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Original Research Article

Maternal outcome in cases of severe anaemia in labour

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ABSTRACT

Background: Anaemia is the commonest medical disorder in pregnancy and severe anaemia is associated with poor maternal and perinatal outcome.
Methods: The study was done to analyse the characteristics of hospitalized pregnant women with severe anaemia (Haemoglobin < 7gms %) at the time of delivery and to find out maternal outcome. It was a prospective study done at Rajindra hospital, Patiala, Punjab, India over a period of one year from February 2016 to January 2017.
Results: Results were analysed; out of 3784 deliveries 210 (5.54%) cases were severely anaemic at the time of delivery. Out of 210 women with severe anaemia 184(87.6%) patients belonged to low socioeconomic category, 177 (84.2%) were unbooked cases, 152 (72.4%) cases from rural area and 119 (57.6%) cases were multi gravidas. The maternal complications were Pre-eclampsia and eclampsia (16.1%), intercurrent infections (3%), abruptio placentae (3.3%), heart failure (1.4%), preterm labours (42.8%), intrauterine deaths (10.9%) and postpartum haemorrhage (10.4%).
Conclusions: Severe anaemia during pregnancy is associated with maternal and perinatal morbidity and mortality so effective preventive measures in the form of regular antenatal check-ups and iron supplementation will prevent complications of anaemia in pregnant women.

Keywords: Anaemia, Haemoglobin

INTRODUCTION

Anaemia is the commonest medical disorder in pregnancy and has a varied prevalence, etiology and degree of severity in different populations being more common in non-industrial countries.[1]

WHO defines anaemia in pregnancy as a haemoglobin concentration of less than 11 g/dl and a haematocrit of less than 0.33.[2]

It uses the following haemoglobin cut offs - 10.0 to10.9 g/dl for mild anaemia, 7.0 to 9.9 g/dl for moderate anaemia and lower than 7.0 g/l for severe anaemia.

In India, more than 90% of anaemia cases are estimated to be due to iron deficiency because high iron requirement during pregnancy are not easily fulfilled by dietary intake especially when iron bio-availability is poor.[3]

Estimates of the WHO report that from 35% to 75% (56% on average) of pregnant women in developing countries and 18% of women from industrialized countries are anaemic.[4] Principal blood changes during pregnancy.

This disproportionate increase in plasma and RBC volumes produces a state of haemodilution (fall in haematocrit) during pregnancy, which is more during second trimester leading to physiological anaemia. Anaemia is not only responsible for increase in maternal and perinatal morbidity and mortality but also severely affects economic and social status of the country.

Table 1: Characteristics of blood during pregnancy.

Characteristics	Non-pregnant	Pregnancy near term	Total increment	Change
Blood volume (ml)	4000	5500	1500	+30-40%
Plasma volume (ml)	2500	3750	1250	+40-50%
Red cell volume (ml)	1400	1750	350	+20-30%
Total Hb (gm)	475	560	85	+18-20%
Haematocrit (whole body)	38%	32%		-6%

METHODS

The present was a prospective observational and clinical study, conducted at Government Medical College and Rajindra Hospital, Patiala in Obstetrics and gynaecology department over a period of one year from February 2016 to January 2017. The pregnant women with severe anaemia in labour were included in the study, after fulfilling the inclusion criteria. A detail history and clinical examination was done as per proforma and required investigation were done. The maternal and perinatal outcome were noted. Inclusion criterias were Hb ≤7 gm/dl, Singleton pregnancy, At the time of delivery. Exclusion criteria: pregnant women with hemoglobin > 7 gm/dl, pregnancy with severe anemia due to acute hemorrhage multiple pregnancy, Women with chronic medical illness, women with blood dyscrasias and hemoglobinopathies. Frequencies and percentages were calculated to assess the distribution of the patient on the socio demographic variables such as age, living setting, religion, dietary habits, booked and unbooked status, parity and living children, degree of anaemia, number of blood transfusions given and mode of the delivery. The outcome of severe anaemia was seen in mother in form of preterm labour, preeclampsia, abruptio placentae, CHF, intercurrent infections and maternal mortality.

RESULTS

Number of deliveries during the study period was 3784. Out of 3784 deliveries 210(5.54%) were severely anaemic.

Maximum women belonged to low socioeconomic status (87.14%), living in rural area (72.8%). Anaemia in pregnancy is more common in women of higher parity due to poor iron reserves.

Women with low socioeconomic status may not afford or have access to good maternal health care services because of lack of education or financial constraints. They are therefore more prone to the deleterious effects of poor nutrition, malaria, diarrhoeal diseases and chronic infections. Diminished intake and increased demands of iron, disturbed metabolism, pre-pregnant health status and excess iron demands as in multiple pregnancies, women with rapidly recurring pregnancies, blood loss during labour, heavy menstrual blood flow, inflammation and infectious diseases are important factors which lead to development of anaemia during pregnancy. There has been increased risk of anaemia among pregnant adolescents (teenage pregnancy) due to depleted iron stores that occurred during the adolescent growth spurt.

Table 2: Different factors of severely anaemic wom.

Characteristics	No. of women (%)
Age group	
<20 years	19(9.0)
20-24 years	90(42.8)
25-29 years	68(32.3)
30 and above	33(15.7)
Socioeconomic status	
Lower	183(87.14)
Middle	27(12.8)
Booked status	
Booked cases	32(15.2)
Unbooked cases	178(84.7)
Residence	
Rural	153(72.8)
Urban	57(27.1)
Parity	
Primigravida	83(39.5)
Multigravida	127(60.4)
Gestational age	
>37 weeks	121 (57.6)
34-37 weeks	56(26.6)
<34 weeks	33(15.7)

Table 3: Severe anaemia-associated maternal complications.

Complications	No. of women (%)
Preterm labour	89(42.8)
Preeclampsia	34(16.1)
Post partum haemorrhage	22(10.4)
IUGR	19(9.0)
IUFD	18(8.5)
Sepsis	8(3.8)
Abruptio placentae	7(3.3)
Placenta previa	5(2.3)
Cardiac failure	3(1.4)
Mortality	1(.47)

The commonest complication of severe anaemia observed in the present study was preterm labour showing highest incidence of 89 cases (42.8%) followed by preeclampsia

(16.1%), intrauterine growth restriction (9.0%), intrauterine death (8.5%), sepsis (3.8%), abruptio placentae in 3.3%, placenta previa (2.3%), cardiac failure in 1.4%. Maternal mortality was seen only in one case (0.47%). Cause of maternal mortality was decompensated cardiac failure due to severe anaemia superimposed with severe preeclampsia.

Anemia results in impaired transport of hemoglobin and thus oxygen to uterus, placenta and foetus. It also causes tissue enzyme and cellular dysfunction. This mechanism explains impaired myometrial contractility resulting in atonic uterus, as well as placental dysfunction leading to preterm birth, low birth weight and growth restricted babies and perinatal deaths. The susceptibility of women with severe anaemia to preeclampsia has been linked to deficiency of micronutrients and antioxidants. The reduction in serum levels of calcium, magnesium and zinc during pregnancy has been linked to the development of preeclampsia. Severe anaemia predisposes congestive heart failure as it causes circulatory overload due to increased stroke volume and tachycardia.

DISCUSSION

In India it is not uncommon to see patients with severe anaemia late in pregnancy with no prior antenatal visits especially in low socioeconomic settings and the same is evident from our study. Worldwide, it is estimated that 58.27 million women are anaemic during pregnancy, of whom 55.75 million (95.7%) live in developing countries. In present study the prevalence of severe anaemia (Haemoglobin < 7 gms%) was 5.54% whereas study by Singhal et al observed the prevalence of 5.7% and Riffat jaleel reported 4.8% of severe anaemia in pregnant women.[5,6] The age group 20-24 years had the highest prevalence of anaemia (68.4%) which agrees with the findings of Rajeshwari and Ashok Kumar, and Rajaratnam et al.[7,8]

Anaemia prevalence was also significantly high in pregnant women from low socioeconomic status (87.6%) compared to those from middle socioeconomic status (12.4%). Studies from Allen et al, Rajaratnam et al and Bentley ME also reported the same observations.[9,10]

Table 4: Severe anaemia-maternal complication in different study group.

Parameter	Awasthi et al	Agarwal R et al	Singhal et al	Devi NB et al	Jaleel R study	Rohilla M et al	Present study
Preterm labour	9.5%	22%	32%	44.68%	23.5%	18.75%	42.8%
Preeclampsia	28%	7.1%	19.33%	25.33%	-	17.7%	16.1%
Abruptio	-	-	10.8%	8.5%	5.9%	3.12%	3.3%
Placenta previa	-	-	10.8%	2%	-	-	2.3%
Abruptio with placenta previa	10.5%	0.68%	-	-	-	-	-
PPH	7.5%	0.4%	7.6%	6.4%	9.8%	25.5%	10.4%
IUGR	37.5%	-	6.62%	12.77%	27.8%	33.33%	9.0%
CHF	-	-	4.97%	1.06%	1.9%	9.37%	1.4%
Mortality	-	-	-	1.06%	1.9%	6.25%	0.47%

Boniface et al also reported that obstetric risks were more in unbooked pregnant women compared to booked ones.[11] There may be expected decline in haemoglobin level due to haemodilution, increasing fetal demand, underlying maternal infection and untreated anaemia in early pregnancy may also get worse with advancing pregnancy.

The booked patient benefits from focused antenatal care objectives, which is proven to reduce maternal and fetal morbidity/mortality, have obvious benefits in terms of risk assessment, active management, correction of modifiable conditions, and boosting the psychological support and family preparedness for a new child.

Preterm labour was more common in present study with 42.8%. Incidence in Singhal et al study it was 32.59%, 22% in Agarwal R study, 9.5% in Awasthi et al study 23.5% in Jaleel R study and 18.75% in Rohilla M et al.[5,12-14] Pregnancy induced hypertension in present study was 16.1%, In Singhal et al study it was 19.33%, Awasthi et al study it was 25.33% and Rohilla M et al study it was 17.7%. The results of present study correlate well with Singhal et al study and Devi NB et al study.[15]

Women with low socioeconomic status may not afford or have access to good maternal health care services because of lack of education or financial constraints. They are therefore more prone to the deleterious effects of poor nutrition, malaria, diarrhoeal diseases and chronic infections. Increased risk of anaemia was observed in the pregnant women who were unbooked at the time of the delivery as compared to the booked pregnant women.

CONCLUSION

Anaemia in pregnancy is a major health problem in developing countries. Anaemia contributes significantly to maternal and perinatal morbidity and mortality. By keeping this in view, it is recommended that good antenatal care should be made available, accessible and affordable to all pregnant women through partnership between all tiers of government and non-governmental organizations. New and innovative strategies are needed, particularly those that improve the overall health and nutrition status of adolescent girls before they enter their reproductive years.

Early marriages and teenage pregnancies are better avoided. Awareness created regarding dietary habits, small family norms, birth spacing, regular antenatal check-ups and regular intake of iron. Efforts therefore need to be directed not only to correct anaemia but to prevent anaemia, so that we can achieve the millennium development goal of reducing the maternal mortality rate by three quarters.

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