. Hepatitis C virus is one of the most widespread blood-borne viruses and is related with momentous morbidity and mortality. It affects 170 million people worldwide and 2.4%-6.5% people in Pakistan. Therapeutic injections by contaminated, re-used syringes, transfusion of unsafe blood and re-use of razors are major factors for the spread of hepatitis C in the general population. Similar to the other countries of South-East Asia, the number of patients afflicted with hepatitis C in Pakistan is increasing gradually. Regrettably, most studies assessing the load of HCV are carried out in particular settings or among blood donors. Therefore, their results cannot predict the percentage in general population, the actual enormity remains mostly obscured and there is inconsistency in the reported prevalence throughout the country. A majority of the reported prevalence estimates for HCV range between 2.4%-6.5% among adults^{2,3}. A study conducted in Pakistan showed 2.1% prevalence of hepatitis C among pediatric

population⁴. It is causing a great health problem particularly in the developing world. The significance of hepatitis C is illustrated by the fact that this infection is striking a profound burden on national economy and individual families due to substantial morbidity and mortality from both acute infection and chronic sequelae including chronic active hepatitis, cirrhosis and hepatocellular carcinoma. Its vaccination is not available therefore prevention is the solitary way to evade disease reduction. Patients presenting to different public and private hospitals are not normally screened for hepatitis C. The reduction of global morbidity and mortality related to chronic HCV infection should be a concern to public health authorities, and primary, secondary and tertiary prevention activities should be implemented and monitored in each country, with precise targets set to be reached. Public awareness of the transmission and prevention of HCV is crucial in decreasing the incidence and prevalence of the disease. There is a need for implementing evidence-based international guidelines for preventing and managing hepatitis C in children worldwide⁵.

One of the major hurdles in the eradication/reduction of the burden of HCV is the lack of hepatitis C vaccine. An effective HCV vaccine remains elusive to date. HCV has been difficult to target with a vaccine because it has many different

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strains. In addition, HCV mutates rapidly and exists as a complex family of mutated viruses within each infected individual (quasispecies) allowing the infecting virus to escape control by the immune system. This makes it difficult to identify which part of the virus should be targeted for developing a vaccine⁵.

Since bulk of carriers are asymptomatic especially in children, they cause a genuine risk to health staff. There are very few studies in Pakistan on prevalence rate of Hepatitis viruses in asymptomatic patients. Therefore the study was conducted to determine the frequency of hepatitis C virus (HCV) infection in asymptomatic patients admitted in ward and attending Outdoor of Pediatrics Medicine of Akhtar Saeed Hospital, Lahore.

MATERIAL AND METHODS

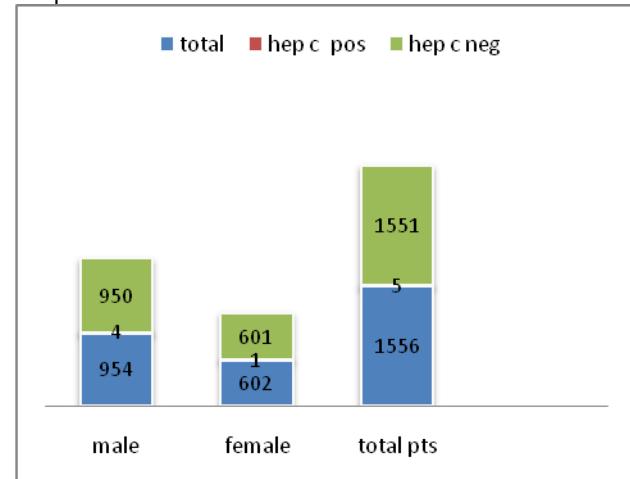
This study was conducted at Pediatrics Medicine Department of Akhtar Saeed Trust Hospital, Lahore. It was performed on 1556 successive asymptomatic patients both inpatients as well as outpatients. It was a descriptive cross-sectional study. Sampling was done by non-probability purposive technique. Consecutive patients of all ages of pediatrics ranging from six (6) months to fourteen (14) years were taken. Informed consent for participation in the study was obtained from the parent or legal guardian who accompanied the child to the hospital. A pre-test counseling was done with the assurance that all information obtained would be kept confidential and for the purpose of research. No particular preparation of the participants was done proceeding to specimen collection. Blood was collected by standard medical techniques. Sera were alienated and analyzed on the same day of collection or refrigerated overnight. Noticeably haemolytic specimens that may suggest false positive or negative results were disqualified from the study. The screening was performed in the clinical laboratory of Akhtar Saeed Hospital, Lahore. Anti-HCV kits were used to screen all blood specimens. Rapid chromatography immunoassay for qualitative detection of antibodies for hepatitis C was the screening technique. Those found positive on screening test were confirmed by ELISA. SPSS version 16.0 was applied for statistical analysis. Percentages were calculated directly for HCV.

RESULTS

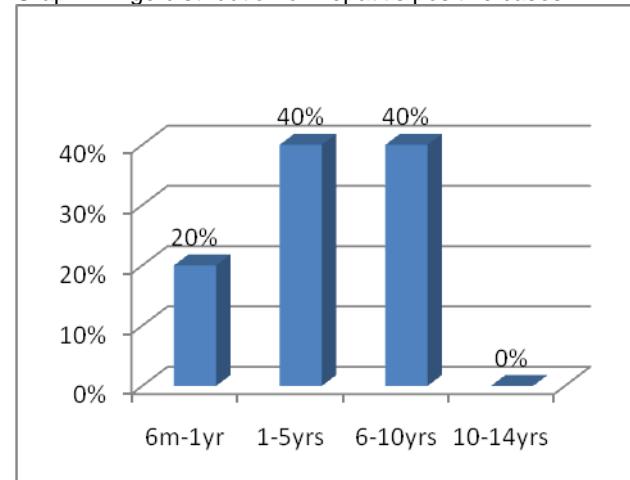
During this study, blood specimens of 1556 participants were screened for hepatitis C. Female participants were 602 and males 954 of the studied population. After screening 5/1556 (0.321%) was found to be sero-positive anti-HCV. In the paediatric

ward and outdoor of ASMDC 1556 children were tested for hepatitis C positivity, out of 602 female patients only one was Hep C positive (0.066%) and out of 954 male patients 4(0.25%) were positive for HEP C.

Graph 1: Sex distribution



Graph 2: Age distribution of Hepatitis positive cases



Age range of the patients was from 6 months to 14 yrs. Mean age of the participants was 8.1 year. Out of 1556 participants, 180 participants were below one year of age, 442 participants were less than 5 yrs while 934 participants were from five to fourteen years. None of the participants below one year of age showed hepatitis C positivity. 2(0.12%) patients were positive for hepatitis C under 5 years of age however 3(0.19%) patients were above five years.

DISCUSSION

The estimated overall global prevalence of Hepatitis is (3%) but with some very high prevalence countries like Egypt (20%) and others like Northern Europe 1%.

Prevalence in pakistan ranges from 4.75-6.5%⁶. In Pakistan few population based studies are available, the most comprehensive being that of Luby et al⁷, which tested a representative sample from a population of 150,000 in Hafizabad and found an overall seroprevalence of 6%. This increased to 30% with increasing age. Other smaller studies have reported a population prevalence of 16% from Lahore and 23.8% from Gujranwala.⁷ Based on an average prevalence rate of 6%, it could be estimated that approximately 10 million people are infected with HCV in Pakistan.

Hepatitis C virus (HCV) is a major health burden infecting 170-210 million people worldwide. Additional 3-4 millions are newly-infected annually⁸. Prevalence of pediatric infection varies from 0.05%-0.36% in the United States and Europe; up to 1.8%-5.8% in some developing countries. The highest prevalence occurs in Egypt, sub-Saharan Africa, Amazon basin and Mongolia.

Frequency of Hepatitis C in our study group was not very high (0.3%). It would have been to be higher if symptomatic Hepatitis patients were also considered who were excluded in this study due to study design. These results match international literature which showed that sero-prevalence of HCV in children appears to be low in Pakistan, with 0.2% and 0.4% children infected under the age of 12 and between 12-19 years respectively⁹.

In our study out of 5 patients which were Hep C positive 4 were males and only 1 was female. Although this is a small data but it matches another study in adults carried in District Mansehra showed that 3.5% of the people were actively infected with HCV It also showed that the prevalence of active HCV infection was high in males (4%) as compared to females (2%)¹⁰.

There is little or no data available which can show frequency of hepatitis stratification of age distribution in children. Most of the data available in infants pertains to vertical transmission. In our study there were no children affected under one year and frequency increases as age increases. However a study in adults shows peak frequency n 21-30 year period¹¹.

The level of the recorded prevalence values calls for the completion of programs expected at detecting clusters or population areas at risk. This information would be of great help in developing or formulating preventive measures and their practical implementation according to local circumstances and experience. All over the country, from a child to the older age group, hundreds of garbage collectors are

allied with foremost recycling businessmen and are providing unsterile syringes to them¹². Anyhow, further studies are needed at the national level with depiction from across the country to determine the actual disease burden in the pediatric population of Pakistan.

CONCLUSION

Our study showed that there is 0.3 % frequency of hepatitis in asymptomatic paediatric population, so the disease burden must be greater in population as a whole. Therefore there is need to edify public through well structured infection control programme, scattering awareness and teaching of infection control events. Larger population based studies are needed to confirm the results.

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