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SICKLECELL ANAEMIA AND ITS EFFECTS ON FETOMATERNAL OUTCOME

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Abstract
Objectives: To determine the perinatal outcome in pregnancy with sickle cell anemia.

Methods: This is a prospective observational study, for which 2214 of pregnant women were chosen from ANC OPD obstetric ward and labor room. All of them were screened for sickle cell anemia, as the prevalence rate in this part of Orissa is 2.8% of the pregnant women, 62 women were found to be positive for either sickle cell disease or trait, confirmed by electrophoresis. Perinatal outcome as regards birth weight, Apgar score, NICU admission and perinatal loss were tabulated, Wherever applicable, chisquare test was applied.

Results: The overall incidence of sickle cell anemia was 2.8%. Out of 62, sickle cell disease (SS) was found in 25 cases (40.32%) and sickle cell trait (AS) in 37 cases (59.68%). SS incidence is 1.12% and AS incidence is 1.67% overall in the pregnant population. Prematurity was detected in 36% of (SS), 5.4% of (AS). Low birth weight babies born to SS, AS were 60%, 24.32%, respectively. Perinatal mortality was 4% in (SS), none in (AS).

Conclusions: The incidence of preterm deliveries, perinatal mortality and low birth weight babies are significantly high in women with sickle cell disease. However the perinatal outcome in mothers with sickle cell trait is better as compared to sickle cell disease.

Key words: sickle cell anaemia, sickle cell disease, sickle cell trait,

Introduction

Sickle cell disease in pregnancy still remains a major challenge for gynecologists, trying to improve the quality and duration of life of both the affected mother and the foetus. The world population report (1975) gives the incidence of anemia to be 100% among pregnant women in India5. Sickle cell haemoglobinopathy is a very common disease in this belt of western Odisha,India and is very

prevalent (2.8%) in pregnant woman attending the ante natal OPD having either SS or AS character[1]. Sickle cell
disease is an important hereditary haemoglobinopathy, a type of disease characterized by production of defective haemoglobins[1]. Sickle cell hemoglobin is produced by substitution of valine by glutamic acid at position 6 of β chain of the normal hemoglobin .Gene mutation – when homozygous, the individual has sickle cell anaemia (Hb SS) ; when heterozygous ,the individual has sickle cell trait (Hb AS)2 .The abnormal HbS tends to polymerize on deoxygenation and red blood cell containing HbS becomes less pliable and consequently deform into the sickle shape. Sickle cell disease is a multi system disorder and risk of sickle cell anaemia during pregnancy includes an increase in gestational hypertension, preterm birth and small-for-gestational-age infants, chronic hemolysis, postpartum hemorrhage, repeated infections, growth retardation in addition to an acute life threatening complication called Crisis. Pain from ischemic necrosis of bone marrow or other organs usually becomes more frequent. Pulmonary complications are also common. Risks of maternal mortality are increased. Fetal wastage is also common and more than one third of pregnancy in woman with sickle cell syndrome have terminated in abortion, still birth or earlyneonatal death[3]. Low birth weight babies were born to SS mothers due to premature deliveries and fetal growth retardation[4]. Perinatal mortality is also very high[5,6]. Hence this study was undertaken to assess the complications arising in perinatal period, the pregnancy outcome in sickle cell disease women and ways and methods through which such complications can be avoided or minimized to decrease perinatal abnormalities .perinatal period, the pregnancy outcome in sickle cell disease women and ways and methods through which such complications can be avoided or minimized to decrease perinatal abnormalities perinatal period, the pregnancy outcome in sickle cell disease women and ways and methods through which such complications can be avoided or minimized to decrease perinatal abnormalities .

Objective:

To study the perinatal outcomes and complications of pregnancy in babies born to mothers with sickle cell anaemia or trait.

Methods

This was a case controlled study, carried out in the Department of Obstetrics and Gynecology, MKCG Medical College Berhampur from January 2019 to December 2021. Total of 2214, pregnant women attending the ANC OPD or admitted to obstetric wards or labor room were screened for sickle cell anemia. Cases that were positive for sickling test were subjected for Hb electrophoresis to differentiate SS from AS. All these positive cases were subjected for detailed examination and investigations like urine examination to detect bile salts by Hay's test, bile pigment by
Fouchet's test & urobilinogen by Ehrlich aldehyde test. Diagnostic hemoglobin estimation and total leucocytic counts were done to rule out infection. USG was done routinely in all cases for fetal growth retardation. After delivery, the babies were weighed. Maturity of newborn babies was assessed and Apgar scoring was done. Resuscitation was done in babies with low Apgar. Selected cases were referred to NICU/SNCU. The newborn babies were followed for seven days after the delivery for any neonatal complication.

Results

Out of total 2214 cases, the incidence of sickle gene in the present study was found in 62 cases (2.8%) of which sickle cell disease (SS) was 25 cases (40.32%) & sickle cell trait (AS) was 37cases (59.68%). Overall incidence of SS is 1.12% and AS is 1.67%. The mean age of pregnant mothers with SS, AS were 24.2, 24.11 respectively. The mean gravida of SS, AS group of women were 1.84, 1.98 respectively. The mean parity of SS, AS mothers were 0.68, 0.87 respectively. In the SS group, 32%, in AS group 10.81% of women were severely anemic. Cesarean section was done in 20%, 37.84%, cases of SS, AS group respectively. Vaginal deliveries deliveries were done in 80%, 62.16% in SS, AS group respectively. Low birth weight babies more commony born to SS group as compared to AS

mothers. Low birth weight babies are significantly more (P<0.05) in SS group. Need for SNCU and NICU admission is more in SS group of mothers. Only one case of Intrauterine fetal death was seen in SS group of patient. Maternal complications are more in the SS group. There was no maternal deaths in any of the groups but the need for ICU for mothers was more in the SS group.(Table 1-4).

TABLE 1: SICKLING INCIDENCE

Sickling	Number of cases	Percentage
SS	25	40.32%
AS	37	59.68%
Total	62	100%

TABLE 2: TYPE OF DELIVERY

Type of delivery	SS	Percentage	AS	Percentage
Vaginal delivery	20	80	23	62.16
LSCS	5	20	14	37.84

TABLE 3: MATERNAL COMPLICATIONS

Complications	SS	Percentage	AS	Percentage
Sickle crisis	4	16%	0	0%
Urinary tract infection	7	28%	17	45.94%
Severe Anaemia	8	32%	4	10.81%
Pre eclampsia	6	25%	2	5.40%

TABLE 4: FETAL OUTCOME:

Fetal outcome	SS	Percentage	AS	Percentage
Birthweight <1000gm	3	12	0	0
Birth weight 1000gm to 2000gm	4	16	2	5.4
Birth weight 2000gm to 2500gm	8	32	7	18.9
Birth weight >2500gm	10	40	28	75.6
Preterm	9	36	2	5.4
Term	16	64	35	94.59
IUD	1	4	0	0
APGAR <5	5	20	1	2.7
APGAR 6-8	6	24	3	8.10
APGAR 9-10	13	52	33	89.18
SNCU/NICU Admission	5	20	1	2.7

Conclusion

Sickle cell hemoglobinopathy is a common disease in the pregnant women of Orissa. The overall incidence of sickle cell disease was 1.12% and sickle cell trait was found to be 1.67% in these pregnant women respectively.The incidence of preterm deliveries, perinatal mortality and low birth weight babies and incidence of cesarean section in women with sickle cell disease is significantly high compared to controls.Need of ICU for mothers is more in Sickle cell disease patients. However the perinatal outcome in mothers with sickle cell trait is favorable compared to sickle cell disease cases. Screening of all cases of anemia in antenatal cases in prevalent area and early, aggressive and comprehensive perinatal care can improve the perinatal outcome in these high risk mothers.

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