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Research Article

Thalassemic Patients in Misan, Iraq, 2024: A Descriptive Study

Alaa Shamikh Hassan[1], Ahmed Ali Al mashhadani[2], Hmood Madhi Hasan[3], Husam Al-hraishawi[4*]

[1]Department of Pathology, college of medicine, University of Misan, Misan, Iraq;
Email: alaashamikh.mcm@uomisan.edu.iq, ORCID: 0000-0001-8891-2730
[2]Department of Surgery, college of medicine, Al Mustansiriyah University, Baghdad, Iraq
Email: Dr.ahmedcts@yahoo.com, ORCID: 0009-0001-5721-8049
[3.]Department of Family and community, college of medicine, University of Misan, Misan, Iraq:
Email: hmoudmh74@gmail.com, ORCID: 0000-0002-3816-8234
*[4 *] Department of Physiology, College of medical, University of Misan, Misan, Iraq; hra10@scarletmail.rutgers.edu.*
ORCID: 0000-0003-4169-1824

Abstract
Thalassemia is a genetics syndrome which lead to abnormal hemoglobin protein and this produce hemolysis, inefficient erythropoiesis, and moderate to severe anemia. Very few studies focus on the frequency of this disease. Therefore, the aims of current study is to determine features, and frequency of thalassemia patients at the thalassemia center in the Misan Governorate.
In 2024, we performed a descriptive file-based study on 499 patients with thalassemia at the Thalassemia Center in Misan City. We reviewed the patient files and gathered the necessary data. After filling out a unique form with information about the patient's features from their medical records and from the patients or caregivers, data analysis was completed using Microsoft Excel and SPSS.
The results showed that the majority of cases (78%), which were of the major type of B-thalassemia, were followed by intermediate cases (16%) and alpha-thalassemia (6%). Of these, 54% were female, and 48% were in the age range of 5-19 years. There were fewer cases in the age range of 0–4 years and older than 40 years. The study's findings also showed that 52% of patients lived in rural areas and 48% in urban areas. O had the highest blood group among the patients, followed by B, A, and AB. According to the study's findings, 64 patients had passed away, with both new and old cases accounting for 12% of all deaths. The kind of thalassemia, age group, and case outcome were statistically significantly correlated (p values were 0.006 and 0.0001, respectively).
In conclusion, our research consider as the first a descriptive study at Misan province that sheds the light on B-thalassemia major. However, genetic study required next to stablish the database in Misan province.

Keywords: Iraq, Misan, thalassemia, major

***Author for correspondence*: *Email:** *hra10@scarletmail.rutgers.edu*

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Introduction:
One of the most prevalent genetic diseases in the world, thalassemias are inherited, autosomal recessive disorders of hemoglobin (Hb) synthesis, characterized by a variety of molecular abnormalities [1-3]. The two main types of thalassemia, α- and β-, are caused by mutations in the globin genes, which result in a reduction or alteration in the amount of adult Hb's α- and β-globin chains produced, respectively [4]. In addition, individuals with BTH continue to experience a variety of side effects, such as changes in bone density (5,7).

Although BTH patients' life expectancy has significantly increased in recent years due to stringent iron chelation therapy compliance and routine blood transfusions, with 5% to 20% of the world's population carrying one or more α-thalassemia mutations and ≈1.5% carrying one or more β-thalassemia mutations, thalassemia is a serious global disease burden [10–12]. Although prevalence rates differ by location, tropical and subtropical nations—particularly those in Southeast Asia and the Mediterranean—have the greatest rates [13]. In several regions of southern Asia, the prevalence of α-thalassemia has nearly reached 100%, meaning that 80% to 90% of the population carries the gene [13–16]. Regular blood transfusion is the mainstay of therapeutic management for these patients, who show progressive severe anemia and extramedullary hematopoiesis that result in poor growth, skeletal deformity, and other problems, such as heart failure and hepatosplenomegaly. Two identical copies of a certain gene, one from each parent, are present in homozygous people; nevertheless, both copies are defective [17, 18]. During the first two years of life, people with β-thalassemia intermedia may or may not require blood transfusions; nevertheless, as they age, the frequency of transfusions may rise. Patients with mild thalassemia typically exhibit no symptoms and present in a carrier status [19, 20]. The thalassemia are more prevalent in regions where falciparum malaria is endemic and widespread, which may provide them a protective benefit in situations where malaria is present [21–25]. Although the full cost of thalassemia to the healthcare and economic systems is unknown at this time, it is known to be rising, not only in high-prevalence nations where more patients are surviving and leading longer lives [26], but also in nations where immigration and demographic shifts are contributing to the rise in prevalence [27]. The goal of treatment and future prevention may be aided by the growing speed and lowering cost of genetic testing and other screening approaches, despite the fact that there are considerable gaps in our knowledge regarding the prevalence and health burden of α-thalassemia. The purpose of the study is to ascertain the traits and frequency of thalassemia patients at the thalassemia facility in the Misan Governorate.

Method:

In 2024, we performed a descriptive file-based study on 499 patients with thalassemia at the Thalassemia Center in Misan City. We reviewed the patient files and gathered the necessary data. A unique form was completed using information about the patient's characteristics gleaned from their medical records or files. The study included the following data: age, sex, residence, blood type, and death Data was gathered and examined using SPSS version 20 and Microsoft Excel.There were no data displayed in tables or figures. P value of 0.05 or less was regarded as statistically significant.

Result

A total study sample was 499 thalassemic patient whose attend the Thalassemia Center in Amara city. Our study was found that 54% of patients was male while 46% of them was female as in figure 1.

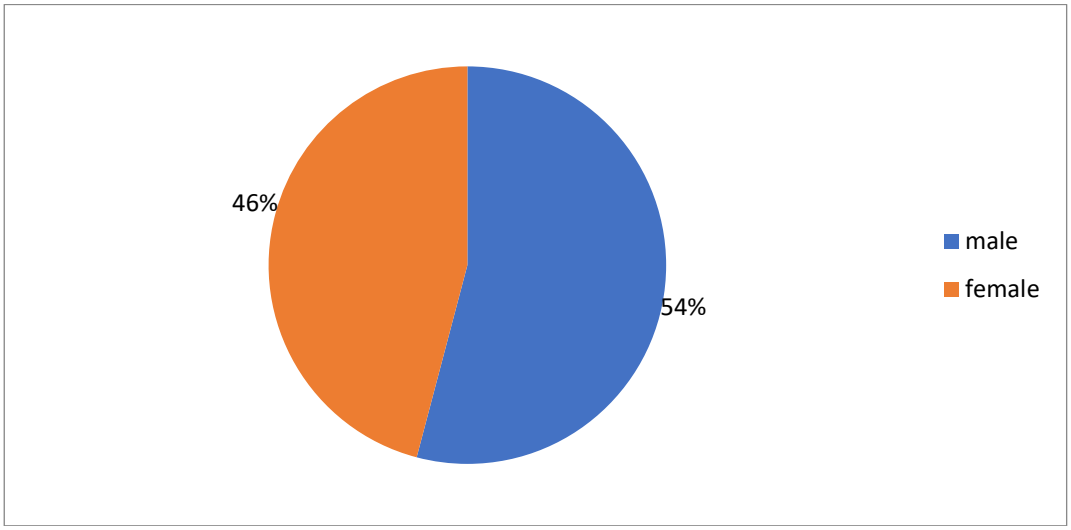

Figure 1: sex distribution of thalassemic patients.

Regarding patient age distribution: most of cases in age groups 5-19 years while less cases in age group 0-4 years and age group above 40 years (284,49 and 19 respectively) as shown in figure 2.

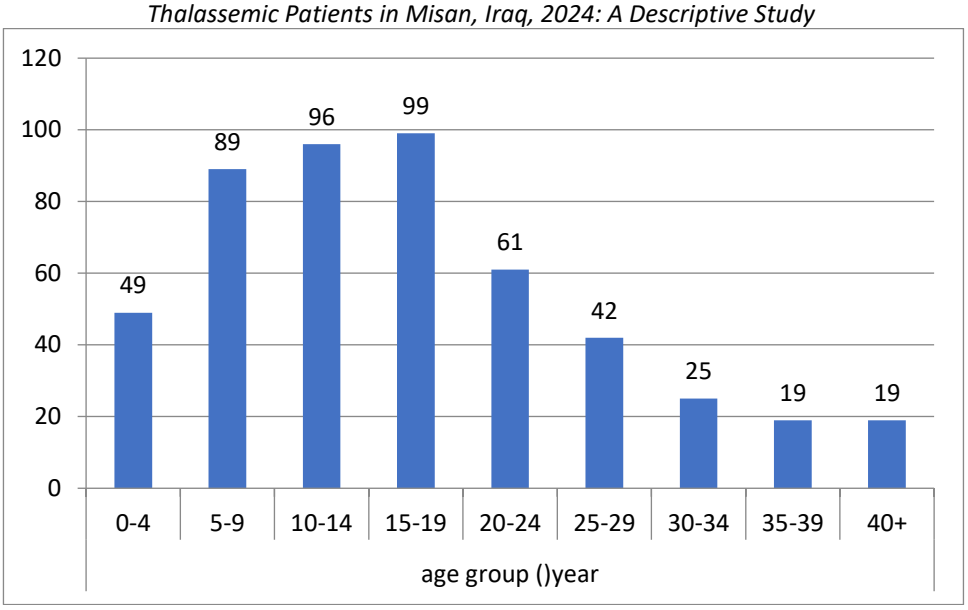

Figure 2: age group distribution of sample study.

Our study result was revealed that 52% of patient was lived at rural area while 48% was lived I urban area or cities as in figure 3.

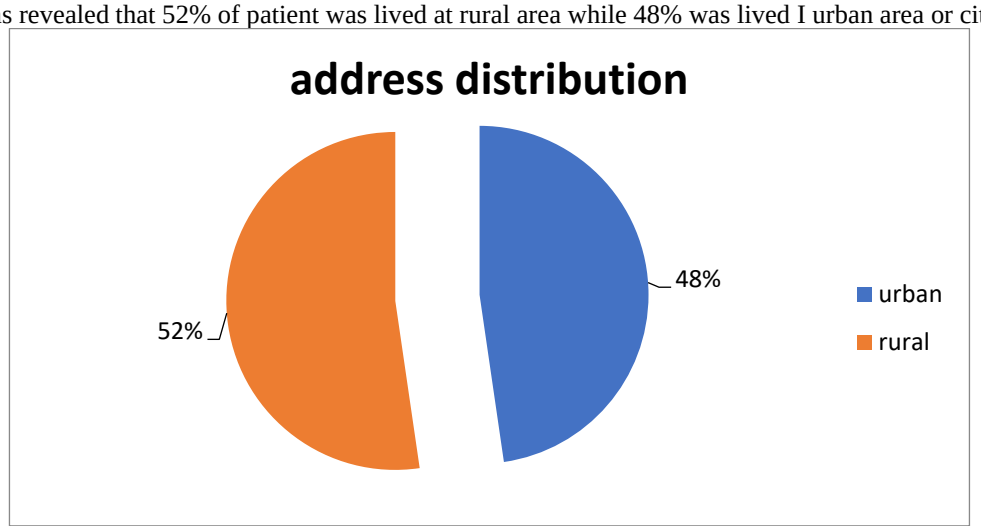

Figure 3: address distribution of sample study.

The most blood group of patients was O followed by B, A and AB which was (187,155,120 and 37 respectively) as shown in figure 4.

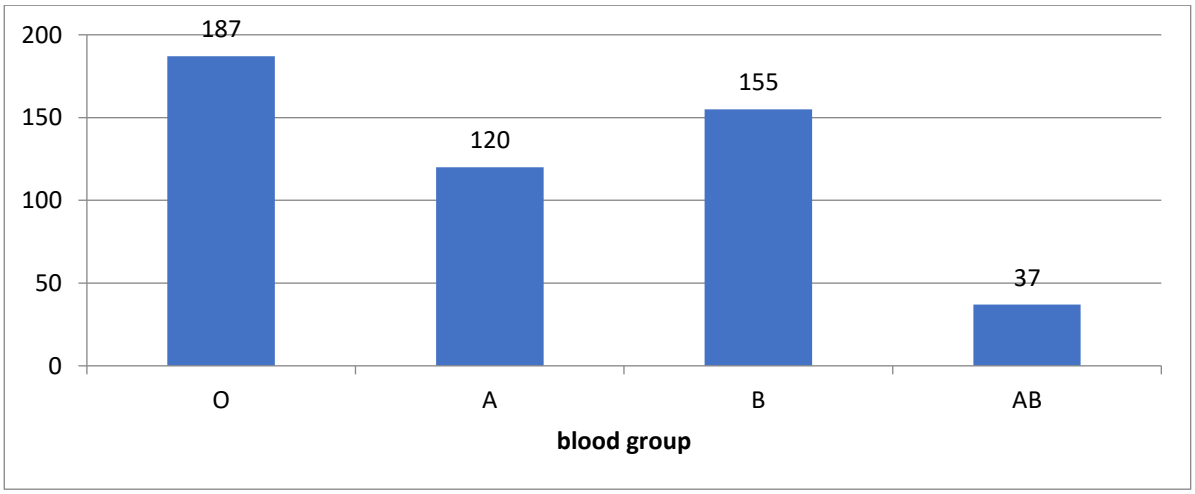

Figure 4: blood group distribution of sample study.

The study result was found that 64 patient was dead, the death rate was (12%) of old and new cases, as in figure 5

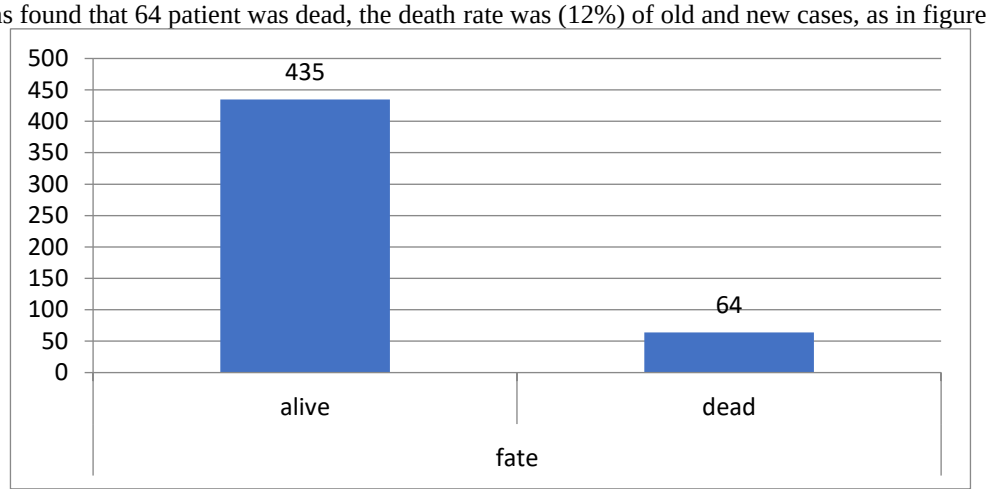

Figure 5: fate of thalassemic patients.

More than 90 patient (18%) was infected by Hepatitis C Virus because of repeated blood receiving while only one cases was infected by Hepatitis B Virus

Regarding the type of thalassemia, the majority of case was B-thalassemia major type (78%), then B-thalassemia intermediate (16%) and 6% was alpha-thalassemia as in figure 6

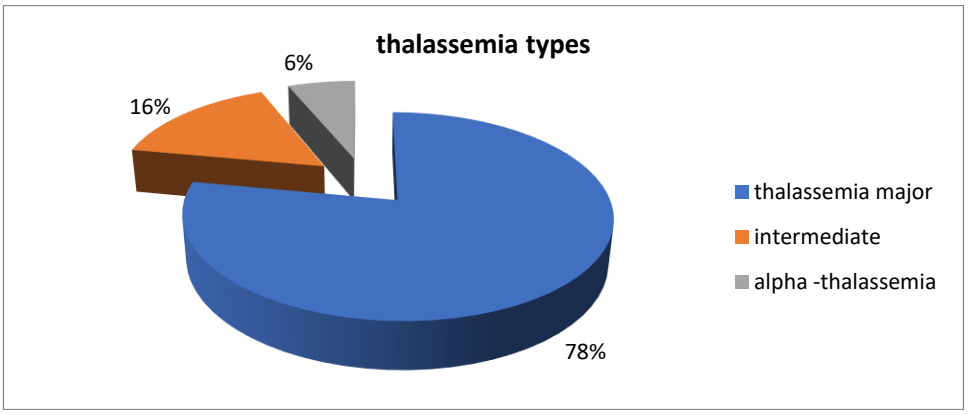

Figure 6: thalassemia type distribution

Regarding the association of thalassemia types and the some feature of patients; the study was revealed that there was a statistical significant between type of thalassemia and age group and fate of cases (p value was 0.006 and 0.0001 respectively), most of dead was in thalassemia major (63 out of 64) and only one dead in intermediate type (table 1) at same manner most of thalassemic major patient was of age group (59),(10-14) and(15-19) and less in othe age group (table2).

Table 1: fate distribution of cases

Item		type								
		thalassemia major		Alpha-thalassemia		intermediate		Total		P value
		N	%	N	%	N	%	N	%	
fate	alive	326	83.8	31	100	78	98.7	435	87.2	0.001
	dead	63	16.2	0	0	1	1.3	64	12.8	
Total		389	100	31	100	79	100	499	100	

Table 2: age group distribution of cases

Item		Type								
		thalassemia major		Alpha- thalassemia		intermediate		Total		P value
		N	%	N	%	N	%	N	%	
age	0-4	35	9.0	2	6.5	12	15.2	49	9.8	
	5-9	73	18.8	5	16.1	11	13.9	89	17.8	0.006
	10-14	73	18.8	5	16.1	18	22.8	96	19.2	

	15-19	82	21.1	8	25.8	9	11.4	99	19.8	
	20-24	51	13.1	5	16.1	5	6.3	61	12.2	
	25-29	32	8.2	1	3.2	9	11.4	42	8.4	
	30-34	22	5.7	1	3.2	2	2.5	25	5.0	
	35-39	12	3.1	0	.0	7	8.9	19	3.8	
	40+	9	2.3	4	12.9	6	7.6	19	3.8	
Total		389	100	31	100	79	100	499	100	

Discussion

Premarital screening and prenatal diagnosis are important ways to avoid thalassemia, which also helps to lower the condition's prevalence and future incidence. Chorionic villus sampling is one test used in prenatal diagnosis; it typically takes place around the eleventh week of pregnancy and involves taking a small sample of the placenta for analysis (28). The only approach to lower the prevalence of genetic illnesses in our society, as in European countries, is via health education and awareness.

According to the results of the current study, B-thalassemia major accounts for 78% of cases, with intermediate cases accounting for 16% and alpha-thalassemia cases for 6%. This conclusion was consistent with earlier research findings from various nations [29], which showed that Pakistan accounted for 50% of cases of severe beta thalassemia globally. Approximately 5,000 babies are born with β-thalassemia, which has a 6% prevalence and 50,000 registered patients nationwide. The World Health Organization estimates that 8,000 pregnancies in Iran are at risk each year, with the Mediterranean basin being the most common location for these pregnancies [30].

In terms of case-fatality ratio, individuals with thalassemic illness had a 12% death rate (including new and old cases). The majority of deaths happen in the age range over 40, and the main causes of mortality for thalassemia patients are medical complications such anemia and cardiovascular disease [31]. Patients are living longer and with better quality of life thanks to transfusions and iron chelation therapies, the creation of evidence-based, standardized protocols for the management of anemia and iron overload, increased awareness of and attention to thalassemia complications, and the use of multidisciplinary care [32, 33,34]. Numerous studies (35) have reported that the prevalence rate of thalassemia is higher in women than in men. However, our study found that 54% of patients were male and 46% were female. This finding may be explained by the fact that men were more likely to seek a diagnosis and visit medical facilities. The current study's findings, which are consistent with those of a study conducted in Iraq in 2023, indicated that the majority of cases were in the age groups of 5 to 19 years, with fewer cases in the age groups of 0 to 4 and over 40. At the same time, 52% of patients lived in rural areas and 48% in urban areas or cities. According to the findings of our study, blood type O is more common in thalassemia patients, followed by type B and, less frequently, blood type AB (36, 37)

Conclusions

1. B-thalassemia major type accounted for 78% of cases
2. The death rate for both new and old cases was 12%. The relationship between age group, fate, and thalassemia type was statistically significant.
3. Thalassemia prevalence was high in female, age group 5–19-year, rural area and blood group O.

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