STUDY OF MATERNAL AND PERINATAL OUTCOME IN PREGNANCY ASSOCIATED WITH SICKLE CELL ANEMIA AND THALASSEMIA

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ABSTRACT

Background:

Aims: The aim of my study is to evaluate the maternal and perinatal outcomes in pregnant women with Sickle cell anemia and Thalassemia.

Material and methods: The present study was undertaken in Mamata General Hospital with an aim to know the occurrence of sickle cell anemia and thalassemia in antenatal women and to evaluate the maternal and perinatal outcome.

Results: Out of the 30 women considered for the study, 20 had sickle cell disease and 10 had thalassemia. Most common age group was between 21-25years of age in both groups of women with 85% and 50% in each respectively. Mean age is 23±2years. Contracted pelvis was the indication in 17% in SCD. However abnormal color doppler study was the indication in 8% of SCD women and 17% in women with thalassemia. Maternal request and abruption were the indications in 8% each in SCD group. The need for transfusion was seen in about 45% of the SCD women and in 30% of the women with thalassemia. The incidence of Low birth weight of <2.5kg was among the most probable cause for neonatal morbidity in 40% of the neonates born under in each group with SCD and thalassemia. There was 5% intrauterine fetal death and another 5% of the women had intrauterine growth retarded babies. In thalassemia the most common fetal complications were neonatal jaundice in 30%, low birth weight in 20% and respiratory distress in 20% respectively. The perinatal outcome in the 20 neonates born to women with SCD, 80% neonates were alive, intrauterine death was seen in 5% and neonatal deaths were 15%. Whereas in 10 neonates born to thalassemia women 70% of the neonates were alive and 30% neonatal deaths were recorded. Among the study group, the most preferred mode of family planning for the women with SCD in the present study was permanent sterilization in 50%. Next most preferred modality was injectable (DMPA) in 45%, and remaining 5% opted for barrier method of contraception.

Conclusion: The obstetric outcome in women with Sickle-cell disease showed significant maternal morbidity. However though low in prevalence, the obstetric outcome in the group of women with thalassemia had low incidence of complications when compared to pregnancies with SCD. However both the groups were prone to neonatal morbidity and mortality.

Keywords: Sickle-cell disease, Thalassemia, Neonatal morbidity, low birth weight, Respiratory distress

INTRODUCTION

Hemoglobinopathies are one of the commonly inherited monogenic autosomal recessive blood disorders, broadly classified as "Thalassemia's and "Sickle cell anemia". The former is caused due to disturbances in hemoglobin synthesis and the latter is caused due to structural defects of hemoglobin. The frequency of total hemoglobinopathies in India was reported to be 4.2%. Individuals with trait (carriers) are healthy and unaware of their carrier status unless specifically screened.The frequency of Beta thalassemia trait was reported to be varying from 1-17% and prevalence of sickle cell anemia varies from 5-40% among many tribal populations from different states. These disorders occurred most frequently in tropical regions in the past, however they are now encountered in most countries as a result of population migration.They are mainly reported in areas where malaria was or remains endemic, because carriers of inherited hemoglobin disorders are resistant to malaria.[1,3]

Pregnancy brings about a number of physiological changes for antenatal women and their adaptation to the physiological demands of pregnancy may exacerbate the underlying diseases (i.e. hemoglobin disorders) and increase the risk of obstetric complications. Anemia leads to insufficient delivery of oxygen to maternal and fetal tissues which might account for the adverse maternal and perinatal outcomes for pregnant women with inherited hemoglobin diseases. In addition, previously asymptomatic underlying chronic cardiopulmonary complications might be evident in some women with hemoglobin disorders due to physiologic stress in pregnancy. With advances in hematological management, women with hemoglobinopathies enjoy an increased life expectancy and quality of life.[3] Hence Better understanding of the pathophysiology of hemoglobinopathies will help clinicians to design appropriate screening approaches and will aid in preventing adverse outcomes during the maternal and perinatal period.

MATERIALS AND METHODOLOGY

All pregnant women visiting the Department of Obstetrics and Gynaecology at Mamata General Hospital, khammam from September 2018 - August 2020 were contacted for enrollment with a minimum sample size of 30.

Inclusion criteria : All or any women with confirmed pregnancy with an established diagnosis of sickle cell anemia and /or thalassemia attending the Department of Obstetrics and Gynaecology (OBG) at Mamata Medical College and hospital.

Exclusion criteria: Any women with confirmed pregnancy diagnosed with nutritional anemia and /or Antepartum haemorrhage, Antenatal women and /or legal guardians not consenting for participation in the study.

Consenting participants were interviewed using a pre-structured questionnaire. All the data were tabulated according to the age, socioeconomic status and consanguinity of the patient, detailed history regarding the antenatal checkups, duration of gestation age, detailed history was taken regarding episodes of painful crisis, any previous transfusion history and detailed obstetric history, past history, family history and personal history were noted.

In all the women basic investigations were carried out. Outcome of each pregnancy in detail was recorded. Compiled data was analyzed by simple descriptive statistics and frequency tables.

General nursing care, fluid and electrolyte balance were maintained, urine output was monitored with an indwelling catheter. Optimal oxygen supplementation in case of hypoxia, adequate analgesia for painful crisis was given. Blood Transfusions in case of severe anaemia. Antibiotics were prescribed in presence of pyrexia due to infections.

RESULTS

Table -1: Distribution of women based on age.

Age Factor	**SCD (N=20)**		**Thalassemia(N=10)**		**P-value**
	Number	**Percentage**	**Number**	**Percentage**	
≤ 20 years	1	5%	2	20 %	>0.005
21-25 years	17	85 %	5	50 %	
26-30 years	2	10 %	3	30 %	
Total	20	100%	10	100%	
Consanguinity					
Consanguinous marriage	5	25 %	3	30%	>0.005
Nonconsanguinous marriage	15	75 %	7	70 %	
Total	20	100%	10	100%	
Socio Economic Status					
Lower Middle	5	25 %	2	20 %	>0.005
Upper Lower	6	30 %	3	30 %	
Lower	9	45 %	5	50 %	
Booking status					
Booked	6	30 %	3	30 %	>0.005
Unbooked	14	70 %	7	70%	
Gravidity					
G1	7	35%	4	40%	>0.005
G2	5	25%	3	30%	
G3	5	25%	1	10%	
>G4	3	15%	2	20%	
Gestational age					
<32 wks +6 days	2	10%	0	-	
33-36 wks+6 days	7	35%	3	30%	
37-42 wks	11	55%	7	70%	
Vaginal Delivery					
Spontaneous	5	25%	2	20%	>0.005
Induced	3	15%	2	20%	

Cesarean Section				
Elective	5	25%	2	20%
Emergency	7	35%	4	40%

There is no difference in the demographic details in both group of pateints.

Table-2: Distribution of women with hemoglobinopathies based on electrophoresis

Hemoglobinopathies	**Number (N=30)**	**Percentage (100%)**
Sickle Cell Anemia	8	27 %
Sickle Cell Trait	12	40 %
Alpha Thalassemia	1	3%
Beta Thalassemia Minor	9	30 %
Total	30	100%

From the preliminary screening tests done for hemoglobin variants, out of the total 30 women a total of 40% (12) were diagnosed with sickle cell trait, 27%(8) with sickle cell anemia, 30%(9) with β thalassemia minor, 3%(1) with α thalassemia ,and none of the women had β thalassemia major in our study.

Table-3: Distribution of women with non-obstetrical maternal complications during pregnancy.

Non obstetrical maternal complications	**SCD(N=20)**		**Thalassemia(N=10)**	
	Number	Percentage	Number	Percentage
Jaundice	3	15 %	2	20 %
Severe Anemia	3	15 %	3	30 %
Vaso-Occlusive Crisis	3	15%	0	0
Urinary Tract Infection	2	10 %	1	10 %
Splenomegaly	1	5%	0	0
Thrombocytopenia	1	5%	0	0
Cholelithiasis	1	5%	0	0
Bronchial Asthma	1	5%	0	0
No Complications	5	25 %	4	40 %
Obstetrical Complications				
Previous Miscarriages	10	50 %	5	50 %
Oligohydramnios	2	10 %	0	0
Severe Preeclampsia	2	10 %	2	20%
Abruption	1	5%	0	0
IUFD	1	5%	0	0
Premature rupture of Membranes	1	5%	0	0
No Complications	3	15%	3	30%
Indications for cesarean section				
Previous LSCS	5	42 %	2	33%
Non reassuring fetal status	2	17%	3	50%

Maternal request	2	17%	0	0
Abnormal doppler study	1	8%	1	17%
Contracted pelvis	1	8%	0	0
Placental abruption	1	8%	0	0

This study confirms that pregnancy in women with SCD and thalassemia has numerous obstetrical, non obstetrical, complications.

Anemia, jaundice, preeclampsia and Vaso occlusive crisis were main maternal complications in the present study. Complications lead to preterm and more caesarian deliveries In the present study perinatal outcome is better in sickle cell trait than in sickle cell diseased mothers.

Table-4: Distribution of women based on the need for transfusions (n=30)

Need for transfusion	SCD(N=20)		Thalassemia(N=10)	
	Number	Percentage	Number	Percentage
Transfusion	9	45%	3	30%
No Transfusion	11	55%	7	70%
Total	20	100%	10	100%

Out of the 30 women in the present study, the need for transfusion was seen in 45% (9) of the SCD women and in 30% (3) of the women with thalassemia. Remaining 55% (11) of the SCD women and 70% (7) of thalassemia group of women did not have transfusion. Moreover, we have found difference between women who had prophylactic transfusions and those who did not.

Table -5: Distribution of babies based on outcome parameters.

Birth Weight		SCD(N=20)		Thalassemia(N=10)	
		Number	Percentage	Number	Percentage
≤1KG – 1.5kg		2	10 %	0	0
1.6 – 2kg		3	15 %	2	20 %
2.1 – 2.5kg		3	15 %	2	20 %
2.6 – 3kg		3	15 %	3	30 %
>3kg		9	45 %	3	30 %
APGAR SCORE					
1 min	1–3	2	10 %	2	20 %
	4–6	14	74 %	3	30 %
	7–9	3	16 %	5	50 %
	Total	19	100 %	10	100 %
5 min	4–6	7	37 %	4	40 %
	7–9	12	63 %	6	60 %
NICU Admissions					
Admitted		8	42 %	4	40 %
Not admitted		11	58 %	6	60 %
Total		19	100%	10	100%

Fetal Complication				
IUGR	1	5%	0	0
IUFD	1	5%	0	0
Neonatal jaundice	3	15 %	3	30 %
Low birth weight	3	15 %	2	20 %
Neonatal sepsis	1	5%	0	0
Respiratory distress	3	15 %	2	20 %
No complications	8	40 %	3	30%
Fetal Outcome				
Alive	16	80%	7	70%
Intra uterine fetal death	1	5%	0	0
Early neonatal death	1	5%	1	105
Late neonatal death	2	10%	2	20%
Total	20	100%	10	100%

. IUGR, IUFD, prematurity, Low Apgar scores were found as main fetal complications in our study, requiring more NICU admission of the neonates.

Table-6: Distribution of women according to acceptance of contraception

Type of contraception	**SCD (N=20)**		**Thalassemia (N=10)**	
	Number	Percentage	Number	Percentage
Barrier methods	1	5%	1	10%
Injectables (DMPA)	9	45%	4	40%
Permanent sterilization	10	505	5	50%
Total	20	100%	10	100%

The need for adequate reproductive family planning was counselled among the women considered for the present study, permanent sterilization was accepted in 50% (10) of the women with SCD and 50%(5) in women with thalassemia . Injectable was the choice in 45%(9) with SCD women and 40%(4) in thalassemic women, while 5%(1) of the women with SCD and 10% (1) of the women with thalassemia opted for barrier contraception.

DISCUSSION

Pregnancy in a woman with haemoglobinopathies is a high risk condition. Indeed, the risk of maternal and fetal complications is higher than in the general population. Chronic fetal hypoxia associated with decreased placental circulatory flow level seems to be the most plausible explanation for this high incidence of perinatal complications.

In the present study, out of the 20 antenatal women with sickle cell disease, most common age group at presentation was between 21-25years with mean age of 23 ± 2 years which is comparable to study by Narcisse Elenga and co-workers [2] who had women with mean age of 24.5years. In a study by Suheyl Asma and co-workers[4], in women with SCD the mean age was 27.4 years which is higher than the present study. In the present study among the 10 women with thalassemia the most common age group was also between 21- 25years with mean age of 26 ± 6years. In the study by Anahita Chauhan and Madhava Prasad [5] in women

with thalassemia and SCD the age group of 21–25 was seen in 35% which is less than the present study.

In the present study, 25% of women with SCD and 30% of women with thalassemia who participated had consanguinous marriages whereas majority of them 75% of SCD and 70% of thalassemia had non consanguinous marriages. In a study by Rahmat Ali Khan and co-workers[6] , the incidence of β thalassemia was highest among consanguinous marriages i.e 73% and a retrospective study in women with thalassemia conducted by Muhammad Sadiq Khan and co-workers[7] demonstrated a high rate of consanguinity in 74%, both the studies are contrast to the present study.

In the study by anahita and co-workers [5], majority of the women with thalassemia and SCD had non consanguinous marriages in 95% which is higher than the present study. In a study by Laura Maffei and co-workers [8] 10% of women with thalassemia and SCD had consanguinous marriage which is lower than the present study. Since Sickle cell disease and thalassemia are one of the major autosomal recessively inherited blood disorders, they are usually associated with consanguinity, and since the women in the present study are aware of the consequences related to consanguinous marriages , majority of them had non consanguinous marriages (75%).

In the present study, most of the women with sickle cell disease and thalassemia belonged to lower class 45% and 50% respectively, followed by upper lower class 30% each group respectively, and then lower middle class about 25% and 20% in both groups respectively, and none under upper class and upper middle class.. In a study by Maria lucia and co-workers[9] found that majority of the groups with SCD 45% belonged to lower class. Both the above studies are supporting our present study. In a study by Fernandes and co-workers [10] lower socioeconomic status shares the maximum prevalence of SCD 72% and thalassemia 60%

In the present study, maximum number of women with sickle cell anemia and thalassemia were unbooked cases i.e 70% and the remaining 30%, were booked cases in both the groups respectively. In a study by Ogbonna Collins Nwabuko and co- workers[11] about 81% of the SCD women were booked cases and 19.2% were unbooked cases.

In study by Anahita Chauhan and Madhva Prasad [5], where women with SCD and thalassemia, 63.3% of the patients were booked cases while 30% were unbooked both these studies are contradicting our present study. Since our hospital works as a tertiary care centre and the biggest provider of maternal health care, most of the women were referred from the rural centres in their late trimesters in view of complications, hence majority of the women were unbooked cases.

In the present study 40% women were diagnosed to have sickle cell trait, 27% had sickle cell anemia, 30% had β thalassemia minor and 3% had α thalassemia while none had β thalassemia major. In a study by Neema Acharya and co-workers [12], majority of the patients had sickle cell trait similar to present study. A total of 27% women were homozygous in comparison to 70.5% traits in Brazilian study. which is comparatively lower than the present study. Since majority of the women in the present study come from the rural belt of khammam district which have high prevalence of sickle cell disease, majority of them were diagnosed with sickle cell traits, more than β thalassemia traits during their antenatal period.

In the present study majority of the patients were primigravidae women with SCD (35%) and thalassemia (40%) followed by 2nd gravida with 25% and 30% respectively. 3rd gravida were 25% and 10% respectively. 4th gravida and more were 15% in SCD and 20% in thalassemia group. In a study by Anahita Chauhan and Madhva Prasad[5] in women with SCD and thalassemia, Primigravidae formed the highest percentage of patients. Out of 516 pregnancies with thalassemia, majority were singleton pregnancy, followed by second gravida in a study by Chanane Wanapirak and co-workers [13] which was similar to present study. In a study by Sedigheh Amooee and co- workers [15] where 59% of the women with thalassemia were primigravida followed by 38.9% in multigravida which is higher compared to present study. Since our hospital is a tertiary care centre and better provider of maternal health and neonatal care hence majority of the women present during their 1st pregnancy for antenatal checkups and referred women based on unforeseen complications which couldn't be managed in a rural health care centre.

Based on gestational age in the present study, among the women belonging to sickle cell disease majority of the women were between 37-42weeks (55%), (35%) were between 33-36wk and 6 days, and 10% were less than 32weeks and 6days. Similarly (70%) women belonging to thalassemia were between 37-42 weeks, rest of the 4 women delivered (30%) between 33-36weeks and 6 days. In a study by F. O. Galiba Atipo Tsiba and co-workers [16] the gestational age at delivery was 35 weeks i.e 45% for SCD women which higher than the present study.In a study by Anahita and co-workers [5] majority of the women with thalassemia (70%) delivered between 37 and 40 weeks of gestation. In a study by Francesco Sorrentino and co-workers [14] in women with thalassemia and SCD with 77% of deliveries between 37-38weeks which is higher than the present study for the women with thalassemia. Hence based on the gestational age at which they presented to our centre, majority of the women were term pregnancies since they were unbooked cases and referred in view of pregnancy associated complications and similar results are seen in all the above studies.

The clinical profile of the patients with non-obstetrical complications among the 30 women presented in the study revealed that out of the 20 women with SCD, jaundice, severe anemia and vaso occlusive crisis was most common 15% in each group followed by Urinary tract infection 10% of the women. Splenomegaly, thrombocytopenia, cholelithiasis and bronchial asthma was seen in 5% each group of the patients with SCD. However, no complications were seen in 25% women. Among the 10 women with thalassemia, 20% had jaundice, 30% had severe anemia 10% had Urinary tract infection and remaining 40% had no complications.

Vaso occlusive crisis is the most frequent complication of SCD during pregnancy according to RCOG [25–50%]. It complicated 15% of all pregnancies in the present study also. Relatively similar results are seen in a study by Narcisse Elenga and co- workers [2] in women with SCD where severe vaso occlusive crisis was seen in 19% and Urinary tract infection in 30%, these studies had results higher than the present study. Since hemolytic anemias are associated with low hematocrit values and pregnancy is a state of immunosuppression, their increased incidence of non obstetrical complications which are evident in the present study.

The clinical profile of obstetrical complications revealed among the 30 women in the present study, out of the 20 women with SCD, miscarriages were the most prevalent

clinical problem seen in 50%, followed by severe preeclampsia and oligohydramnios in 10% each group and 5% of SCD patients presented with abruption and PROM and IUFD in each respectively and remaining 15% of the patients had no complications. Among the 10 women with thalassemia, miscarriage was the most prevalent in 50%, followed by severe preeclampsia in 20% and remaining 30% had no complications.

In a recent study by F. O. Galiba Atipo Tsiba and co-workers [16] history of miscarriages was 30% in women with SCD which are similar to present study. In a study by Elenga N and co-workers [2] in women with SCD, the incidence of miscarriages is 11% and overall incidence of intra uterine fetal death was 11%. This bias is related to the retrospective nature and the high sample size of the above study compared to the present study with low sample size and also early referrel to our centre with the onset of warning signs has helped us to prevent such complications. In a study by Chauhan A and co-workers [5] in women with thalassemia and SCD the incidence of oligohydramnios was 3%, Preterm labor in 1%, PIH in 3.5%, which are lower than the present study. In a study by Francesco Sorrentino and co-workers [14] among SCD and thalassemia groups the incidence of spontaneous abortion is 5% which is very much lower than the present study.

A case control study done in women with beta thalassemia by Amooee and co- workers [15] observed high prevalence of severe oligohydraminous 45% more than preeclampsia 30% which is higher as compared to present study. In heterozygous condition, complications are less severe. However in association with inherited haemoglobinopathies, pregnancy losses are among the major complications in the present study. Hence it is concluded that while caring for women with SCD and thalassemia we should be aware of increased risk for pregnancy associated complications, although overall pregnancy outcome is favourable.

In the present study about 45% of SCD women needed transfusions and 30% of thalassemia women needed transfusion. In a study by Narcisse Elenga and co-workers [2]19% needed transfusion during pregnancy, both the studies are lower than the present study.

In a study by Laura Maffei and co-workers[8], among women with thalassemia 22% needed transfusion which is almost near similar to present study and only 3% of scd group needed transfusion which is very much lower than the present study. In a study by Prasad M and co-workers [5] 62% of women with SCD needed transfusion which is higher than the present study and 38% of women with thalassemia needed transfusion which is similar to present study. In a study by Sedigheh Amooee and co-workers [15] 4.4% of the women with thalassemia needed transfusion which is comparatively lower than the present study. This indicates that there is a very high prevalence of anemia especially nutritional anemia among pregnant women in this region with low socioeconomic status being the major factor in the present study.

In the present study among the women with SCD majority of them delivered at term i.e 55% and 45% delivered preterm. Among the 10 women belonging to thalassemia, majority of them delivered at term i.e 70% and 30% had preterm deliveries. Narcisse Elenga [5] both the studies are similar to present study. In a study Maria Lúcia Ivo and co-workers [9] about 21% women with SCD and thalassemia combined had 21% of preterm deliveries. In a study by Asma A Eissa and co-workers [4] in women with SCD and thalassemia the incidence of preterm delivery was 16–24% which is similar to present study. In a study by Sedigheh Amooee and co-workers [15] term deliveries in women with thalassemia was 94% Since the

women were given required supportive therapy and blood transfusions for correction of anemia, majority of the women were delivered at term.

In the present study among 30 women, 20 women with SCD had 25% spontaneous vaginal delivery and 15% were induced, Remaining 60% had cesarean section. Where as in women with thalassemia, 20% had spontaneous vaginal deliveries and 20% had induced deliveries. Remaining 60% had cesarean section. Study by Narcisse Elenga and co-workers[2], Cesarean section was the mode of delivery in 37% which is lower than the present study. In a study by Asma A Eissa and co-workers [4] in women with SCD and thalassemia, the rate of cesarean delivery was 30-70% which is on a higher side compared to present study. In the study by Francesco Sorrentino and co-workers [14] in women with thalassemia and SCD the cesarean delivery was applied in 91%, and 9% were spontaneous vaginal deliveries and in a study by Sedigheh Amooee, and co-workers[15], 38.3% of the women with thalassemia had Cesarean delivery and 60% had vaginal deliveries which are contrasting to the present study. Depending on the gestational age of the fetus, fetal well-being, presence or absence of amniotic fluid, Bishop score and maternal condition, a caesarean section was the preferred mode of delivery. Prudent and prompt selection of cases for either vaginal delivery or cesarean section has positive impact on the maternal and perinatal outcome.

The most common indication for cesarean section in the present study was previous LSCS in both groups i.e 42% women with SCD and 33% with thalassemia followed by maternal request 17% in SCD group, fetal distress was the indication in 17% in SCD group and 50% in thalassemia group. Abnormal Doppler study was seen in 8% of women with SCD and 17% in thalassemia. Contracted pelvis and abruption were seen in 8% each in women with SCD and none in thalassemia group. In a study by Narcisse Elenga and co-workers [2], in women with SCD the indication for cesarean with fetal distress was 22% which is higher than the present study. Anahita chauhan and co-workers [5], in women with thalassemia and SCD, most common indication for cesarean delivery was fetal distress 33% lower than the present study.

In a study by Asma A Eissa and co-workers [4] in women with thalassemia and SCD the most common indication for cesarean was fetal distress during labour in 30% which is higher than the present study. In order to improve maternal and perinatal outcome elective and emergency cesarean sections were planned to terminate the pregnancies presenting with obstetric complications.

Birth weight and birth weight centiles were analysed for infants born to women with SCD in which majority of the neonates i.e 45% were born with weight > 3kgs and 15% were between 1.6-2kg , 2.1-2.5kg and 2.6-3 kgs and remaining 10% between ≤1-1.5kgs, the mean birth was 2.6kg,. whereas neonates born to women with thalassemia shared birth weight between 2.6-3kgs and >3kgs equally i.e 30% each and remaining 20% of the newborns were born with birth weight between 1.6-2kgs and 2.1-2.5kgs each and none with birth weight 1-1.5kg. The mean birth weight was 2.5kg. A study by Chauhan and co-workers[5] in women with thalassemia and SCD, the mean birth weight was between 2.5-3kgs which is similar to present study. In a study by Francesco Sorrentino and co-workers[14] in women with thalassemia, the mean birth weight was 2.3kg similar to the present study. The contrasting results are because of high prevalence of teenage pregnancy associated with nutritional anemia and obstetrical complications in the present study. Perinatal outcome is

improved by early intervention by delivery depending on maternal and fetal condition. Most of the babies were delivered immediately through cesarean route which improved perinatal outcome.

In the present study it was found that 1 min Apgar score in the present study out of the 29 women who delivered live babies, 19 women showed that 74% of the newborns of SCD mothers was between 4-6, 16% was between 7-9 and only 10% was between 1-3. Whereas 10 newborns of thalassemia women had Apgar score between 7-9 in 50% and 30% were between 4-6 and 20% with 1-3. 5 min Apgar score showed 63% of neonates born to SCD mothers was between 7-9 , 37% had score between 4-6 and none with 0 score. Whereas 60% of neonates born to thalassemia mothers had score between 7-9, and 40% had score between 4- 6 and none with 0 score.

However in a study by Sedigheh Amooee and co-workers [15] in women with thalassemia about 19% of the babies with Apgar score at 1 min was <7 and 7% with Apgar score at 5 min was <7, when compared to present study is very low. Hence early intervention and prompt delivery in presence of obstetrical complications has significantly improved the perinatal outcome.

Based on the present study among the 20 women with SCD the Incidence of low birth weight, neonatal jaundice and respiratory complications were among the most fetal complications that is 15% each and incidence of IUGR, IUFD and sepsis was 5% each and remaining 40% had no complications. Among the 10 women with thalassemia the incidence of neonatal jaundice was 30% followed by low birth weight and respiratory distress in 20% each and 30% had no complication.

In a study by Chauhan and co-workers [5] in women with thalassemia and SCD the incidence of IUGR was 6.6% which is similar to present study. In a study by Francesco Sorrentino and co-workers [14]in thalassemia and SCD the incidence of respiratory distress was 11% which is lower than the present study. In a study on thalassemia in pregnancy by Amooee and co-workers [15] incidence of perinatal complications most common was respiratory distress 35%, and these findings are higher compared to our present study.In a study by Asma A Eissa and co-workers[4] in women with SCD and thalassemia the incidence of IUGR was 18-23% which is higher than the present study. Neonatal morbidity increased with severity of complication. Adequate antenatal care and education along with good NICU facilities regarding the consequences will reduce the complication rate.

In the present study about 42% of the babies born to SCD mothers were admitted in NICU while majority of the babies dint require NICU admissions. However babies born to thalassemic women NICU admission was required in 40% and rest 60% did not need admissions. In a study by Maria Lúcia Ivo and co-workers [9] in women with SCD and thalassemia about 15.6% newborns needed NICU admission which is very low compared to present study.

In the present study majority of the babies 80% born to SCD had no neonatal complications and only 10% of them had late neonatal death followed by 5% who had early neonatal death and intra fetal death in each respectively. And babies born alive to thalassemia mothers was 70% and late neonatal death was in 20% and early neonatal deaths was 10% and while there were no intra uterine death present. In a study by Chauhan A and co-workers [5] in thalassemia there was 95% live birth rate which is higher than the present study and no early

neonatal death was reported. Perinatal mortality is an important indicator of the status of maternal and child health. It is also an indicator of the condition of obstetric care and the level of economic development of a community.

In the present study the women with SCD and thalassemia opted for permanent sterilization about 50% in each group. 45% of the SCD women and 40% of women with thalassemia used injectables (DMPA), 5% women with SCD and 10% of women with thalassemia used barrier methods. None opted for oral contraceptive method under both groups. A Cochrane review by Manchikanti and co-workers [17] reported that DMPA use in women with SCD was a common contraceptive option (55%) which is higher than the present study however no trial involving estrogesn products was reported similar to present study. Howard and co-workers [18] investigated the use of contraceptives in women with SCD and thalassemia, DMPA was used by 17% which is lower than the present study. Despite the known side effects of long-acting progestogens, they have proven to be an important contraceptive method appropriate for women who have completed their desired family size and are awaiting permanent sterilization. There are many advantages in addition to the contraceptive effect, such as reduced rates of anemia especially SCD & thalassemia.

CONCLUSION

To conclude, Sickle cell disease was the most common hemoglobinopathy affecting pregnancy in our study. The obstetric outcome in women with Sickle-cell disease showed significant maternal morbidity. However though low in prevalence, the obstetric outcome in the group of women with thalassemia had low incidence of complications when compared to pregnancies with SCD. However both the groups were prone to neonatal morbidity and mortality.

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