TO DETERMINE THE FREQUENCY OF BETA THALASSEMIA TRAIT IN PREGNANT ANEMIC PATIENTS.

by Maimoona Qadir

FILE	17371-67391-1-RV.DOC (74.5K)		
TIME SUBMITTED	06-FEB-2017 01:52PM	WORD COUNT	1976
SUBMISSION ID	767123710	CHARACTER COUNT	11391

6

TO DETERMINE THE FREQUENCY OF BETA THALASSEMIA TRAIT IN PREGNANT ANEMIC PATIENTS.

GYNAECOLOGY AND OBSTETRICS DEPARTMENT
KHYBER TEACHING HOSPITAL PESHAWAR.

Principal Author

1. **Dr. Maimoona Qadir**
   Registrar Gynae B unit
   Khyber Teaching Hospital, Peshawar
   Contact no. 03469196731
   Email : drpolite@rocket mail.com

Co- Authors

2. **Dr. Sohail Amir**

   Assistant Professor Neurosurgery
   Naseer Teaching Hospital. Peshawar
   Contact no. 03235723653
   Email add. dr.sohailamir@gmail.com

TO DETERMINE THE FREQUENCY OF BETA THALLASEMIA TRAIT IN PREGNANT ANEMIC PATIENTS.

ABSTRACT

OBJECTIVE: To determine the frequency of beta thalassemia trait in pregnant anemic patients.

MATERIAL AND METHODS: This descriptive cross sectional study was conducted in Gynae department of Khyber Teaching Hospital,Peshawar from 3rd November 2015 to 3rd May 2016.Sample size was 194 keeping 55.9% proportion of beta thalassemia trait among pregnant women with anemia, 95% confidence interval and 7% margin of error using WHO sample size calculator.

RESULTS: Our study of 194 pregnant patients showed that mean age was 27.74 years ± 5.16.The mean SD for haemoglobin level was recorded as 9.43 mg/dl ± 0.40.The age distribution was 125(64.43%) patients in 15-30 years age group and 69(35.56%) patients in31-45years age group.The results of our study for beta thalassemia trait in pregnant anemic patients were recorded as 110(56.7%) were positive whereas 84(43.29%) had no beta thalassemia traits.

CONCLUSION: Our study concluded that beta thalassemia trait is quite common in pregnant anemic patients in our region.

KEY WORDS: Anemia, Beta thalassemia trait, Haemoglobin level.

INTRODUCTION:

The thalasemias is the most common inherited monogenic disorder which causes a major genetic health problem worldwide [1,2].Beta thalassemia represents a heterogeneous group of hemoglobin disorders and is caused by the reduced or absent beta globin gene expression. This disease has high frequency in the Mediterranean regions, Africa,Southeast Asia and Indian Subcontinent [3,4].It is estimated that there are 270 million carriers globally and out of which 80million are beta thalassemia traits[5].It is significant health problem in Pakistan also.5-7% of our population (approx 9-13 million) are thalassemia minors [6].Due to high carrier state in our population,more than 6,000-7,000 thalassemia major children are born each year in Pakistan [7,8].There is a high rate of consanguineous marriages in our society due to which harmful genes are accumulated within a family.In a developing country like Pakistan,the treatment of beta thalassemia major patients which require regular blood transfusions with effective iron chelation therapy is not effective for everyone.Thus the disease ends up with significant morbidity and mortality.An alternative long term approach to this problem would be to reduce the number of these individuals through genetic counseling and prenatal diagnonsis of affected fetus[9,10].

Thalassemia trait is a genetic trait and not a health disease;it does not progress into the more serious forms of thalassemia,which needs medical treatment.Beta thalassemia trait represents one allele mutation in the globin gene.It presents with mild microcytic hypochromic anemia without clinical symptoms [11].

The present study was designed to determine the frequency of beta thalassemia trait among pregnant women presenting with anemia.A huge number of infants are born thalassemic each year who does not survive beyond puberty unless have good frequency of blood transfusion and chelation.Our study will be an attempt to screen women who are presenting with anemia of pregnancy and have beta thalassemia trait.

MATERIAL AND METHODS:

This descriptive (cross sectional) study was conducted at Gynae and obstetric department of Khyber Teaching Hospital,Peshawar from 3rd November 2015 to 3rd May 2016.Sampling technique was consecutive (non probability).Sample size was 194 keeping 55.9% proportion of beta thalassemia trait among pregnant women with anemia, 95% confidence interval and 7% margin of error using WHO sample size calculator.Inclusion criteria was all pregnant women with hemoglobin value of less than 10.5 g/dl presenting in first trimester and in age group of 15-45 years.Exclusion criteria was already diagnosed cases of haemoglobinopathies like thalassemia major,sickle cell anemia on medical grounds.These conditions act as confounders and if included in study will introduce bias in the results.

The study was conducted after approval from hospital ethical and research committee.All pregnant women meeting the inclusion criteria were invited to participate in the study through OPD.The purpose and benefits of the study was explained to all women and written informed consent obtained.All women were subjected to detailed history and clinical examination.10cc of venous blood was obtained from all women and was sent to hospital laboratory for Hb electrophoresis to detect beta thalassemia trait.

All the above mentioned information including name,age,address and contact numbers were recorded in a predesigned proforma.Strict exclusion criteria was followed.All the laboratory investigations were conducted under supervision of an expert hematologist having minimum of seven years of experience.

All the collected data was stored and analysed in SPSS version 20 for windows.Mean and standard deviation was calculated for numerical variables like age and haemoglobin level.Frequencies and percentages were calculated for categorical variables like beta thalassemia trait.Beta thalassemia trait was stratified among age of mother.Post stratification was done using Chi square test(p value $\leq$ 0.05).All results were presented in the form of tables and graphs.

RESULTS:

In this study,a total of 194 pregnant anemic patients were screened for beta thalassemia trait and the results were analyzed as under:

Age distribution amongst 194 pregnant anemic patients was studied .Two age groups were created and it was observed that 125(64.43%) patients fell into age group of 15-30years and 69(35.57%) patients were in age range of 31-45years.Mean age was 27.74 years $\pm$ 5.16.(Table no.I)

The results of our study in 194 pregnant anemic patients showed that 110(56.7%) were positive for beta thalassemia trait whereas 84(43.29%) had no beta thalassemia trait.(Table no.II)

The mean standard deviation for haemoglobin level was recorded as 9.43 mg/dl $\pm$ 0.40.

Stratification of beta thalassemia trait in pregnant anemic patients with age of mother(Table no.III) showed that out of 125 patients in 15-30years age range,65(52%) were positive for beta thalassemia trait whereas 60(48%) didn't show beta thalassemia trait.Out of the 69 pregnant anemic patients in age range of 31-45years,44(63.77%) had beta thalassemia trait and 25(36.23%) didn't had beta thalassemia trait.The p-value was 0.113 which is not significant.

TABLE NO.I : AGE DISTRIBUTION
(n=194)

AGE GROUP	NUMBER OF PATIENTS	PERCENTAGE
15-30 Years	125	64.43%
31-45 Years	69	35.57%
Total	194	100%
Mean and SD for age	27.74 Years ± 5.16	
Mean and SD for Hb level	9.43 mg/dl ± 0.40	

TABLE NO. II: FREQUENCIES AND PERCENTAGES OF BETA THALASSEMIA TRAIT.

(n=194)

BETA THALASSEMIA TRAIT	FREQUENCIES	PERCENTAGES
YES	110	56.7%
NO	84	43.29%

TABLE NO.III: STRATIFICATION OF BETA THALASSEMIA TRAIT WITH AGE.

(n=194)

AGE	BETA THALASSEMIA TRAIT	FREQUENCY	PERCENTAGE	p-value
15-30Years	Yes	65	52%	0.113
	No	60	48%	
	Total	125	100%	
31-45Years	Yes	44	63.77%	
	No	25	36.23%	
	Total	69	100%	

DISCUSSION:

Anemia among pregnant women is so common that healthcare providers may consider it a normal phenomena.Pregnant women with even mild anemia have increased perinatal and early neonatal mortality largely assoiated with preterm birth and growth restriction.Thalassemia trait in pregnancy is associated with mild hypochromic microcytic anemia[12].

Sinha M et all in a study done in India in 2006,where 120 pregnant anemic women were taken into consideration and it was found that 50% had positive beta thalassemia trait [13].Another study conducted at India by Mohanty D et all concluded that 55.9% of the pregnant anemic women had positive beta thalassemia trait [14].The results of the second study were very close to our study's results where 56.7% of pregnant anemic women were beta thalassemia trait positive.Hafeez M et all in their study at Lahore observed that 53.1% of the pregnant ladies presented with the diagnosis of beta thalassemia trait [15].

In a similar study done in New Delhi,India in 2014,the mean haemoglobin level was 9.8 $\pm$ 1.1 g/dl 15,whereas in our study this level was 9.43 $\pm$ 0.40 g/dl [16].

In a study done by Verma S et all in 2014,the mean age was found to be 29.2 $\pm$ 9.03 years [16] which is quite close to our study where this mean age was 27.74 $\pm$ 5.16 years.According to a study which was done in Bangalore,India by Sarda H et all,209 pregnant anemic women were studied,beta thalassemia trait had a preponderance of 108(51.6%) in anemic women of age group 21-30 years [17].This is in accordance with our study where we have observed that this haemoglobinopahty is more prevalent in 15-30 years age group,where out of 125 women,65(52%) were positive for beta thalassemia trait.Although the association of this haemoglobinopathy with age is statistically insignificant with p-value of 0.113.

There were several limitations in our study.First,the conventional screening technique of haemoglobin electrophoresis was used.Although newer and more accurate techniques have evolved now but those are expensive and not widely available.Secondly, Khyber Teaching Hospital was the only centre selected for the study.Inclusion of the other local hospitals could have given better idea about the prevalence of this disorder in a locality.

CONCLUSION:

In looking at reproductive or pregnancy related outcomes,anemia is an undesirable health outcome and a predictor or cause of other adverse outcomes.Since the majority of patients we reviewed were referred from peripheral areas where diagnostic facility is not available,this data is representative of overall prevalence of thalassemia trait in our province.An effective strategy of preventing the progression of disease might be a nationwide screening programme employing sophisticated techniques like polymerase chain reaction,direct sequencing,genetic counseling and creating public awareness.

REFERENCES:

1. Shawky RM, Kamal MT. Thalassemia intermedia: An overview. Egyptian Journal of Medical Human Genetics 2012; 13(3): 245- 55.
2. Little MP, Brocard P, ElliottP, Steer PJ. Haemoglobin concentration in pregnancy and perinatal mortality: A London based cohort study. Am J Obstet Gynecol 2005; 193:220-6
3. Usman M, Moinuddin M, Ghani R. Molecular genetics of beta thalassemia syndrome in Pakistan. East Mediterr Health J 2010; 16(9): 972- 6.
4. Quck L, Thein SL,. Molecular therapies in beta thalassemia. British Journal of Haematology 2009; 136(3): 353- 65.
5.Stephanson O, Dickman PW, Johansson A, Cnattingius S. Maternal haemoglobin concentration during pregnancy and risk of stillbirth. JAMA 20000; 284: 2611-7.
6.Amanat S, Ikram N, Baqai HZ. Pattern of Haemoglobin disorders. Journal of Rawalpindi Medical College 2012; 16(1): 15- 8.
7.Khattak SA, Ahmad S, Anwar J, Ali Khan, Shaikh KH. Prevalence of various mutations in beta thalassemia and its association with haematological parameters. J Pak Med Assoc 2012; 62(1): 40- 3.
8.Hussain J, Arif S, Zamir S, Mahsud MAJ, Jahan S. Pattren of thalassemias and other haemoglobinopahties: A study in district Dera Ismail Khan,Pakistan. Gomal MedJ Si 2013; 11:174- 7.
9.Ansari SH, Shamsi T, Ashraf M, Bohray M. Molecular epidemiology of beta thalassemia in Pakistan: Far reaching implications. Int J Mol Epidemiol Genet 2011; 2(4): 403- 8.
10. Saleem M, Ahmad PA, Mubarik A, Ahmad SA.Distribution pattern of haemoglobinopathies innorthern areas of Pakistan. J Pak Med Ass 1985; 35: 106- 9
11.Hanprasertpong T, Kor-anantakul O, Leetanaporn R, Suntharasaj T, Sawaranth C, Pruksanusak N, Pranpanus S. Pregnancy outcomes amongst thalassemia traits. Archives of Gynaecology and Obstetrics 2013; 288(5): 1051- 4.
12. Rousse DJ, Macpherson, Landon M, Varner MW> Blood transfusion and caesarean delivery. J Obstet Gynecol 2006; 108: 891- 7.
13. Sinha M, Panigrahi I, Shukla J, Khanna A, Saxena A. Spectrum ofanemia in pregnant anemic women and importance of antenatal screening. Indian J Pathol Microbiol 2006; 49(3): 373- 5

14. Mohanty D, Gorakshakar AC, Colah RB, Patel RZ, Master DC,Mahanta J.Intereaction of iron deficiency anemia and haemoglobinopathies among college students and pregnant women;A multi centre evaluation in india. Haemoglobin 2014; 38(4): 252-7
15. Hafeez M, Aslam M, Ali A, Rashid Y, Jafri H. Regionaland ethnic distribution of beta thalassemia mutations and effect of consanguinity in patients referred for prenatal diagnosis. JCPSP 2007; 17(3): 144- 7.
16. Verma S, Gupta R, Kudesia M, Mathur A, Krishan G, Singh S.Coexisting iron deficiency anemia and beta thalassemia trait:Effect of iron therapy on red cell parameters and hemoglobin subtypes. ISRN Haematology 2014.Hindawi publishing corporation.article ID 293216.http//dx.doi.org/10.11555/2014/293216
17. Sarda H, Niveditha SR, Shivlingaiah N. Screenign of beta thalassemia trait among pregnant women with NESTROFT. Thalassemia Reports 2015; 5(1). DOI: http://dx.doi.org/10.4081/thal.2015.4430

TO DETERMINE THE FREQUENCY OF BETA THALASSEMIA TRAIT IN PREGNANT ANEMIC PATIENTS.

ORIGINALITY REPORT

12%	8%	8%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Hanprasertpong, Tharangrut, Ounjai Kor-anantakul, Roengsak Leetanaporn, Thitima Suntharasaj, Chitkasaem Suwanrath, Ninlapa Pruksanusak, and Savitree Pranpanus. "Pregnancy outcomes amongst thalassemia traits", Archives of Gynecology and Obstetrics, 2013. Publication	2%
2	www.glowm.com Internet Source	2%
3	icmr.gov.in Internet Source	1%
4	Zhou, X.C.. "Microgravimetric DNA sensor based on quartz crystal microbalance: comparison of oligonucleotide immobilization methods and the application in genetic diagnosis", Biosensors and Bioelectronics, 200101 Publication	1%

5	pafmj.org Internet Source	1%
6	www.iqjb.net Internet Source	1%
7	kmj.kust.edu.pk Internet Source	1%
8	Fawibe, Ademola Onyedum, Cajetan Sogaolu. "Drug prescription pattern for asthma among nigerian doctors in general practice: A cross-sectional s", Annals of Thoracic Medicine, April-June 2012 Issue Publication	1%
9	old.oalib.com Internet Source	1%
10	www.medicalchannel.pk Internet Source	1%
11	www.sciencedomain.org Internet Source	<1%
12	medforum.pk Internet Source	<1%
13	Drukker, Lior, Yael Hants, Rivka Farkash, Rosa Ruchlemer, Arnon Samueloff, and Sorina Grisaru-Granovsky. "Iron deficiency anemia at admission for labor and delivery is associated with an increased risk for Cesarean section and	<1%

adverse maternal and neonatal outcomes : MATERNAL ANEMIA AND ADVERSE OUTCOME", Transfusion, 2015.
Publication

14 V. Laosombat. "Molecular basis of beta thalassemia in the south of thailand", American Journal of Hematology, 11/1992 <1%
Publication

EXCLUDE QUOTES	ON	EXCLUDE MATCHES	OFF
EXCLUDE BIBLIOGRAPHY	ON		