

A STUDY OF SICKLE CELL TRAIT COMPLICATIONS IN PREGNANCY & DELIVERY AT TERTIARY LEVEL CENTERSurekha Narayan Khandale¹, Kshama Kedar²**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: OBJECTIVE: To study the outcome of pregnancy in women with sickle cell trait (SCT) and compared with normal hemoglobin. **METHODS:** This is a comparative study consisted of 75 pregnant women with SCT who were attending the antenatal clinic & admitted in obstetric ward were followed till 7th day after delivery. The control group consisted of 150 age and gravidity matched pregnant women with normal hemoglobin recruited from same hospital. **RESULTS:** Statistically significant complications during pregnancy were preeclampsia; UTI, eclampsia and severe anemia were observed. Incidence of adverse fetal outcome in terms of stillbirth and intrauterine death were significantly higher in the study group than control group. **CONCLUSION:** At tertiary level hospital which is also a regional centre for sickle cell hemoglobinopathy, still SCT was a important contributor for adverse maternal and fetal outcome. Hence vigilant observation & care is needed for SCT women.

KEYWORDS: SCT-sickle cell trait, SCD-sickle cell disease, AA-women with normal hemoglobin, AS-women with sickle cell trait, UTI-urinary tract infection, IUD- intrauterine death, END_early neonatal death.

INTRODUCTION: Anemia is an important factor affecting the health of pregnant women in India and all over the world. In India sickle cell anemia is important cause of anemia in pregnancy, more prevalent in Vidarbha and Central India. Sickle cell trait is potentially dangerous in the presence of certain disease states and in healthy persons under certain circumstances which lead to anoxia, dehydration or in physical stress.¹ Women with HbAS reported higher incidence of intrapartum and postnatal complications. Hence watchful follow up of pregnancies among women with sickle cell trait is very necessary.²

Hence this study is carried out to study outcome and complications of pregnancy in women with sickle cell trait.

METHODS: The present comparative study was conducted between the periods of 2 year (2007-08) in the department of Obstetrics & Gynecology, Indira Gandhi Govt. Medical College Nagpur. It is a tertiary level hospital & also a regional centre for sickle cell hemoglobinopathy.

75 women who were diagnosed with sickle cell trait were selected women attending antenatal Clinic in early 1st trimester and from obstetrics ward. 150 Women with normal hemoglobin were taken as control group. Two controls were selected for each subject by matching age and gravidity. The demographic characteristics' of women like age, gravidity, caste, religion, family history, socioeconomic status were noted. A thorough obstetric history, significant past history and family history noted. Detailed clinical examination, blood, urine tests were carried out at the time of registration.

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These women were followed up in ANC clinic and PNC ward till 7th day. Complication during pregnancy, at the time of delivery or in the 7 day of puerperium, mode of delivery and fetal outcome noted.

Statistical Analysis: Continuous variables like age, birth weight and hemoglobin were presented in mean \pm SD, categorical variables were expressed in percentage, and continuous variables were compared between "AS" and "AA" groups by performing un-paired t-test. Categorical variables were compared by Chi-square statistics and Fisher-Exact test for small numbers. $p < 0.05$ was taken as statistical significance. Data was analyzed with statistical software STATA version 10.0.

RESULTS: The mean Hemoglobin level in the AS group (9.15 ± 1.16) is significantly lower than that in AA group (9.56 ± 0.59). (p -value 0.0006 HS). The results of study are tabulated in Table 1, 2, 3, & 4.

DISCUSSION: Significant difference was found between the mean Hb level in 'AS' group (9.15 ± 1.16 gm%), & in 'AA' group (9.56 ± 0.59 gm%). Study conducted by Sonwane Anju et al (2005)¹ reported the mean Hb level in 'AS' group was 8.77 gm/dl, was lower than that in 'AA' group (mean Hb 9.36 gm/dl). Comparing our study with above study, result was comparable and showed that the mean hemoglobin level was lower in the sickle cell trait group.

Western literatures show a lower incidence, Study conducted by Fouche and Switzer (1949)³ reported incidence of anemia 37.4% while Tuck and Studd (1983)⁴ reported 47.4% cases of anemia. Hamdi Illham M (2002)⁵ reported that there was increase in the incidence of anemia in sickle cell trait group. The result of our study correlated with above study. In our study severe anemia was seen in four (5.33%) cases (< 7 gm %) in 'AS' group whereas no patients of 'AA' group had severe anemia.

In our study, 92.84% of patients in 'AS' group had anemia with hemoglobin less than 10 gm%. The incidence of anemia is highest in our study. Probable cause of this is higher incidence of coexisting nutritional deficiency anemia and lack of awareness about the disease in patients in Indian scenario.

Tuck SM (1983)⁴ reported 6% incidence UTI in his study. Baill (1990)⁶ reported incidence of urinary tract infection in 13 – 15% of cases, which correlates with our study. Abdulsalam (2003)² reported 3.1%. Sonwane Anju et al (2005)¹ reported the incidence of urinary tract infection 1.07%,

Incidence of urinary tract infection is highest in our study (14.67%) as compared to above studies. All these patients were complicated pre-eclampsia, eclampsia cases, urinary tract infection due to papillary necrosis in renal medulla.

Freeman and Ruth (1969)⁷ reported incidence of pre-eclampsia in 32.6% cases. Horger (1974)⁸ reported pre-eclampsia in 29% cases; Larabee KD (1997)⁹ reported 24.7% cases of pre-eclampsia, Sonwane Anju (2005)¹ reported 36.55% cases of pre-eclampsia in sickle cell trait group which is correlating with our study.

Abdul Salam et al (2003)² reported incidence of fever in 6.2% patients in 'AS' group. Sonwane Anju (2005)¹ reported incidence of fever in 1.07% cases in 'AS' group which is comparable with our study.

Fouche and Switzer (1949)³ reported incidence of preterm labor in 19.4% of cases, Tuck and Studd (1983)⁴ reported incidence of preterm labor in 13.3% of cases. The results of our study correlate with above two studies.

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Mean birth weight in our study in 'AS' group 2576±562.23 gm and in control group mean birth weight is 2622.67±307.49 gm and the difference found to be non-significant. Larabee KD (1997)⁹ reported mean birth weight in 'AS' group 3082 gram ±591 and in 'AA' group 3369±573 grams. Tuck SM (1983)⁴ reported mean birth weight of babies' 3202 gram and compared with a comparable group of women without sickle cell trait and found that there was no difference in mean birth weight. P. Blatnner (1977)¹⁰ Abdulsalaam (2003)² found that there is no significant difference between the birth weight of the babies born to sickle cell trait and 'AA' control group

The results of our study correlates with the above studies and showed no difference between birth weights.

Perinatal Outcome: In our study out of 75 cases of sickle cell trait 61(81.33%) were lives birth, five (6.66%) were intrauterine deaths, four (5.33%) were early neonatal death and five (6.66%) were stillbirth. In control group 143(95.33%) were live birth, two (1.33%) were stillbirth, intra uterine deaths in two (1.33%) cases and three (2%) early neonatal deaths.

The difference for live birth (p-value 0.001) was highly significant, for IUD (p value 0.043) and still birth (p value 0.043) was significant while for END (p-value 0.226) it was not significant.

Sonawane Anju (2005)¹ reported the incidence of perinatal mortality of about 14.44% in sickle cell trait group and 2.95% in 'AA' group. Michelle Y. Taylor (2006)¹¹ reported incidence of fetal death in 'AS' group 9.7% and 3.5% in 'AA' group The results of our study correlating with above studies and shows that there is increased fetal wastage in sickle cell trait group as compared to control group.

Conclusion: Sickle cell trait is an important contributor for adverse maternal & perinatal outcome. Hence meticulous antenatal care, close observation coupled with obstetric & hematologic consultation is necessary to improve to get healthy mother & healthy baby.

Hb (gm/dl)	AS subjects		AA controls	
	No	%	No	%
<8	16	21.33%	4	2.67%
8-10	54	72 %	120	80%
>10	5	6.66 %	26	17.33%

Table 1: Distribution according to hemoglobin level:

Complications	AS		AA	
	No	Percent	No	Percent
Severe anemia	4	5.33	0	0
UTI	11	14.67	5	3.33
Pre-eclampsia	22	29.33	15	10
Eclampsia	3	4	0	0
Fever	2	2.67	3	2
Preterm labor	11	14.67	15	10
Hematuria	2	2.67	0	0

Table 2: Maternal complications during pregnancy and child birth

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Birth weight (gram)	AS		AA	
	No	Percent	No	Percent
< 999	1	1.33%	0	0%
1000-1499	3	4%	0	0%
1500-1999	9	12%	5	3.33%
2000-2499	16	21.33%	44	29.33%
>2500	46	61.33%	101	67.33%
TOTAL	75	100%	150	100%

Table 3: Distribution according to birth weight:

Fetal outcome	AS		AA		P Value	Significance
	No.	Percent	No.	Percent		
Live birth	61	81.33	143	95.33	0.001	HS
IUD	5	6.66	2	1.33	0.043	S
END	4	5.33	3	2	0.226	NS
Stillbirth	5	6.66	2	1.33	0.043	S

Table 4: Distribution of fetal outcome

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