

Effect of Maternal Anemia on Birth Weight of Term Babies in A Tertiary Care Hospital, Manipur

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Abstract

Background: Anemia has been a very important nutritional disorder in the world and it is a common medical problem in pregnancy. India has reported high prevalence of anemia in pregnancy. Maternal anaemia is commonly considered a risk factor for low birth weight (LBW) babies. The aim of this study was to determine whether maternal anaemia would affect the birth weight of the baby and compare this with that of non-anaemic mothers. It was a cross-sectional study carried out in the Department of Paediatrics in collaboration with Department of Obstetrics and Gynaecology, Regional Institute of Medical Sciences Hospital (RIMS), Imphal, Manipur.

Methods: Study population consisted of 200 babies; they were divided in to two groups. Group A include babies born out of woman having third trimester hemoglobin concentration of less than 10g/dl. Group B include babies born out of woman having third trimester hemoglobin concentration more than 10g/dl.

Results: Low birth weight babies were higher in anemic mothers compared to non anemic mothers.

Conclusion: The results of this study show an association of maternal anaemia in pregnancy with increased risk of LBW babies.

Keywords: Birth weight, Maternal anemia.

I. Introduction

Birth weight is the first weight of the newborn obtained after birth. For live births, birth weight should preferably be measured within the first hour of life, before significant postnatal weight loss has occurred.

Low birth weight has been defined by the World Health Organization (WHO) as weight at birth of less than 2,500 grams (5.5 pounds) irrespective of gestational age. This practical cut-off for international comparison is based on epidemiological observations that Infants weighing less than 2,500 g are approximately 20 times more likely to die than normal babies. It is common in developing countries; a birth weight below 2,500 g contributes to a range of poor health outcomes.

Low birth weight is the major determinant of mortality, morbidity and disability in infancy and childhood. It has a long term impact on health outcome in adult life.¹ The global incidence of LBW is around 17%, although estimates vary from 19% in the developing countries to 5-7% in the developed countries.²

India alone has more than 8 million infants born with low birth weight which accounts for 40 per cent of low birth weight in the developing world and more than half of those in Asia.³ Low birth weight is closely associated with neonatal mortality and morbidity, inhibited growth and cognitive development, and chronic diseases later in life.⁴

There are several maternal factors that cause low birth weight babies, which include preterm birth, maternal factors like anemia, hypertension, multiple pregnancies, poor nutrition, drug addiction, alcohol abuse, insufficient prenatal care, socio economic status, ethnic background and genetic factors. Among these factors maternal anemia is one of the risk factor for low birth weight in developing countries like India.⁵

Anemia is the commonest hematological disorder that may occur in pregnancy. In India, incidence of anemia in pregnancy is as high as 40-80% when compared to 10-20% in developed countries. Maternal anemia is also responsible for 20% maternal death in developing countries.⁶

According to WHO criteria anemia in pregnancy is defined as hemoglobin concentration of less than 11g/dl or hematocrit of less than 33%.⁷ However in India and most of the other developing countries the lower limit is accepted as 10gm%.

Studies demonstrated a strong association between low hemoglobin before delivery and low birth weight. However, some others have not found a significant association.⁸

II. Aims And Objects

To assess the difference in birth weight pattern of newborn born to anemic and non anemic mothers.

III. Materials And Methods

3.1 Study design: Cross sectional study.

3.2 Study duration: Duration of study is 2 years starting from October 2014 to September 2016.

3.3 Study setting: The study was carried out in the Department of Paediatrics in collaboration with Department of Obstetrics and Gynaecology, Regional Institute of Medical Sciences Hospital (RIMS), Imphal, Manipur.

3.4 Sample size: A total of 200 cases were included in this study.

3.5 Study population: Study population consisted of 200 babies; they will be divided in to two groups. Group A include babies born out of woman having third trimester hemoglobin concentration of less than 10g/dl. Group B include babies born out of woman having third trimester hemoglobin concentration more than 10g/dl, coming from different areas of Manipur and attending pediatric or gynecology OPD/ emergency.

3.6 Inclusion criteria:

1. Babies born to woman of more than 18 years of age.
2. Babies born to woman less than 35 years of age.
3. Babies born out of term deliveries.
4. Babies born out of singleton pregnancy.

3.7 Exclusion criteria:

1. Babies born out of preterm delivery.
2. Babies born out of post term delivery.
3. Babies born out of multiple pregnancies.
4. Babies born from mothers having obstetric complications.
5. Babies born from mothers having medical complication except anemia.
6. Babies born with congenital anomalies.
7. Those patients who are not willing to participate in the study.

3.8 Study tools: Study tools used for weighing the newborn baby is electronic weighing machine, and the maternal haemoglobin was estimated by Sahli's hemoglobinometer.

3.9 Statistical analysis: The statistical software named SPSS version 21.0 was used to analysis the data and Microsoft word and Microsoft excel has been used to generate graphs, tables etc.

3.10 Ethics issues: Prior clearance was taken from Institutional Ethics Committee (IEC), Regional Institute of medical Sciences, Imphal, before the commencement of the study.

IV. Results

Table. Showing correlation between maternal anemia and birth weight:

Birth weight	Maternal Hemoglobin		Significance
	<10 g/dl	>10 g/dl	
< 2.5 kg	58(58%)	13(13%)	p=0.001
2.5- 4 kg	41(41%)	78(78%)	
>4 kg	1(1%)	9(9%)	
Total	100	100	

V. Discussion

In this study, out of 100 anemic mothers 58(58%) delivered LBW babies, 41(41%) mothers delivered normal birth weight babies, and remaining 1 (1%) mother delivered a baby with a birth weight of >4 kg. Out of 100 non anemic mothers 13(13%) mothers delivered LBW babies, 78(78%) mothers delivered normal birth weight babies, and 9(9%) mothers delivered babies having birth weight >4 kg. It is obvious that there is significant correlation between maternal anemia and birth weight having a 'p' value of 0.001. Similar results were observed in studies conducted in past by Ahmad MO et al⁹ (p <0.001).

VI. Conclusion

The results of this study show an association of maternal anaemia in third trimester of gestation with increased risk of LBW babies. Maternal anaemia is a common complication of pregnancy in developing

countries like India that can be detected by simple and low cost screening test, which can be prevented by adequate measures and prophylaxis during pregnancy.

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