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Original Research Article

A study of fetomaternal outcome in cases of severe anemia in labor at a tertiary care center

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ABSTRACT

Background: In India, the prevalence of anemia is high because of fewer intakes of iron, folic acid and food sources that prevent iron absorption, coupled with poor bioavailability of iron is the major factor responsible for prevalence of anemia. More than iron deficiency, zinc, vitamin B12 and folate deficiency was highly prevalent due to ascariasis infestation.
Methods: This study was carried out in the department of obstetrics and gynaecology at PDU medical college and hospital Rajkot, Gujarat from May 2021 to April 2022.
Results: The study was conducted on 83 cases, the prevalence rate of severe anemia in the study population of PDU Medical College Rajkot was found to be 1.6% during this study period. 57.83% of cases delivered before term. Most of the patients 85.54% in the study group suffered from iron deficiency anemia. Most of the patients 49.40% were managed by transfusion of 2-pint PCV. Most common complications associated with anemia in pregnancy are atonic PPH, pulmonary oedema and surgical site infections in this study. A 67.46% of new-borns were of <2.5kg birthweight. High number of new-borns 39.75% with moderately abnormal APGAR scores were delivered. In this study, 75 patients were delivered vaginally, 5 instrumental deliveries were conducted to cut short the second stage of labor, 3 patients underwent LSCS due to major degree placentae previa and foetal distress.
Conclusions: Severe anemia during labor affect the maternal and foetal outcome to a large extent. The major step in improving these outcomes is prevention of anemia which could be done at pre-pregnancy stages of a woman's life, measures such as food fortification, deworming, mass haemoglobin screening among adolescent girls helps in this cause.

Keywords: Bioavailability, Food fortification, Iron deficiency, Preterm

INTRODUCTION

Anemia during pregnancy is one of the important factors associated with a number of maternal and foetal complications. It decreases the woman's reserve to tolerate bleeding either during or after child birth and makes prone to infections. Anemia during pregnancy also has been associated with increased risk of intra uterine growth restriction, premature delivery, low birth weight (LBW) and maternal and child mortality.[1,2] World Health Organization (WHO)/World Health Statistics data shows that 40.1% of pregnant women worldwide were anaemic in 2016. The condition is prominent in Southeast Asian countries where about half of all global maternal deaths are due to anemia and India contributes to about 80% of the maternal death due to anemia in South Asia.[3] There is marginally increase in prevalence of anemia in pregnant women in India from 50.4% in NFHS-4 (National Family Health Survey-2015-16) to 52.2% in NFHS-5 survey (2019-21).[4-6]

Moreover, poor nutritional status affected by low body mass index (BMI) in the women was found to be associated with anemia, which necessitates intervention by health care providers in order to prevent complications that might arise as a result of these dietary inadequacies. The other contributing factors are young age, grand multiparty and ethnicity. The other causes of iron deficiency are: Insufficient quantity of iron-rich foods and 'iron enhancers' in the diet (foods rich in vitamin C, such as citrus fruits) and low bioavailability of dietary iron, excessive quantity of 'iron inhibitors' in diet, especially during mealtimes (e.g. tea, coffee; calcium-rich foods), iron loss during menstruation, poor iron stores from infancy and childhood deficiencies, iron loss from postpartum haemorrhage, increased iron requirement due to tissue, blood and energy requirements during pregnancy and, in some areas, due to heavy workloads, teenage pregnancy, repeated pregnancies with less than 2 years' interval, iron loss due to parasite load (e.g. malaria, intestinal worms), poor environmental sanitation, unsafe drinking water and inadequate personal hygiene.[7] Aim of this study was to evaluate the effects of severe anemia on maternal health during labor and study its neonatal outcome. To study the mode of delivery, maternal complications and ro know the APGAR scores and of NICU admissions.

METHODS

This study was crossectional study conducted in the P.D.U Medical College & Civil Hospital, Rajkot, India from May 2021- April 2022. There were 83 patients were enrolled in the study.

All patients admitted in obstetrics department of P.D.U. Medical College and civil hospital Rajkot during study period of 1 year in labor having severe anemia (Hb% <7Gm%) are included in study. Standard case record sheet filed. All details of patient like basic demographic data regarding name, age, socio-economic status, residence, diagnosis, booked or unbooked, referral status are recorded. General physical examination including vital signs, obstetric examination is done. Hematological samples are collected using standard techniques and results are calculated using cell counters. Mode of delivery and treatment on basis of blood and products transfusions are evaluated. Follow up on the period of hospital stay and neonatal outcome are done.

Inclusion criteria

Inclusion criteria were the All the cases admitted in Obstetrics & Gynaecology department during study period with Hb <7gm% in active labor.

Exclusion criteria

Exclusion criteria were women having Hb >7gm% Or women not in active labor.

Patients will be selected based on inclusion and exclusion criteria and will be classified according to their socioeconomic status, parity, severity of anemia and appropriate results based on various statistical test calculated.

RESULTS

In this study, 57.8% patients admitted with gestational age <37 weeks gestation. The incidence of preterm birth is very high in anemic mothers as compared to non-anemic mothers. Women who are severely anemic are more prone to infections due to compromised immune function which predisposes to premature labor (Table1).

Table 1: Gestational age.

Gestational age	No. of mothers (n=83)	%
Pre term (<37 weeks)	48	57.83
Full term (>37 weeks)	35	42.17

In this study, majority of the cases- 85.54% were found to be due to iron deficiency. Iron is the chief component in hemoglobin synthesis, low levels of iron are due to less intake and increased loss from body. Deficiencies of Vit B12 and folic acid would cause nutritional anemia (Table 2).

Table 2: Type of anemia.

Type of anemia	No. of cases (n=83)	%
Iron deficiency	71	85.54
Sickle cell anemia	08	09.63
Nutritional anemia	04	04.81

In present study, out of 83 severe anaemia patients, 75 patients were delivered vaginally due to multiparity and average birth weight. Five instrumental deliveries were conducted to cut short the second stage of labor. Three patients were delivered by LSCS due to major degree placenta previa, foetal distress (Table 3).

Table 3: Mode of delivery.

Mode of delivery	No. of patients (n=83)
Vaginal delivery	75
Instrumental delivery	05
LSCS	03

In this study, blood transfusion was the main stay of treatment. Most patients were managed by transfusion of 2-PCV. The range of PCV transfusion was from 2 to 7. Blood transfusion given in intrapartum and post-partum period (Table 4).

In this study, SSI at LSCS wound or episiotomy wound were found in 3.6% of patients due to their poor

regeneration and less immunity. 2.4% patients had atonic PPH and 1.2% had pulmonary edema (Table 5).

Table 4: Blood transfusion.

Number of PCV transfused	No. of patients (n=83)	%
1	0	00.00
2	41	49.40
3	24	28.92
4	13	15.66
5	5	06.02

Table 5: Maternal complications.

Complications	N=83	%
Atonic PPH	02	02.4
Pulmonary oedema	01	01.2
SSI	03	03.6

In this study, 32.53% newborns had birthweight >=2.5 kg and rest 67.46% had birthweight <2.5 kg. Anemic mothers have high incidence of preterm labor and intrauterine growth restriction resulting in high number of newborns born with low birth weight (Table 6).

Table 6: Birth weights.

Baby weight	No. of new-borns (n=83)	%
>=2.5 kg	27	32.53
1.5 kg-2.5kg	51	61.45
=<1.5 kg	05	06.02

In this study, 60.24% new-borns had normal APGAR scores and 39.75% had moderately abnormal and low scores. High number of new-borns with moderately abnormal APGAR scores were delivered. Their low scores were attributed mostly to prematurity and IUGR. Other causes are MSL, cord compression and birth asphyxia (Table 7).

Table 7: APGAR.

APGAR (5min)	No. of newborns (n=83)	%
Reassuring (7-10)	50	60.24
Moderately abnormal (4-6)	30	36.14
Low (0-3)	03	03.61

DISCUSSION

Gestational age

In a study conducted by Bansal et al and Singhal et al, 46% of the newborns delivered by severely anemic mothers in labor were preterm which is slightly lower than our study group mostly due to low sample size.[8]

Hospital stay

In a study conducted by smith et al, the hospital stay is severely prolonged for anemic patients as compared to others which is also depicted in this study.[9] The mean hospital stay in this study is 3.4 days for severely anemic mother's.

Blood transfusion

The rates of blood transfusion were significantly higher than the study conducted by Smith et al.[9] About 49% patients were managed by transfusion of 2 pints PCV

Cause of anemia

The most common cause of anemia in our study was iron deficiency (85.54%). It is consistent with study conducted by Vinogravoda et al.[10] Nutritional iron deficiency, less birth spacing and multiple pregnancies are the most common cause of iron deficiency.[14,15]

APGAR scores

High number of neonates with low APGAR scores (<7-39.75%) and low birth weights were delivered to anemic mothers which is consistent with the study conducted by shah et al.[11]

Mode of delivery

The rate of instrumental plus caesarean deliveries was 9.63% in our study which is low than shah et al.[11]

Parity

In this study, 85.54% were multipara which is consistent with finding of study conducted by Rashid et al.[12]

This study has some limitations. This study was cross-sectional and did not include a study group to compare the outcomes with a control population.[13-15]

CONCLUSION

Anemia is an important cause of maternal and fetal morbidity especially in developing countries like India. Early detection and treatment of anemia in young women cause significant improvement in maternal hemoglobin levels. Hemoglobin estimation and nutrition supplementation in school going young women should be practised. Due to high rates of complications in such anemic mother's institutonal deliveries having Emergency obstetric care and pediatric services are recommended.

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