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Research Article

HIV SERO-PREVALENCE AMONG SUBJECTS WITH THALASSEMIA AT A TERTIARY CARE FACILITY

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ABSTRACT

BACKGROUND

Background: In India, the prevalence of thalassemia trait differs from 3 to 17% in general. HIV can spread to children with thalassemia because they frequently get blood transfusions. Globally, the prevalence of HIV contamination in people with thalassemia differs significantly, ranging from less than 1% to over 20%. The significant sero-prevalence of anti-HIV-1, or 0.5%, in blood donors raises concerned concerns about the danger of HIV transmission during transfusions.

Aim and Objectives: to investigate the sero-prevalence of HIV contamination in individuals with thalassemia.

Materials and methods: A one-year observational research was conducted in a tertiary care hospital. We took 500 multitransfusion thalassemia subjects who were receiving blood transfusions at the hospital. After obtaining consent, a thorough history was recorded. Five milliliters of blood were aseptically drawn, and HIV testing were carried out in accordance with kit instructions and NACO recommendations.

Results: With a male to female proportion of 1.3:1, the age group that predominated was 0–5 years old, with a average age of 9. Of the 500 specimens, 28% had thalassemia intermedia and 72% had thalassemia major. HIV sero-prevalence was 0.4%. Two (1.2%) HIV-positive individuals had received 0–50 blood transfusions and were primarily in the 0–5 age range.

Conclusion: Subjects with many blood transfusions for thalassemia frequently have HIV contamination, which is still a serious health issue for them. HIV prevalence may be low since all blood bags must be screened, donors must meet strict selection requirements, sensitive tests are used to screen all blood donors, and public knowledge of HIV is rising. However, newer technologies such as p24 Antigen identification, HIV viral RNA detection by RT-PCR, and HIV Mini pool nucleic acid testing (MP-NAT) can further shorten the HIV window period.

Key Words: HIV contamination, Thalassemia.

INTRODUCTION:

Although blood transfusions and blood products are safer than ever, we are still a long way from reaching a "zero risk" state. Children with thalassemia are one such high risk population[1]. Subjects who have many transfusions are at an increased risk for transfusion-associated illnesses. In India, the prevalence of thalassemia trait differs from 3 to 17% in general. Frequent blood transfusion has improved the general prognosis of subjects with hereditary hemolytic anemia, especially thalassemia, but there is a real risk of contracting blood-borne viral contaminations[2-5]. Transfusion-related contaminations, or TTIs,

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are a feared side effect of transfusion since they can cause long-term morbidity and death. In India, testing for HBs Ag, syphilis, malaria, anti-HIV 1 and 2 (since 1991), anti-HCV (since 2000), and HBs Ag is required for given blood. Blood donations that are negative for these illnesses' indicators can nonetheless result in TTIs. The safety of the donor population, the sensitivity of the screening tests employed, the donation window, and additional factors like mutant strains all affect the residual risk of TTIs transmission from screened blood.[6] HIV can spread to children with thalassemia because they frequently get blood transfusions. Globally, the prevalence of HIV contamination in people with thalassemia differs significantly, ranging from less than 1% to over 20%. Different regions of the nation have varying rates of HIV prevalence among blood donors[7]. The significant sero-prevalence of anti-HIV-1, or 0.5%, in blood donors raises concerned concerns about the danger of HIV transmission during transfusions. We conducted this research to give thorough data based on HIV contamination epidemiology in individuals with thalassemia, as there was a dearth of information regarding this prevalence. Given the foregoing information, this research was conducted[8].

MATERIALS AND METHODS

Research location: Central India's Tertiary Care Hospital's Department of Microbiology Research period: a year Design of the research: observational Specimen size: Five hundred individuals with thalassemia who were receiving blood transfusions at the hospital were included in the research. Subjects with thalassemia who arrive at a tertiary care hospital and receive at least three blood transfusions meet the inclusion criteria. Subjects who do not have thalassemia, subjects with thalassemia who have less than three transfusions, and subjects who do not provide informed consent for the research are excluded. Ethics approval: Following approval from the institutional ethics committee, the research was launched.

Methodology: Procedure for the research: 500 thalassemia subjects (n = 500) who met the previously stated inclusion criteria and were enrolled in the Thalassemia Day Care center were chosen for the research. For every subject, a thorough history was obtained, which was appropriately documented in the case record form. Following pretest counseling, a signed informed consent or assent form for HIV testing was obtained from these subjects in order to participate in the research. The protocol was then explained to the subjects in the language that they could understand the best.

Collection of Specimen: Five milliliters of thalassemia subject blood in a sterile vial. Centrifugation was used to separate the serum as quickly as possible for 15 minutes at 2000 rpm. Testing was done after the serum specimens were stored in sterile jars. HIV testing was conducted in compliance with NACO recommendations and Strategy III.

OBSERVATIONS AND RESULTS

The purpose of the current research was to determine the sero-prevalence of HIV contamination in subjects with thalassemia in a tertiary care facility. Five hundred multitransfused thalassemia subjects who were receiving blood transfusions at the hospital were included in the research. These subjects' blood specimens were taken from the Thalassemia Day Care Center and processed for tests to detect HIV antibodies.

Table 1: Distribution of thalassemia cases

	Thalassemia major		**Thalassemia intermedia**	
No. of Cases (n)	**No.**	%	**No.**	%
500	358	72	142	28

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358 (72%) of the 500 instances of thalassemia were related to thalassemia major, whereas 142 (28%) were related to thalassemia intermedia.

Table 2: Anti-hiv antibody test

	Reactive		Non-Reactive	
No. of Cases (n)	**No.**	%	**No.**	%
500	2	0.4	498	99.6

In the current research, 2 subjects out of 500 cases of thalassemia were anti-HIV antibody positive, averageing that the sero-prevalence of HIV was 0.4%. Out of the 500 thalassemia subjects in the current investigation, only 2 (1.2%) were reactive for anti-HIV antibodies and belonged to the 0–5 age group. Only two (1.2%) of the 500 thalassemia subjects in the current research were reactive for anti-HIV antibodies and had received 0–50 blood transfusions.

DISCUSSION

It is acknowledged that thalassemia is the most common disease worldwide. Nonetheless, with a carrier population of up to 150 million, beta-thalassemia is the most prevalent autosomal single-gene illness globally, present in more than 60 nations[8]. Six In India, one of the main issues with public health is beta-thalassemia major. In India, the prevalence of thalassemia trait differs from 3 to 17% in general. In India, there are thought to be between 65,000 and 67,000 cases of beta-thalassemia, with an additional 9,000 to 10,000 cases reported annually[9-11]. The likelihood of coming into contact with contaminated blood units is correlated with the risk of developing TTIs. This likelihood is based on the quantity of transfusions and the prevalence of carriers among blood donors in the community.

As a result, in later years, the incidence of TTI contamination rises with age. Due to the high prevalence of HIV in the general population, there is a high incidence of HIV contaminations among pediatric subjects with thalassemia who are Indian. A total of 500 multitransfused thalassemia subjects who were receiving blood transfusions at the hospital were included in the current research. After obtaining written informed agreement, blood specimens from these subjects were taken from the Thalassemia Day Care Center and processed for anti-HIV antibody testing. Thalassemia major was shown to be more common than Thalassemia intermedia[12].

It could be the result of thalassemia major, which manifests clinically as severe symptomatic anemia that usually begins within the first year of life and necessitates frequent and frequent blood transfusions; in contrast, thalassemia intermedia is a form of thalassemia that manifests clinically as symptomatic anemia that does not require transfusions during the first few years of life and allows subjects to survive into their second decade of life without the need for chronic hypertransfusion therapy. Of the 500 instances of thalassemia in the current research, 72% had thalassemia major and 28% had thalassemia intermedia. [First Table] Eiman Hussein's research, however, revealed intermedia 24% and serious thalassemia 76%. Likewise, a research by Miromomen et al. (2006) revealed thalassemia major and intermedia to be 77.7% and 22.3%, respectively[13].

The majority of the research that were discussed agreed with the current investigation. Out of the 500 thalassemia cases in the current research, 170 fell into the 0–5 age group and 168 into the 5–10 age group. The ages of 100, 48, and 14 were, respectively, 10-15, 15-20, and 20-25 years old. Nine years was the average age (average ± 2SD = 8.7 ± 5.43). [Table 2] Thus, the age group of 0–5 years accounted for the greatest number of subjects

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(34.6%), followed by the age group of 5–10 years (33.6%).

Comparably, 34% and 38% of instances in the age groups of 0–5 years and 4–7 years, respectively, were recorded in the studies of Rezaul Karim et al. and Bhavsar et al. Similarly, in the 0–5 and 1–5 year age groups, Ankita et al. and Shah S.M.A et al. reported 39.51% and 38.8% of instances, respectively. According to a research done in Tikrit by Nadhim, 32% of the subjects were between the ages of 5 and 10. These investigations supported the findings of the current research. The research's male to female proportion of 1.27:1 was similar to that of Mirmomen et al.'s research, which found a male to female proportion of 1.29:1. In a similar vein, the male to female proportions reported by Hossainuddin et al and Dhaval et al were 1.33:1 and 1.63:1, respectively[14].

HIV transmission through donated blood has decreased significantly since HIV-1 and HIV-2 testing became required in 1989 and 1993, respectively.25 Two cases (0.4%) out of 500 specimens of thalassemia cases were positive for anti-HIV antibodies in the current investigation. The majority of the aforementioned studies supported our findings. The findings indicated that there was no statistically significant relationship between age and HIV seropositivity. Only two (1.2%) of the 500 thalassemia subjects in the current research were reactive for anti-HIV antibodies and had received 0–50 blood transfusions.

It was discovered that there was no discernible relationship between the quantity of transfusions and HIV seropositivity. Similarly, Dhaval et al. and Prakash et al. have also reported on this.

CONCLUSION:

Subjects with many blood transfusions for thalassemia frequently have HIV contamination, which is still a serious health issue for them. HIV prevalence may be low since all blood bags must be screened, donors must meet strict selection requirements, sensitive tests are used to screen all blood donors, and public knowledge of HIV is rising. However, newer technologies such as p24 Antigen identification, HIV viral RNA detection by RTPCR, and HIV minipool nucleic acid testing (MPNAT) can further shorten the HIV window period. Because NAT is so expensive in comparison to ELISA, most blood banks in our nation do not now use it. The risk of TTIs in subjects requiring chronic transfusions will be substantially reduced if NAT costs are reduced and if it becomes required in all blood banks.

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