Research Paper

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A Prevalence Of HIV, HBV and HCV In Patients of Thalassemia

Medical Science

KEYWORDS : Prevalence, HIV, HBV, HCV, thalassemia

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ABSTRACT

Introduction : Thalassemia is one of the commonest inherited hemolytic disorder.1 Mainstay of management of thalassemics is 2-4 weekly packed red cell transfusion.Most common complication is transfusion transmitted infections.2The aim and objective of study is to determine the prevalence of HIV, Hepatitis B and Hepatitis C in thalassemia major children.[2]
Materials and methods : Present study was done at a tertiary care hospital in Ahmedabad, India from July 2012 to December 2012. Blood samples of 136 patients attending thalassemia clinics collected and tested by ELISA methods.
Observations and results : A total of 136 thalassemic children (86 male) and 50 female) were tested.No one was HIV Positive, 2 (1.47%) were positive for HBsAg and 28 (20.58%) were positive for HCV. Incidence of anti-HCV seropositivity increases with no. of transfusions.
Conclusion : Incidence of HIV and HBsAg has decreased due to mandatory screening of blood bags and vaccination of Hepatitis B.Screening of donor for HCV should be done by better recent techniques.

INTRODUCTION

Thalassemia is a group of congenital anaemia's that have in common deficient synthesis of one or more of the globin subunits of normal human haemoglobins. They are one of the commonest inherited hemolytic disorder.[1] Beta thalassemia major is clinically the most significant homozygous form, resulting in reduced or absent beta chain production.[1]

Mainstay of management of thalassemics is 2-4 weekly packed red cell transfusion. Major complications of this treatment are iron overload and chance of contracting transfusion transmitted infections. Most common among them are viral infection [Human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV)] syphilis, malaria etc.[2]

Transfusion transmitted diseases add to the misery of multi-transfused thalassemia children and create additional burden to the health care system. Thalassemic children are more prone to liver dysfunction due to hepatitis because their livers are already compromised due to iron overload. So there should be proper assessment of the magnitude of the problem. This will help to provide an optimally safe blood transfusion service.[2] Present study was carried out to determine the prevalence of HIV, Hepatitis B and Hepatitis C in thalassemia major children.

MATERIALS AND METHODS

Present study was done at a tertiary care hospital in Ahmedabad, Gujarat from July 2012 to December 2012. Blood samples of 136 patients attending thalassemia clinic of this hospital were collected in plain vacuette using standard precautions along with relevant clinical history. In laboratory, serum was separated after centrifugation at 1500 rpm (revolution per minute) for 10 minutes and aliquoted in vials. All the samples were tested for HIV, HBsAg and HCV. Repeated samples were excluded from the study.

HIV testing was done as per NACO guidelines. Guardian's consent was taken for HIV testing. HIV antibodies were detected using ELISA test (ERBALISA, Transasia Biomedical). Reactive samples were tested by 2 other kits: Retroscreen and Combaids-RS advantage. HbsAg detection was done by using ELISA test (ERBALISA, Transasia Biomedical). Antibodies to HCV were detected by using ELISA (Qualisa, Qualpro diagnostics). Reactive samples of HBsAg and HCV were retested in duplicates. Samples which were reactive in duplicate are considered reactive. All the procedures were performed as per manufacturer's guidelines. Epi info version 7 was used for statistical analysis with 95% confidence level.

OBSERVATIONS AND RESULTS

A total of 136 thalassemic children (86(63.23%) male and 50(36.77%) female were tested for anti-HIV, HBsAg and anti-HCV.Out of 136, 39 patients had <50 transfusions, 47 patients had transfusion between 51 and 100, 35 patients had 101-150 transfusion and 15 patients had 150-200 transfusions. None had > 200 transfusion. Our youngest thalassemic child was a 9 months old female and eldest thalassemic child was 13 years old male. Mean age among children was 6.83 + 3.23 SD.

Table 1: HIV, HBsAg and HCV Seropositivity among thalassemic children.

Tests	Frequency	Percentage (%)
HIV Positivity	0	0
HBsAg Positivity	2	1.47
HCV Positivity	28	20.58
Total Patients	136	100

No one was HIV Positive, 2 (1.47%) were positive for HBsAg and 28 (20.58%) were positive for HCV.Both patients, who were positive for HBsAg, were also positive for HCV. So, total no. of patients reactive for any of these 3 viral diseases were 28 (20.58%).Total 108 patients (79.42 %) were free from all of these 3 diseases.

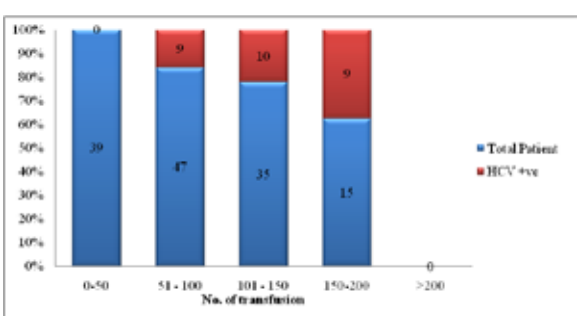
Table 2: HIV, HBsAg and HCV Seropositivity in thalassemic children with relation to age and sex.

Sex	Age groups (in years)					
	<2	2- 5	5-8	8-12	> 12	Total
Male						
Total	6	25	30	22	3	86
HIV Positivity	0	0	0	0	0	0
HBsAg positivity	0	0	1	1	0	2
HCV positivity	0	3	7	6	1	17
Female						
Total	6	13	15	15	1	50
HIV Positivity	0	0	0	0	0	0
HBsAg positivity	0	0	0	0	0	0
HCV positivity	0	1	2	7	1	11

Statistical analysis showed that the difference in positivity in male and female was not significant (p >0.05).

131 patients (96.3%) were either completed 3 doses or were undergoing vaccination for Hepatitis B. Only 2 male patients were HBsAg positive. Both were not vaccinated.

Figure 1:Incidence of Anti HCV Seropositivity in thalassemic children with relation to no. of blood transfusions.



(X^2 = 21.757, p = 0.000073 i.e. < 0.05)

This data also show that incidence of anti HCV seropositivity increases with no. of transfusions. No HCV positive patient with no. of transfusion < 50. With increased in no. of transfusion to 51-100, 101-150 and 151-200, no. of positivity increased to 9 patients out of 47 (19.14%), 10 patients out of 35 (28.57%) and 9 patients out of 15 (60%) respectively.

Statistical analysis showed that the difference in positivity with relation to no. of transfusion was significant (p <0.05).

DISCUSSION

Transfusion transmitted infections (TTIs) had always been a major problem in multi-transfused patients (including thalassemics) in the past. So the magnitude of the problem was always a topic for various studies, with advent of improved technology and universal screening of blood the risk is now decreased but definitely present.3

HIV had become very rare after testing became mandatory for HIV - 1 on 1989 and HIV-2 in1993.4

Table 3: Prevalence of anti-HIV antibodies, HBsAg and Anti-HCV antibodies as found by different workers.

Sr. No	Author	Place	Year of Publi-cation	No. Total	HIV Positivity	HBsAg Positivity	HCV Positivity
1.	Chakra-bartiS et al[5]	Kolkata, India	2006	20	0%	5%	5%
2.	Bhavs-aret al[2]	Ahmedabad, India	2009	100	9%	6%	18%
3.	Twisha Oza et al[3]	Gujarat, India	2011	193	3.1%	0.52%	7.8%
4.	Present Study	Ahmedabad, India	2012	136	0.0%	1.47%	20.58%

In present study, no patient found HIV reactive. They were transfused HIV non-reactive blood from this hospital.So if anyone gets HIV infection, they are likely to be infected by window period transmission. Mandatory screening of blood bags for HIV, voluntary donation camps and use of 4th generation ELISA (p24 detection) in blood banks have reduced transmission of HIV to thalassemic children.[6]

In current scenario, the prevalence of Hepatitis B has decreased considerably due to better immunisation and screening of blood bags. Routine screening does not eliminate risk of transmission of HBV. HBsAg test may be negative in the initial infection, in convalescence phase (core window period) and also in HBV chronic infection, with low level of viraemia.[7] Ideally minimum two dose of vaccination should be given before starting transfusion in a newly diagnosed thalassemic. It is possible only if patient comes well in advance when there is no need of emergency transfusion due to severe anaemia.

A test for immunity (Anti-HBs antibody) should be carried out 4 - 8 weeks following the final dose of the primary course of vaccination to demonstrate response of vaccine. Antibody level more than 100 mIU/ml indicates a good response to vaccination. Antibody level between 10 and 100 mIU/ml indicates a poor response and a booster dose should be given immediately to improve response.[8]

Hepatitis C is emerging as the predominant transfusion transmitted infection now a day. There is no vaccination for HCV. It is found to be very high when study population of thalassemic children consisted predominantly of older children receiving more no. of transfusion.This lack of anti-HCV may be due to non-seroconversion or sero-reversion (for example in patients with HIV infection or in immunosuppressed transplant recipients) or to undetermined host or viral genetic factors.[9] A major fraction of this anti-HCV positive children develop chronic liver disease they may progress to cirrhosis and hepatocellular carcinoma after many years. A small number of patients spontaneously clear the virus. [9]

CONCLUSION

Incidence of HIV and HBsAg positivity has decreased due to mandatory screening of all blood bags and vaccination of Hepatitis B. Screening of blood donor for HCV should be done by better recent techniques than routine performed antibody detection test. Newer molecular techniques like Nucleic Acid Amplification Test e.g. Polymerase chain reaction (PCR) for screening of blood donors for HIV, Hepatitis B and Hepatitis C infection, donor awareness programme, purely voluntary donation and screening of antenatal mother should be encouraged.

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REFERENCE

1. Caterina B.P. and Renzo G - ThaLassemia and Related Disorders - Wintrobe's Hematology 11. P. 1319 - 52. | 2. HardikBhavsar, Kanu Patel, MahendraVegad, Molly Madan, Anita Pandey, AshishAsthana, KalpeshMistry. Prevalence of HIV, Hepatitis B and Hepatitis C infection in Thalassemia major patients in tertiary care hospital, Gujarat, NJIRM 2011; Vol. 2(3). July- September. | 3. Dr.TwishaOza ,Dr.AmitAgrawat ,Dr.GauraviDhruva , Dr. H.V. Oza, A Study Of Prevalence Of HIV, HbsAg And HCV In Thalassemia Major Children, NJIRM 2012 ; Vol. 3(4). September- October | 4. Leach J.M and Ruck B.J. - Latex agglutination for Australia. Ag - Br. Med. J.4. 1970. P. 597. | 5. Chakrabarti S. Pradhan P. Roy A et al - Prevalence of anti HCV, HBsAg and HIV Ab in high risk recipients of blood products dept of pathology NRS. Med. College Kolkata - IJ. Public health 2006. Jan - Mar. 50(1) P. 43 - 44. | 6. Jaju N. - HIV seropositivity in multitransfused thalassemics during window period in Mumbai - Int. conf. AIDS 1998. 12 : 393. | 7. N. Choudhury, SobhaPhadke, Transfusion transmitted diseases, Indian journal of Pediatrics, Volume 68-Oct. 2001. | 8. Hepatitis B and healthcare personnel, CDC guide line, www.immunize.org/catg.d/p2109.pdf | 9. Ayaz M. Majid, David R. Gretch, Current and future hepatitis C virus diagnostic testing: problems and advancements, Microbes and Infection 4 (2002) 1227–1236.