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Frequency of Transfusion Transmitted Infection among Transfusion Dependent Beta Thalassemia Patients in District Headquarter Hospital Turbat Kech Baluchistan

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Abstracts

Objective
To estimate the frequency of transfusion transmittedinfection among transfusion dependent beta thalassemia patients in District Headquarter Hospital TurbatKech Baluchistan.

Methodology
This was a cross sectional study conducted in district headquarter hospital TurbatKech Baluchistan. All known diagnosed cases of beta thalsemia major, registered at District Headquarter Hospital Turbat, Kech, irrespective of their age, gender and transfused at least five unit of blood were included. Those who were not resident of District Kech Baluchistan were excluded from the study. 5ml of blood was drawn a aseptically using a 5 cc disposeable syringe and tested for HIV, HBV and HCV. SPSS v.22 was used for the statistical analysis purpose.

Results
The average age of 100 thalsemic patients was 8.58 _+ 6.68 years (minimum 1 maximum 4). The vast majority of the patients (80%) were under the age of ten. The male prevalence was found to be higher (60%) than the female preponderance (40 percent). Hepatitis C infection was found to be reactive in the majority of patients (21%) followed by HIV (4%) and hepatitis B infection was shown to be reactive in one patient. When baseline parameters were compared to HIV, HBV, and HCV reactivity, only age (p-value 0.044) was shown to be substantially related with HBV infection, whereas all other factors were statistically insignificant (p-value>0.05).

Conclusion
In the District Headquarter Hospital TurbatKechBlauchistan, hepatitis C was the most common transfusion-transmitted infection among transfusion-dependent beta thalassemia patients, followed by HIV and hepatitis B.

Keywords: Transfusion transmitted infections; Beta thalassemia patients;Blauchistan.

INTRODUCTION
Thalassaemias are haemoglobin-related genetic diseases. Thalassaemia is caused by a variety of mutations in the globin gene. Thalassaemia carriers account for around 1.5 percent of the population, with 50–60,000 new beta thalassaemia patients born each year. The most prevalent form of beta thalassemia is seen in Mediterranean people, although it can also be found in Africa, Southeast Asia, and the Middle East. Thalassemia is a blood disorder caused by a lack of haemoglobin, a major component of red blood cells, that is genetically transmitted (i.e., passed on from parents to children).[1] In patients with thalassemia, anaemia

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can be moderate or severe. Organ damage and even death can result from severe anaemia. When we talk about distinct "categories" of thalassemia, we're usually talking about one of two things: the specific component of haemoglobin that's affected (either "alpha" or "beta"), or the severity of thalassemia, which is indicated by phrases like carrier, trait intermedia, and major.[2]

Hemoglobin is made up of two components, alpha and beta, that carry oxygen to all of the body's cells. The component of haemoglobin that isn't produced is referred to as "alpha" or "beta" in thalassemia. There aren't enough building blocks to create normal levels of haemoglobin if either the alpha or beta parts aren't made. Alpha thalassemia is a condition characterized by a low level of alpha. Beta thalassemia is a condition characterized by low beta levels. The terms "trait," "small," "intermedia," and "major" are used to characterize the severity of thalassemia. Because people with moderate - to - severe types of thalassemia experience significant anaemia symptoms early in life, they generally find out about their disease in childhood. People with less severe types of thalassemia may only find out because they are experiencing anaemia symptoms, or because a doctor discovers anaemia during a regular blood test or another test. [3]

In Pakistan, the blood transfusion service is fragmented, owing to the growth of several types of blood centres that rely on family replacement donations. According to reports, the country has approximately 1800 blood centres, with the private/non-governmental sector playing a significant role. The private nonprofit sector plays a key role in blood transfusion, owing to unfulfilled transfusion demand, which is primarily driven by the country's substantial thalassaemia disease load. In Pakistan, thalassemia is the most common hereditary blood disease. The moderate type of the illness, thalassaemia minor or carrier, has a prevalence of 5–7% in the country (8 to 10 million people).[4,5] In Pakistan, it is estimated that 100,000 people suffer with thalassaemia major, the most severe type of the disease. Every year, this number rises by 5–9,000 people. These patients, in addition to pricey chelation therapy and other medical treatments, need on monthly blood transfusions to stay alive.. As an outcome, thalassaemia is a serious healthcare problem that causes significant psychological and financial hardship for afflicted families while also putting a significant strain on the national health - care system.[6]

In underdeveloped nations, transfusion-transmitted infections (TTIs) constitute a serious concern. Due to frequent transfusions, individuals with beta thalassaemia major are at a higher risk of TTIs. Hepatitis C virus (HCV), Human immunodeficiency virus (HIV-I/II), and hepatitis B virus (HBV) are the three main TT viruses of clinical relevance (HBV).[7,8] The patients' survival is dependent on regular blood transfusions. If the patients are not adequately treated medically, repeated transfusions might lead to other problems such as iron excess.In poor nations with low blood safety standards, the spread of HIV, HCV, and HBV is a serious issue. The goal of this multicenter study was to learn more about the epidemiology of HCV, HIV and HBV infections in beta thalassaemia patients in Pakistan.

MATERIAL AND METHODS

Five distinct thalassaemiacentres in Rawalpindi, Islamabad, and Karachi participated in a cross-sectional multicenter research. These clinics give thalassaemia patients with screened blood and necessary medical treatment. District Headquarter Hospital TurbatKech Baluchistan was one of the centers. The blood screening was done in the TurbatKech Baluchistan District Headquarter Hospital. A total of 1253 individuals with blood transfusion-dependent thalassaemia who were registered at these clinics were chosen. The study looked at the prevalence of HCV, HIV and HBV infections in a sample of Baluchistanis from various areas and ethnic groupings. Patients with thalassaemia had monthly transfusions from thalassaemiacenters in order to keep their haemoglobin levels

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between 9 and 10 g/dL. The serum was separated in Eppendorf tubes and kept at –20 C after blood was taken aseptically from individual. The Abbott ARCHITECT i2000 system was used to screen for HIV, HBV, and HCV. CLIA is a technique for determining sample concentrations based on the amount of light emitted by a chemical reaction. CLIA has a higher sensitivity and dynamic range, allowing it to detect lower analytic concentrations and hence diagnose illness early. Patients were advised of a positive result through their doctor, and all information and test results were kept private. All patients, or their families in the case of minors, gave written consent to participate in this study. The District Headquarter Hospital in TurbatKech, Baluchistan, gave its approval to the research. Patients of all ages and genders who had been diagnosed with -thalassemia and were routinely transfused were eligible. The information was put into MS-Excel and analysed using SPSS. For the main characteristics of the recruited participants, several explanatory summaries were created. We looked at the distribution of several demographic factors. The Chi-square test and t-test were used to determine the statistical significance of the random distributions, using a $p < 0.05$ cut-off value.[9]

RESULTS

The average age of the thelasamic patients was 8.58±6.68 years. The patient's lowest age was one year, and his maximum age was four years. The bulk of the patients (80%) were above the age of ten years, whereas 20% of the thelasamic patients were under ten years old. Male preponderance was found to be higher (16%) than female preponderance (40 percent). The most common transfusion-transmitted infection was hepatitis C, which was found reactive in 21% of patients, followed by HIV, and Hepatitis B, which was found reactive in just one patient.

When baseline characteristics were compared to HIV, HBV, and HCV reactivity, it was shown that the values were statistically significant. (p-value>0.05).

TABLE NO 1: COMPARISON OF HBV, HCV, & HIV WITH AGE GROUP AND GENDER

Variable		HBV		HCV		HIV	
		Non Reactive	Reactive	Non Reactive	Reactive	Non Reactive	Reactive
Age group	≤10 years	80	0	65	15	76	4
	>10 years	19	1	14	6	20	0
Gender	Male	59	1	44	16	56	4
	Female	40	0	35	5	40	0

DISCUSSION

The goal of this study is to determine the prevalence of transfusion-transmitted illnesses among beta thalaseemia patients who rely on blood transfusions. Only 1% of patients with transfusion-dependent beta thalaseemia tested positive for HV. Furthermore, the prevalence of HCV infections among patients with transfusion-dependent beta thalaseemia was found to be 21% in this research. These findings were found to be relatively comparable to those of other published studies. In a research done by Said et al , HCV antibodies were found in 34.4 percent of Egyption patients, whereas HCV negative individuals were found in 4.9 percent.In contrast to our findings, Ansari et al. found a decreased prevalence of HBV and HIV in our nation. HCV infection was identified in 19.2% of patients with transfusion-dependent beta thalasemia, however none of the patients tested positive for HIV.[10]

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HBV and HCV infections were shown to be common among multitransfused beta thalaseemia patients in Swat, Pakistan, HCV infections were found to be prevalent in 5.88 percent of patients, with 21.67 percent reporting HCV positive infections.
In our study, non-reactive HBV infection was found in 80.8 percent of patients under the age of ten, whereas only 19.2 percent of patients above the age of ten were found to have non-reactive HBV infection. Furthermore, just one beta thalaseemia patient had HBV infection reactive, according to the study. Waheed et al investigated the frequency of transfusion-transmitted diseases among blood donors at an Islamabad teaching hospital. Similarly, the study found that 82.3 patients under the age of 10 years old had non-reactive HCV infection. [11]
On the other hand, 71.4 percent of patients under the age of ten years were found to have a reactive HCV infection, while 28.6 percent of patients above the age of ten years were found to have a reactive HCV infection. Non-reactive and reactive HIV infection were found in 79.2 percent and 100 percent of patients under the age of 10 years, respectively. Furthermore, non-reactive HIV infection was discovered in 20.8 percent of patients over the age of ten. Mirmomen et al investigated the epidemiology of HIV, HBV, and HCV infection in patients with beta thalasemia in Iran..The study found that HCV seropositivity was strongly related with patient age (p=0.001). Furthermore, serum ferritin level (p=0.002), lengthier history of transfusion (p0.001), and history of Splenectomy (p0.05) were all shown to be substantially related with HCV infection in the research. According to the study, the prevalence of HIV infection among Iranian patients over the age of 20 was 16-64 percent.[12]

CONCLUSION

In the District Headquarter Hospital TurbatKechBlauchistan, the results of this study revealed that hepatitis C was the most common transfusion-transmitted infection among transfusion-dependent beta thalassemia patients, followed by HIV and hepatitis B. More planning and methods are needed to enhance screening in multitransfusion patients in Turbat, Kech, and Blauchistan, according to the researchers.

REFERENCES

1. Ahmed Kiani, R., Anwar, M., Waheed, U., Asad, M. J., Abbasi, S., & Abbas Zaheer, H. (2016). Epidemiology of transfusion transmitted infection among patients with β-thalassaemia major in Pakistan. *Journal of blood transfusion*, *2016*.
2. Vidja, P. J., Vachhani, J. H., Sheikh, S. S., &Santwani, P. M. (2011). Blood transfusion transmitted infections in multiple blood transfused patients of beta thalassaemia. *Indian Journal of Hematology and Blood Transfusion*, *27*(2), 65-69.
3. Al-Sharifi, L. M., Murtadha, J., Shahad, A., Mohammed, Y., Sura, J., Waleed, Z., ...& Abbas, Q. (2019). Prevalence of hepatitis B and C in thalassemic patients and its relation with type of thalassemia, frequency of blood transfusion, and spleen status. *Medical Journal of Babylon*, *16*(2), 108.
4. Jain, R., Perkins, J., Johnson, S. T., Desai, P., Khatri, A., Chudgar, U., & Choudhury, N. (2012). A prospective study for prevalence and/or development of transfusion-transmitted infections in multiply transfused thalassemia major patients. *Asian journal of transfusion science*, *6*(2), 151.
5. Jafroodi, M., Davoudi-Kiakalayeh, A., Mohtasham-Amiri, Z., Pourfathollah, A. A., &Haghbin, A. (2015). Trend in prevalence of hepatitis C virus infection among β-thalassemia major patients: 10 years of experience in Iran. *International journal of preventive medicine*, *6*.

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Received 08 November 2021; Accepted 15 December 2021.

6. Ehsan, H., Wahab, A., Anwer, F., Iftikhar, R., &Yousaf, M. N. (2020). Prevalence of transfusion transmissible infections in beta-thalassemia major patients in Pakistan: a systematic review. *Cureus*, *12*(8).
7. Mansour, A. K., Aly, R. M., Abdelrazek, S. Y., Elghannam, D. M., Abdelaziz, S. M., Shahine, D. A., ...&Darwish, A. M. (2012). Prevalence of HBV and HCV infection among multi-transfused Egyptian thalassemic patients. *Hematology/oncology and stem cell therapy*, *5*(1), 54-59.
8. Ataei, B., Hashemipour, M., Kassaian, N., Hassannejad, R., Nokhodian, Z., &Adibi, P. (2012). Prevalence of anti HCV infection in patients with Beta-thalassemia in isfahan-iran. *International journal of preventive medicine*, *3*(Suppl1), S118.
9. Ansari, S. H., Shamsi, T. S., Ashraf, M., Farzana, T., Bohray, M., Perveen, K., ...& Raza, F. (2012). Molecular epidemiology of β-thalassemia in Pakistan: Far reaching implications. *Indian journal of human genetics*, *18*(2), 193.
10. Waheed, U., Saba, N., Wazeer, A., & Ahmed, S. (2021). A Systematic Review and Meta-Analysis on the Epidemiology of Hepatitis B and Hepatitis C Virus among Beta-Thalassemia Major Patients in Pakistan. *Journal of Laboratory Physicians*.
11. Zaheer, H. A., Waheed, U., Abdella, Y. E., &Konings, F. (2020). Thalassemia in Pakistan: A forward-looking solution to a serious health issue. *Global Journal of Transfusion Medicine*, *5*(1), 108.
12. Yousafzai, Y. M., Wahid, Q. U. A., Khan, S., Mir, A., Khan, A., &Raziq, F. (2019). Co-existing iron deficiency/overload in beta-thalassemia trait. *JPMA. The Journal of the Pakistan Medical Association*, *69*(6), 806-810.