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Original Research Article

Study the Effect of Anemia on Pregnancy Outcome in Terms of Maternal Complications, APGAR Score and Perinatal Mortality

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Abstract:

Introduction: Anemia is crucial among all nutritional disorder in all over the world1. Anaemia is a global public ill-health problem affecting both developing and developed countries with major consequences on human health specially women and children. According to WHO (2008) Iron deficiency anaemia (IDA) remains the most typical medical disorder in pregnancy within the developing world, with the burden of disease impacting on both the mother and therefore the newborn.

Material and Methods: A total of 200 antenatal patients were included in the study based on inclusion and exclusion criteria. All the women underwent detailed history taking and clinical examination, routine. Details of the patients including clinical data and investigations were recorded in self prepared clinical data sheet. These recruited women were divided into two group's i.e. anaemic and non-anaemic group.

Results: Out of total 200 cases of deliveries, complications of labour were seen in 34 cases. Majority of cases were of PPH i.e. 13, where 8 were non anaemic while 3 were having Haemoglobin level ≤ 9.9g/dl. Equal number of cases was seen in anaemic and non-anaemic group with respect to respiratory infection and failing lactation. Mean Apgar score at 1 min were 7.88, 8, 8 and 8 for non-anaemic, mildly anaemic, moderately anaemic and severely anaemic group respectively. At 5 min mean Apgar score, univariate analysis showed 8.91,9,9 and 9 for nonanaemic, mildly anaemic, moderately anaemic and severely anaemic group respectively. Total 22 perinatal morbidity were noted, out of which 14 were foetal growth restriction babies and 8 early neonatal deaths.

Conclusion: Estimation of maternal haemoglobin alone doesn't have direct effect on the maternal and perinatal outcome if provided with effective obstetric and neonatal care.

Keywords: Maternal Anemia, Apgar Score, Perinatal Mortality.

Introduction

Pregnancy is a unique experience in every woman's life. Anaemia is a global public ill-health problem affecting both developing and developed countries. According to WHO (2008) Iron deficiency anaemia (IDA) remains the most typical medical disorder in pregnancy within the developing world, with the burden of disease impacting both the mother and therefore the newborn (and subsequent child and later adult).

WHO (2001) defines anaemia in pregnant women as haemoglobin level < 0.33.Anaemia in postpartum females is defined as Hb less than 10 g/dl by WHO [2,3].

The WHO report shows that 52% of pregnant women and around 35 to 40% of normal women are anaemic in developing countries due to iron deficiency [4].

The causes of anaemia during pregnancy are multifactorial including micronutrient deficiencies of iron, folate, and vitamins A and B12 and anaemia due to parasitic infections such as malaria and hookworm. Patients with anemia present clinical symptoms such as fatigue, breathlessness, dizziness, and headache [5,6]. Severe anemia may predispose to infection and heart failure, and may significantly contribute to both maternal mortality and morbidity [7,8]. Maternal anemia carries a significant risk of haemorrhage and infection in mothers, reduces the resistance to blood loss causing maternal death and place women at higher risk of death during delivery and the period following childbirth [9]. Maternal anemia may also increase the risk of adverse pregnancy outcomes, such as preterm birth, low birth weight, perinatal death, and anemia in infancy.

Many countries have made programmes of supplementing pregnant women with iron and folic acid with an aim that increasing the Hb levels has some beneficial effect [10]. Several randomized control trials (RCTs) and meta-analyses have observed that routine iron supplementation is not of much use [11]. Present study was done to find association between maternal anaemia and neonatal complications and to find long term morbidity and mortality of babies born to anaemic mothers.

Material and Methods

The study was conducted at the department of Obstetrics and Gynaecology, Shri Ram Murti Smarak Institute of Medical Sciences (SRMS IMS), Bareilly, Uttar Pradesh, India and has multispecialty services oriented facilities for Medical Education, Research and Advanced Medical Care. It was a hospital based prospective case study. A total of 200 antenatal patients were recruited based on inclusion and exclusion criteria.

Inclusion Criteria:

- All consecutive antenatal women
- Singleton pregnancy
- Cephalic presentation
- Age groups: women 20 to 45 years of age

Exclusion Criteria:

- Gestational age <28 weeks
- Multiple pregnancy
- Antepartum Haemorrhage
- Patients with malpresentation
- Induced labour
- Intrauterine demise/ congenital foetal anomalies

All the antenatal women underwent detailed history taking and clinical examination and routine investigations including Blood group, Haemoglobin, hematocrit, general blood picture. Details of the patients including clinical and on investigations were recorded in self-prepared clinical data sheet. These recruited women were divided into two groups i.e. anaemic and non-anaemic group. LMP, EDD, POG, any risk factors, obstetrical history, past history, personal history, family history, Intra partum, post-partum and puerperal complications, birth weight and NICU admission were all noted in a Self-prepared clinical data sheet.

The data were entered on a Microsoft excel spreadsheet and improved into Statistical Package for Social Sciences (SPSS) version 22 for statistical analysis.

Data was present in mean and standard deviation.

Results

Table 1: Distribution of cases according to maternal outcome

Maternal Outcome	Maternal Haemoglobin level, g/dl				p value
	Normal (≥11)	Mild (10-10.9)	Moderate (≤9.9)	Severe (<7)	
	No of Cases (%)	No of Cases (%)	No of Cases (%)	No of Cases (%)	
Respiratory Infection	03 (2.6%)	03(7.0%)	00(0.0%)	00	0.522
Postpartum Haemorrhage	08(7.0%)	02(4.7%)	03(7.8%)	00	1.00
Puerperal Sepsis	03(2.6%)	01(2.3%)	03(7.8%)	01 (25%)	0.6171
Wound Gaping	01(0.9%)	0(0.0%)	00(0.0%)	00	0.3652
Lactation Failure	03(2.6%)	01(2.3%)	02(4.8%)	00	0.5777

Table 2: Distribution of cases according to Apgar Score

Apgar Score	Maternal Haemoglobin level, g/dl ≥11	10-10.9	≤9.9	<7	p value	≥11 V/S 10-10.9	≥11V/S ≤9.9	10-10.9 V/S ≤9.9
	Mean ± SD	Mean ± SD	Mean ± SD	Mean± SD		10.9	<9.9	9.9
At 1 min	7.88 ± 0.69	8.00 ± 0.00	8.00 ± 0.00	8.00± 0.00	0.271	0.398	0.405	1.000
At 5 min	8.91 ± 0.51	9.00 ± 0.00	9.00 ± 0.00	9.00± 0.00	0.289	0.417	0.423	1.000

Table 3: Distribution of cases according to perinatal mortality

Perinatal mortality	Maternal Haemoglobin level, g/dl				
	Normal (>11)	Mild (10-10.9)	Moderate(<9.9)	Severe (<7)	P value
	No of cases(%)	No of cases(%)	No of cases (%)	No of Cases (%)	value
Foetal growth restriction	06 (5.2%)	01 (2.3%)	07 (18.4%)	00	0.507
Early neonatal death	03 (2.6%)	04 (9.3%)	01 (2.6%)	00	0.134

Discussion

Pregnancy is a vital part of a women's life but it is period of greater risks of different complications for mother and foetus. Anaemia is responsible for 20% of maternal deaths in developing countries and second most common in India. In present study 200 women were studied, among which 115(57.5%) were non anaemia, 43 (21.5%) had mild anaemia, 42(21.0%) had moderate anaemia, 4 (02%) had severe anaemia. They were categorised accordingly and their maternal and foetal outcomes were analyzed and evaluated with standard literature.

The maternal outcome of both the groups was compared. Out of 85 anaemic women undergoing deliveries, 29 cases had adverse maternal outcome events such as PPH 31.2%, respiratory infection 18.8%, puerperal sepsis 31.2%and lactation failure 18.8%.

In non- anaemic women, adverse maternal events were noted in 18 women, respiratory infection i.e. 16.7% after delivery and 44.4% women had PPH, 16.7% had puerperal sepsis and 16.7% case had lactation failure. It is not a statistically significant result but just a coincidence result. This could be explained by fact that PPH is affected by various other maternal factors also not only by haemoglobin level.

Shradha S. Maka et al 2017 showed postpartum febrile illness (9%), PPH(7.5%), and puerperal sepsis(3.5%) similar to Singal N. et al 2018 showing PPH (7.5%), retained placenta(1.5%) and CCF 3(1.5%).In Singh Set al 2018, preterm labour (42.8%), PPH(10.4%), preeclampsia (16.1%), sepsis(3.8%) [12]. Study conducted by Riffat et al in which PPH was 9.8% and wound infection around 7.8% [12].

This study had highlighted the importance of considering maternal anaemia as an indicator of adverse pregnancy outcome. Therefore, to reduce the burden of this problem and related morbidity, measures to be implemented at community level, which can prevent and treat anaemia in adolescent girls and women.

Fetal outcome in both the groups were studied. Out of 200 women, 115 were of non anaemic group. Perinatal outcome variables according to mean Apgar score at 1 min were 7.88, 8, 8 and 8 for non-anaemic, mildly anaemic, moderately anaemic and severely anaemic group respectively with no significant statistical association.

At 5 min mean Apgar score, univariate analysis showed 8.91,9,9 and 9 for nonanaemic, mildly anaemic, moderately anaemic and severely anaemic group with no p value significance. In this study among 200 deliveries, Total 22 perinatal morbidity were noted, out of which 14 were foetal growth restriction babies and 8 early neonatal deaths. In 14 cases of foetal growth restriction babies, 7 babies mother were found to be moderately anaemic.

In Neonatal Death cases, 4 babies mother were mildly anaemic and only 1 baby mother having haemoglobin level 7g/dl. The observed difference in case distribution was not statistically significant with p=0.507. Our hospital provided good patient care and antenatal surveillance, good patient monitoring and back support like blood transfusion, NICU care, anaesthetic care, 24 hour running operation theatre these all help in better neonatal outcome. Better neonatal outcome seen in my study because of the NICU facility. Our being tertiary care center with all facilities, outcome in both the group is comparable. It is suggested by our result that to optimize the outcome, antenatal women complicated with anaemia should deliver in centers which are equipped to deal with all sorts of maternal and neonatal complications.

Conclusion

The incidence of anaemia in antenatal women in our tertiary care hospital was 42.5%. Of these anaemic women, 50.5% mildly anaemic, 44.7% as moderately anaemic and 4.8% were severely anaemic. We found that estimation of maternal haemoglobin alone doesn't have direct effect on the maternal and perinatal outcome. Our result indicates that perinatal and obstetrical outcome is influenced not only by maternal haemoglobin level but also by effective care provided to anaemic women.

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