Maternal and Fetal Outcome in Cases of Severe Anemia: A Retrospective Analysis of 140 Cases at a Tertiary Health Care Centre in Western India

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Abstract:

Introduction: Anaemia is a major public health problem throughout the world especially in developing countries like India and it is the most common nutritional deficiency disorder in the world. Anemia in pregnancy is defined as Hemoglobin concentrations <11 g/dL in the 1st and last trimester, and a Hemoglobin concentration of <10.5 g/dL in the 2nd trimester3. The prevalence of anaemia indicates the nutritional status of a community and it often goes untreated especially in pregnant women where it can be most dangerous.

Materials and Methods: The present study was a retrospective observational study conducted at Department of Obstetrics and Gynaecology, Smt. N.H.L Municipal Medical College. The study was conducted over a time period of from June 2022 to May 2024. The study included 140 patients with anemia and 140 patients without anemia.

Results: The mean age of patients in anemia group was 30.63±4.97 years and the mean age in control group was 30.60±5.17 years. However the p value was statistically insignificant (0.97). Regarding antenatal registration, maximum patients 30.7% in anemia group were unbooked and 19.3% were booked. While as in group B, 27% were booked and 23% patients were unbooked. 31.4% patients from anemia group and 27% patients from group B were multigravida and 18.6% patients from anemia group and 23% patients from group B were primigravida. The difference wasn't statistically significant (p value 0.39). The inter pregnancy interval in Anemia group was <2 years in 31.4% patients and >2 years in 18.6% patients while as in group B, maximum patients (40%) had inter pregnancy interval of >2 years and only 10% had <2 years. The difference between two groups regarding inter pregnancy interval was statistically significant (p value<0.05).

Conclusion: Anemia in pregnancy is a major health problem in developing countries, contributing significantly to fetomaternal morbidity and mortality. Proper Antenatal care should be made accessible and affordable to both urban and rural areas. Proper antenatal counselling regarding diet, birthspacing, regular ante natal checkups and regular intake of iron supplements to be done in all antenatal clinics.

Keywords: Anemia, Pregnancy, PPH, Antenatal.

Introduction

Anaemia is a major public health problem throughout the world especially in developing countries like India and it is the most common nutritional deficiency disorder in the world [1]. World Health Organization (WHO) has estimated the prevalence of anaemia among pregnant population to be about 38% [2]. Anemia in pregnancy is defined as Hemoglobin concentrations <11 g/dL in the 1st and last trimester, and a Hemoglobin concentration of <10.5 g/dL in the 2nd trimester [3]. The prevalence of anaemia indicates the nutritional status of a community and it often goes untreated especially in pregnant women where it can be most dangerous [4].

Iron deficiency anaemia is an important public health problem for pregnant women, living in developing countries, affecting 2/3rd of pregnant women and contributes to maternal morbidity and mortality and to low birth weight [5, 6]. Iron deficiency can be due to inadequate oral intake or

poor bioavailability of iron in foodstuffs. It can also occur due to excessive loss of iron from the body.

While the diet may contain adequate amounts of iron poor bioavailability of dietary iron is considered as the major reason for the widespread prevalence of iron deficiency anaemia [7-9]. Folate deficiency anaemia has been seen in 25-50% of pregnant women in some areas of India attending the hospital clinics [7]. Studies have shown that folate deficiency anaemia in pregnancy has become a global problem and mainly affects the economically unprivileged population [10-16]. Anaemia has hazardous influence on maternal and fetal outcome and increases risk of postpartum haemorrhage (PPH), infection, sepsis and risk for pre-term birth, low birth weight and small for gestational age babies thereby contributing to maternal and perinatal morbidity and sometimes mortality [17].

In India, anaemia is the second most common cause of maternal death, accounting for 20% of total maternal deaths [15]. Considering the effects of IDA on maternal and fetal mortalities, physical function and child growth and development, it is regarded as one of the main health indicators [4].

In fact, the high incidence of post-partum haemorrhage (PPH) in India as compared to rest of world has been attributed to the high prevalence of anaemia in pregnant women [2].

The aims of the study were to find the impact of age and other demographic factors on anemia and to evaluate the feto-maternal outcome due to anemia in pregnancy.

Materials and Methods

The present study was a prospective observational study conducted at the Department of Obstetrics and Gynaecology, Smt. N.H.L Municipal Medical College. The study included cases over from June 2022 to May 2024.The study included 140 patients with anemia and 140 patients without anemia.

Inclusion criteria

- HB<7
- Singleton pregnancy,
- Pregnant women beyond 36 weeks of gestation

Exclusion criteria

- Multiple pregnancy
- Women with chronic medical illness
- Patients with anemia due to acute blood loss

Procedure

140 pregnant women (GROUP A) with Hb <7, reporting to OPD or admitted to the hospital in labour or not in labour after 37 weeks of pregnancy were taken as study subjects. 140 pregnant women without anemia (GROUP B) admitted to the hospital were taken as control group.

All the haematological and biochemical investigations were carried out on admission. Route of delivery was decided on the basis of patient-to-patient profile. Patients were monitored for incidence of intrapartum, postpartum and perinatal complications.

Statistical analysis

Statistical testing was conducted with the statistical package for the social science system version (SPSS). The statistical significance of the difference between two groups was based on p-value. P-value of <0.05 was considered to be statistically significant.

Observations and Results

In this study 140 patients with anemia have been compared to 140 patients without anemia to evaluate the role of age, sociodemographic factors, parity on anemia and to study the influence of anemia on feto maternal unit. The mean age of patients in anemia group was 30.63 ±4.97 years and the mean age in control group was 30.60 ±5.17 years. However, the p-value was statistically insignificant (0.97).

Table 1: Mean Age in Case and Control Group

Mean Age (Years)	Group A	Group B	P- Value
	30.63 ±4.97	30.60 ±5.17	0.97

The mean gestational age in group A was 37.40 ±1.02 and 37.26 ±0.943 in group B. The p-value was 0. 393.

Table 2: Mean Gestational Age in Case and Control Group

Mean Gestational Age	Group A	Group B	P- Value
	37.40 ±1.02	37.26 ±0.943	0. 393

In anemia group, 30% patients belonged to rural area and 20% patients belonged to Urban area where as in control group 22% patients belonged to rural areas and 27% belonged to Urban areas. The p-value was statistically insignificant (0.23).

Table 3:Locality in Case and Control Group

	Group A		Group B	
Rural	84	30%	63	22%
Urban	56	20%	77	27%

Regarding antenatal registration, maximum patients 30.7% in anemia group were unbooked and 19.3% were booked. While as in group B, 27% were booked and 23% patients were unbooked. However, the difference was statistically insignificant (p value 0.90).

Table 4: Booking status in Case and Control Group

	Group A		Group B	
Unbooked	86	30.7%	64	23%
Booked	54	19.3%	76	27%

Regarding parity, 31.4% patients from anemia group and 27% patients from group B were multigravida and 18.6% patients from anemia group and 23% patients from group B were primigravida. The difference wasn't statistically significant (p value 0.39).

Table 5: Parity status in Case and Control Group

	Group A		Group B	
Primi	52	18.6%	64	23%
Multi	88	31.4%	76	27%

The inter pregnancy interval in anemia group was <2 years in 31.4% patients and >2 years in 18.6% patients while as in group B, maximum patients(40%) had inter pregnancy interval of >2 years and only 10% had <2 years. The difference between two groups regarding inter pregnancy interval was statistically significant (p value<0.05).

Table 5: Interpregnancy Interval in Case and Control Group

	Group A		Group B	
IPI < 2 Years	88	31.4%	28	10%
IPI > 2 Years	52	18.6%	112	40%

The mode of delivery was FTVD in 31% patients from anemia group and 36% patients from non-anemia group, LSCS in 19% patients from anemia group and 14% from non-anemia group (p-value=1).

Table 5: Route of delivery in Case and Control Group

	Group A		Group B	
Vaginal Delivery	86	31%	100	36%
Cesarean Section	54	19%	40	14%

Regarding maternal complications, from anemia group out of 140 patients, 6(2.1%) had Abruption, 10(3.6%) had Preterm labour, 14(5%) had postpartum haemorrhage and 2(0.7%) had sepsis. In non-anemic group, 4(1.4%) had Abruption, 4(1.4%) had Preterm labour, 8(2.9%) had post-partum haemorrhage and none had sepsis. However, the p value was statistically insignificant (0.16).

Table 6: Maternal Complications in Case and Control Group

	Group A		Group B	
Abruption	6	2.1%	4	1.4%
Preterm Labor	10	3.6%	4	1.4%
Postpartum Haemorrhage	14	5%	8	2.9%
Sepsis	2	0.7%	0	0

In anemia group patients out of 140 babies, 6 (2.1%) were FGR, 2 (0.7%) had IUFD, 10 (3.6%) had meconium aspiration and 8 (2.9%) had respiratory distress syndrome. In non anemia group, only 4(1.4%) had meconium aspiration and 8(2.9%) had respiratory distress syndrome. The p value was statistically insignificant (0.240).

Table 6: Perinatal Complications in Case and Control Group

	Group A		Group B	
Fetal Growth Restriction	6	2.1%	-	-
Intrauterine Death	2	0.7%	-	-
Meconium Aspiration Syndrome	10	3.6%	4	1.4%
Respiratory Distress Syndrome	8	2.9%	8	2.9%

Discussion

Anemia in pregnancy is more prevalent and severe in developing countries [17]. Maternal anemia has been found to be associated with higher maternal mortality and morbidity and adverse perinatal outcome [18, 19]. Older women have more burden of anemia than younger ones, this might be due to combined effects of repeated pregnancies, inadequate dietary intake and social factors. In our study, the majority of pregnant women were in age group of 30-34 years.

Regular antenatal Checkups and access to the health facilities are cornerstone for the safe motherhood. In our study, 30.7% patients from

anemia group were unbooked and 30% patients were from rural areas. Anemia in pregnancy is more common in women of high parity and birth spacing of <2 years [20]. In our study 31.4% patients with anemia were multi gravida and 31.4% patients had inter pregnancy interval of <2 years.

There was no significant difference between the modes of deliveries in both groups. Maternal effects of anaemia vary, depending upon the degree of anaemia. It can directly lead to cardiac failure, haemorrhage and infection. Severe anaemia may impair myometrial contractility resulting from impaired oxygen carrying capacity leading to enzyme and cellular dysfunction which leads to postpartum haemorrhage (PPH) [21].

In our study, presence of anemia was associated with occurrence of PPH, Abruption, preterm labour and sepsis. However, the p value was statistically insignificant (0.169). Anaemia in pregnancy is associated with adverse foetal outcome in the form of preterm birth, low birth weight, intrauterine growth restriction, stillbirths, intrauterine foetal death, and birth asphyxia. In the present study the incidence of FGR was significantly associated with anemia. The incidence of meconium aspiration and respiratory distress syndrome was also high in anemic patients.

Conclusion

Anemia in pregnancy is a major health problem in developing countries, contributing significantly to fetomaternal morbidity and mortality. Proper Antenatal care should be made accessible and affordable to both urban and rural areas. Proper antenatal counselling regarding diet, birth spacing, regular ante natal checkups and regular intake of iron supplements to be done in all antenatal clinics.

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