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ORIGINAL ARTICLE

Frequency of HCV in Children with Thalassemia Major

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ABSTRACT

Objective: The purpose of this study is to determine the prevalence of HCV in children presented with thalassemia major.
Study Design: Retrospective/Cross-sectional study
Place and Duration: Islamic international medical college Riphah university, From March, 2021 to August, 2021
Methods: There were 72 children with ages 3-15 years were presented in this study. Age, gender, and weight were tallied after informed written permission was obtained from each participant. Both the enzyme-linked immunosorbent assay (ELISA) based fast immunochromatographic technique and the chemiluminescence assay utilizing the Abbott method were used in order to test the blood samples of all thalassemia patients for the presence of antibodies against HCV.SPSS 23.0 was used to analyze all data.
Results: Among 72 cases, majority of the children were males 40 (55.6%) and 32 (44.4%) cases were females. Mean age of the patients was 11.14+7.49 years and had mean weight 30.6+3.31 kg. Majority of the cases were from urban areas. Frequency of HCV was found among 26 (36.1%) cases in which majority of the cases were males 16 and 10 cases were females. Among 26 cases of HCV positive, blood transfusion, dental procedures and ear piercing was the most common cause found.
Conclusion: In this study we concluded that the frequency of HCV among major thalassemia patients were higher found in 36.1% cases and majority were males. Among HCV patients dental procedures and ear piercing among females were the most common causes.
Keywords: HCV, Thalassemia major, Children, Dental procedures

INTRODUCTION

One of the most common causes of post-transfusional hepatitis infection is infection with the hepatitis C virus (PTH). Viral infection results in significant inflammation of the liver, which may have long-term consequences for the host's health.[1] A HCV infection may cause cirrhosis, liver cancer, and other serious complications. [2,3] HCV has the potential to take away 1.83 million years of life from those under the age of 65 between 2010–2019, according to some estimates. [4] Approximately 170 million individuals worldwide are infected with the human hepatitis C virus (HCV). [5]

One of the most common forms of hemoglobinopathies, beta thalassemia is passed down from generation to generation. Those with thalassemia suffer from severe anaemia, which necessitates regular blood transfusions. [6]. Patients with thalassemia are more susceptible to bloodborne microbial infections as a result of recurrent blood transfusions. Thalassemia sufferers' health, well-being, and mortality might be further harmed by this. Patients with beta-thalassemia must be monitored closely since there is no immunisation to protect them against HCV infection [7]. Antiviral therapy can have negative side effects on patients, so it's important to know about them. That's why doing thorough HCV testing on all donations is now more important than ever.

Their infection rate has decreased since the introduction of the Hepatitis B vaccine in routine vaccination programmes and hepatitis C screening. In spite of this, HCV remains the primary cause of post-transfusion hepatitis in Thalassemia patients. [8,9] When these patients get infected with the viruses, their risk of hepatic damage and chronic liver disease increases even more. This is because they already have hepatic iron overload. Thalassemic patients' mortality and morbidity may be increased by hepatitis B and C virus infection after transfusion. There have been a few studies that found HBV in 1.7% and HCV in 35% of Pakistani thalassemia patients who required multiple transfusions. [10]

The goal of this study was to determine the prevalence of Hepatitis C among the thalassemia patients we have on file and to gauge the usefulness of routine blood screening in our facility.

MATERIAL AND METHODS

This retrospective/cross-sectional study was conducted at Islamic international medical college Riphah university, From March, 2021 to August, 2021 and comprised of 72 children had thalassemia major. Children with severe other medical illness were excluded from this study.

Each and every case of Beta Thalassemia that has been identified Participants in the research comprised both male and female transfusion-dependent kids ranging in age from 3 to 15 years old. Informed agreement was obtained from the parent/patient for these patients to be enrolled in Paediatric OPD. The ethical difficulties had been resolved. Each patient's personal information, such as age, gender, the number of blood transfusions they need each year, and whether or not they have been immunised against HBV, was gathered and submitted into a pre-formed survey. Blood was taken from a vein and stored in a serum container under aseptic conditions. Third generation enzyme-linked immunosorbent assay (ELISA) was used to test for HBsAg and anti-HCV antibodies in the blood sample (ELISA). When Hepatitis C was detected by ELISA in any of the patients, they all underwent PCR confirmation.

SPSS version 23 was used to input and analyse all of the data. For numerical data, the mean and standard deviation were employed, while percentages were used to depict categorical data. When required, the chi square test was used, and a p value of less than 0.05 was deemed significant.

RESULTS

Among 72 cases, majority of the children were males 40 (55.6%) and 32 (44.4%) cases were females. Mean age of the patients was 11.14+7.49 years and had mean weight 30.6+3.31 kg. Majority of the cases were from urban areas.(table 1)

Table-1: Patients with baseline characteristics

Variables	Frequency	Percentage
Mean age (years)	11.14+7.49	
Mean Weight (kg)	30.6+3.31	
Gender		
Male	40	55.6
Female	32	44.4
Residency		
Urban	48	66.7
Rural	24	33.3

Frequency of HCV was found among 26 (36.1%) cases and 46 (63.9%) cases were seronegative for HCV.(fig 1)

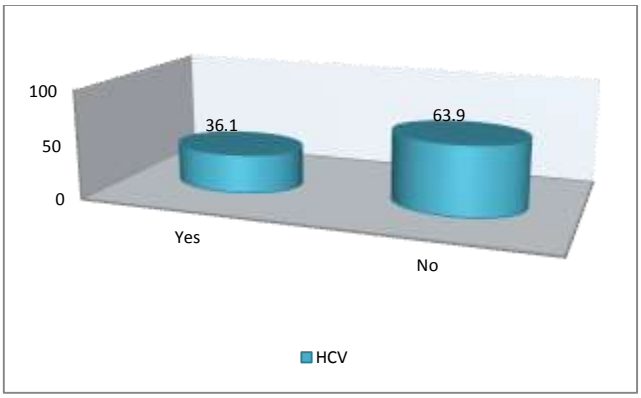

Figure-1: Prevalence of HCV among thalassemia patients

Among 26 cases of HCV, majority of the cases were males 16 and 10 cases were females. In HCV positive, blood transfusion, dental procedures and ear piercing was the most common cause found.(table 2)

Table-2: Gender distribution and causes of HCV

Variables	Frequency (26)	Percentage
Gender		
Male	16	61.5
Female	10	38.5
Causes		
Dental procedures	13	50
Ear Piercing	4	15.4
Blood transfusion	9	34.6

DISCUSSION

Hepatitis C (HCV) is one of a number of hepatitis viruses, including Hepatitis A (HAV), B (HBV), D (HDV), and E (HEV) [11]. Both HCV and HBV may infect the liver and spread via the bloodstream through the parenteral route. To spread hepatitis, the fecal-oral pathway is used by both HAV and HEV. Both HBV and HDV have been discovered and their involvement in producing hepatitis is still unclear. While both HBV and HCV are linked with acute and chronic infections, the self-limiting acute hepatitis HAV and HEV are responsible for is self-limiting.

HBV and HCV infections resolve in more than 80% of the cases without the need for any special therapy; but, in certain persons, the exposure might lead to the development of a chronic infection. People with chronic hepatitis, such as that caused by HBV or HCV, may experience symptoms only on rare occasions when the virus invades the bloodstream and infects the liver cells. Cirrhosis and hepatocellular carcinoma (HCC) may occur in certain persons as a result of this progressive liver damage [12].

Now that HBV has been shown to be more contagious than HCV, it is possible for household members to get infected with HBV. As an alternative to HIV, which may be shared via casual contact, HCV infection is most often found in those who have had many blood transfusions in the past. Even so, sharing razors, coming into touch with blood, and being exposed to bodily fluids on a regular basis may spread the virus among family members. [13]

In this study 72 children had thalassemia major were presented. Among 72 cases, majority of the children were males 40 (55.6%) and 32 (44.4%) cases were females. Mean age of the patients was 11.14+7.49 years and had mean weight 30.6+3.31 kg. Majority of the cases were from urban areas. These findgings were comparable to the previous studies.[14,15] Frequency of HCV was found among 26 (36.1%) cases and 46 (63.9%) cases were seronegative for HCV.[14] In Pakistan, Hussain et al. found that 41.7% of thalassemic patients tested positive for hepatitis C in 2002; these numbers are virtually identical to ours. [16] Blood transfusions were also shown to increase the risk of hepatitis C infection. There is a strong correlation between the frequency of blood transfusions and the prevalence of hepatitis C infection. These results were in line with those of previous investigations. [17,18] In our study, among 26 cases of HCV, majority of the cases were males 16 and 10 cases were females. In HCV positive, blood transfusion, dental procedures and ear piercing was the most common cause found

HCV genotypes 3a (39 percent), 3b (20.7 percent), and 1a (26.9 percent) were the most common in the Indian drug misuse population [19]. Between 0.5% and 1.5% of the population in India suffers from the disease, with Punjab reporting the highest frequency at more than 3.2 percent.[20] HCV prevalence was high (>6 percent) in the Eastern Indian tribal population because of a lack of knowledge about the transmission mechanism of infection [21]..

According to a survey from Chennai, India, 0.52 percent of eye donors were found to have HCV. [22,23] Patients with febrile illness in a hospital in Gujarat, West India, reported having an HCV prevalence of 2.3%. A study in West Bengal, eastern India, found that 1.06 percent of hospitalised patients had the disease [24].

A research from Orissa, India reported that 59.3% of thalassemia patients were infected with HCV, which is extraordinarily high. Surat, Gujarat, Western India revealed an HCV incidence of 51.1% among thalassemia patients [25,26]. HCC was shown to affect 1.66 percent of thalassemia patients, with the transfusion-independent HCC rate somewhat higher at 1.96 percent [27]. Researchers in Oman found that 41% of thalassemia patients also have HCV in their bloodstreams.[28]

CONCLUSION

In this study we concluded that the frequency of HCV among major thalassemia patients were higher found in 36.1% cases and majority were males. Among HCV patients dental procedures and ear piercing among females were the most common causes.

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