International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

A Clinical Study of Fetal and Maternal Outcome in Sickle Cell Disorder in Pregnancy

Dr. Divyakshi Rajput[1], Dr. P. Revathi[2]

[1]Postgraduate, 3rd Year, Great Eastern Medical School and Hospital (GEMS)

[2]HOD & Professor, Great Eastern Medical School and Hospital (GEMS)

Abstract: ***Aims and Objectives: Aim: to study prevalence of Sickle cell disorders in pregnant women and its Fetal and maternal outcome. Study Design: Prospective study. Objective: To guide the health care professionals in providing evidence - based care improving outcomes, enhancing overall quality of care for pregnant women with Sickle cell disorders. Conclusion: The present study reported a greater risk and adverse pregnancy outcomes in women with SCD as compared to sickle cell trait. Pregnancy with combined SCD and Anaemia possess a greater challenge in achieving better maternal and fetal outcomes in developing countries.***

Keywords: Sickle Cell Disorders, Anemia, Sickle cell trait, Hemoglobinopathy

1. Introduction

Sickle cell disease is a common and life - threatening haematological disorder that affects millions of people worldwide [(1).] Sickle cell disease (SCD) is a hereditary blood disorder characterized by the production of abnormal hemoglobin molecules that cause red blood cells to take on a crescent or sickle shape [(3).]

This condition affects millions of people worldwide, particularly those of African, Mediterranean, Middle Eastern, and South Asian descent [(3).]

Spectrum of SCD includes Homozygous sickle cell anemia (SCA) (HbSS) and the heterozygous sickle cell trait (SCT) [HbSA] and additional clinically atypical hemoglobin, e. g., HbSC, HbS Beta thalassemia [(2).] Those with HbS beta^0 - thalassemia usually have a severe form of SCD. People with HbS beta$^+$ - thalassemia tend to have a milder form of SCD. [(2)]

Sickle cell disease (SCD) is characterized by intermittent vaso - occlusive events due to abnormal sickle - shaped erythrocytes disrupt blood flow in small vessels [(1).] So causes chronic hemolytic anemia. These Vaso - occlusive events result in tissue ischemia leading to acute and chronic pain as well as organ damage that can affect any organ system, including the bones, spleen, liver, brain, lungs, kidneys, and joints [(4).]

SCD severely affects pregnancy, leads to the elevated occurrence of perinatal and maternal outcomes such as pre - eclampsia, eclampsia, abortions, intrauterine growth retardation (IUGR), etc are common. so sufficient care during the pregnancy guarantees an improved outcome [(5)]. Due to the best health care conveniences, availability of drugs such as hydroxyurea, antibiotic prophylaxis, and vaccination, the life expectancy of SCD patients has greatly improved in recent times though directly related to the access and services available at the healthcare facilities for the needy and poor [(6).] But Late antenatal booking, anemia, and poor education are the major factors responsible for poor pregnancy consequence [(4).]

Aim

To study the prevalence of Sickle cell disorder in pregnant women and its fetal and maternal outcome in GEMS Medical college and Hospital.

2. Materials and Methods

The Prospective study was conducted in the Department of obstetrics and gynaecology in pregnant women. It was approved by the ethics review committee.

The inclusion criteria: 1. Patient who are both booked, Un - booked with Diagnosed of sickle cell disorder confirmed by Hb Electrophoresis either during pregnancy or prior to the pregnancy.

The exclusion criteria: 1. Patient with Hb Electrophoresis negative.2. Anemia responding to iron therapy.3. Associated with other medical and obstetric complications.

Design of study: Prospective Study.

Period of study: 1 year from Jan 2023 to Dec 2023

3. Results

10 cases had outside reports of Hb Electrophoresis which confirmed Sickle cell disorder and 5 cases were resistant to iron therapy and had repeated history of Blood transfusion unknowingly, we got a doubt and we sent their blood samples for Hb Electrophoresis confirmed for sickle cell disorders.

Amongst the total 15 cases, 2 cases were of sickle cell anemia and 13 cases were of sickle cell trait.

Distribution according to electrophoretic pattern in patients studied

Group	Total Cases	Percentage
Sickle Cell Trait	13	86.6%
Sickle Cell Anemia	2	13.3%
Total Cases	15	100%

Amongst 15 SCD patients, Gravida wise Distribution of cases.

Group	G1		G2		G3	
	No	%	No	%	No	%
	9	60	4	26	2	13

Incidence of complications in SC Anemia and SC trait cases are:

Complications	Sickle Cell Anemia (SCA) (%)	Sickle Cell Trait (SCT) (%)
Anemia	100	23
Blood Transfusion	100	23
Joint pain and breathlessness	50	15
PIH	50	15
UTI	50	38.4
Jaundice	100	30

Vaginal delivery (VD) was seen in 46.17% in the SCT group and 50% in the SCA group.

At term, the most common indication in the SCT and SCA groups for induction of labor was impaired fetal well - being and PIH.

GROUP	VD		LSCS	
	No	%	No	%
SCT	6	46.1	7	53.8
SCA	1	50	1	50

Mean Birth Weight and Incidence of IUGR and Growth retarted babies in our study in both group is -

	Sickle Cell Anemia (SCA)	Sickle Cell trait (SCT)
Mean Birth Weight	2036.4gm	2346.7gm
Growth Retarded Babies	57.89 %	30%
IUGR	50%	23%

Management - the following are required

Pre - conceptional Counselling -
1. Screening for end organ damage [ECG, Retinal screening etc] 2. Partner status 3. Genetic counselling –risk of transmitting SCD to fetus.4. Immunization - Pneumococcal, Haemophilu, Influenzae B, Meningococcal.

Antenatal Care: It is a high - risk case, ANC in tertiary care centers where multidisciplinary approach is possible.
During First trimester - Low dose Aspirin 75mg Folic acid, Prophylactic graduated compression stockings.
In Second and Third trimester - Folate supplementation. Penicillin prophylaxis - for infections like Pneumonia and Blood transfusion - in acute anaemia, acute chest syndrome.

Treatment of Sickling Crisis –
Adequate oxygenation, rehydration, treating any infections (parenteral antibiotics), analgesics, correcting metabolic acidosis. Exchange transfusion is advised in unresponsive patients.

Labor Management of cases
Epidural analgesia is suited for labor and delivery. Vaginal delivery is ideal. Induction of labor at 38 weeks. Oxygen saturation monitoring and Continuous CTG monitoring is done. Avoid dehydration and acidosis. Circulatory overload should be avoided.

4. Conclusion

Any history of Sickle cell disease or trait have to have Genetic counselling regarding the Disease. The present study reported a greater risk and adverse pregnancy outcomes in women with SCD as compared to sickle cell trait.

Pregnancies with combined SCD and anaemia possess a greater challenge in achieving better maternal and fetal outcomes in developing countries.

To minimize maternal and fetal complications in such women, multispecialty team management is required. It is advisable to diagnose sickle cell disorders before conception or during early pregnancy.

References

[1] Ware RE, de Montalembert M, Tshilolo L, Abboud MR. Sickle cell disease. Lancet.2017 Jul 15; 390 (10091): 311 - 323. doi: 10.1016/S0140 - 6736 (17) 30193 - 9. Epub 2017 Feb 1. PMID: 28159390
[2] Centers for Disease Control and Prevention.
[3] Elendu C, Amaechi DC, Alakwe - Ojimba CE, Elendu TC, Elendu RC, Ayabazu CP, Aina TO Aborisade O, Adenikinju JS. Understanding Sickle cell disease: Causes, symptoms, and treatment options. Medicine (Baltimore).2023 Sep 22; 102 (38): e35237. doi: 10.1097/MD.0000000000035237. PMID: 37746969; PMCID: PMC10519513.
[4] Bender MA, Carlberg K. Sickle Cell Disease.2003 Sep 15 [updated 2023 Dec 28]. In: Adam MP, Feldman J, Mirzaa GM, Pagon RA, Wallace SE, Bean LJH, Gripp KW, Amemiya A, editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993–2024. PMID: 20301551.
[5] Piel FB, Hay SI, Gupta S, Weatherall DJ, Williams TN: Global burden of sickle cell anaemia in children under five, 2010 - 2050: modelling based on demographics, excess mortality, and interventions.
[6] Ngô C, Kayem G, Habibi A, Benachi A, Goffinet F, Galactéros F, Haddad B: Pregnancy in sickle cell disease: maternal and fetal outcomes in a population receiving prophylactic partial exchange transfusions. Eur J Obstet Gynecol Reprod Biol.2010, 152: 138 - 42. 10.1016/j. ejogrb.2010.05.022
[7] JB sharma of Obstetrics.