ORIGINAL ARTICLE

Maternal Anaemia Is An Independent Risk Factor For Preterm Labour

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ABSTRACT

INTRODUCTION: Anemia is the main hematological complication during pregnancy. Over the world, anemia during pregnancy is a public health problem. Low folic acid intake increases the risk for preterm delivery.

OBJECTIVE: To determine the association between maternal anemia and preterm labour.

STUDY DESIGN: Cross-sectional study

SETTING: Obstetric and Gynaecology Department, Sir Ganga Ram Hospital, Lahore

DURATION OF STUDY: Study was carried out over a period of six months from 01st January 2009 to 30th June 2009

MATERIAL AND METHOD: Total 280 antenatal laboring patients, of which 140 between 24 and 37 weeks of gestation (group-A), remaining 140 >37 weeks of gestation (group-B) were selected.

RESULTS: Regarding distribution of cases be age, majority of the patients were between 21-25 years i.e. 73(52.1%) and 77 (55.0%) in group-A and B, respectively. Minimum patients were between 31-35 years of age, in group-A (8.3%) and in group-B, 5 patients (3.6%) with mean age 28.3+_ 5.1 and 29.5+_3.7 in group-A and B respectively. 71 (50.7%) preterm laboring were anemic, the remaining 69 (49.3%) were not anemic. 39 (27.9%) of term labouring patients were anemic while 101 (72.1%) were not.

CONCLUSION: The study concludes that anemia has got a significant effect on the occurance of preterm labour.

KEY WORDS: Maternal anemia, preterm labour, nutrition.

INTRODUCTION

Anaemia is the commonest medical disorder in pregnancy. It affects about 18% of pregnant women in developed and 35-75% of pregnant women in developing countries. According to World Health Organization, maternal anaemia is taken as haemoglobin concentration of less than 11gm% or a haematocrit of less than 33cm fall in 1st hour.[1]

Severe anaemia in pregnancy results in relatively poor maternal and fetal outcome[2], preterm delivery being among other[3,4]. Preterm birth (PTB) is a major determinant of neonatal mortality, morbidity and childhood disability and remains one of the most serious problem in obstetrics.

Anaemia is the commonest problem during pregnancy particularly in developing countries like pakistan[5]. Defined as haemoglobin level below the fifth percentile of a trimester specific haemoglobin reference level in iron-supplemented pregnant women. The prevalence of anaemia among women participating in public health nutrition programmes is approximately 8% in the first trimester, 12% in the second trimester and 29% in the third trimester. Among women in whom haemoglobin was measured in the second trimester, the corresponding rate of preterm birth was 8.3% among women with haemoglobin levels in the normal range and 10.3%, 13.4% and 16.5% among women with low normal haemoglobin, mild, and moderate to severe anaemia respectively[6].

Anaemia means a deficiency of red blood cells, which can be caused either by too rapid loss or too slow production of red blood cells leading to decreased oxygen carrying capacity of blood causing tachycardia, tiredness, breathlessness and other symptoms. Anaemia can also be defined as reduction below normal limits of total circulating red cell mass[7].

The overall prevalence of anaemia is estimated to be about 40% of world's population. The prevalence is 35% for non-pregnant women and 51% for pregnant women globally, and tends to be 3-4 times higher in non-industrialized countries[8]. Nearly half of the global total number of anaemic women live in the subcontinent and in

India alone, the prevalence of anaemia is as high as 88%[9].

Pathological anaemia of pregnancy is mainly due to iron deficiency. Iron nutritional status depends on long term balance and is favored by ingestion of adequate amount of iron in diet. The balance is adversely affected by the loss of iron through intestinal mucosal turnover and excretion, skin desquamation, menstruation and lactation[10].

Hereditary anaemia and other nutritional deficiencies particularly of folic acid or vit.B12 are also important causes of anaemia. The importance of other causes of anaemia varies from population to population.

The rationale of my study is to determine the association between maternal anaemia and preterm labour.

RESULTS

Total 280 antenatal laboring patients, of which 140 between 24 and 37 weeks of gestation (group-A), remaining 140 >37 weeks of gestation (group-B) were selected from labour room of Sir Ganga Ram Hospital, Lahore, based upon inclusion criteria. Informed consent was taken. Their haemoglobin was calculated by kit method to determine presence or absence of anaemia. All this information was recorded on a pre-designed proforma.

The data were entered and analyzed by SPSS version 10.0, computer based software programme. Age and gestational age, was presented by mean+_ standard deviation. Frequency and percentage of anaemic patients in each group was calculated to see any association between maternal anaemia and preterm labour. Chi-square test was used to compare anaemia between the two groups. P value <_0.05 was taken level of significance.

Regarding distribution of cases be age, majority of the patients were between 21-25 years i.e. 73(52.1%) and 77 (55.0%) in group-A and B, respectively. Minimum patients were between 31-35 years of age, in group-A (8.3%) and in group-B, 5 patients (3.6%) with mean age 28.3+_ 5.1 and 29.5+_3.7 in group-A and B respectively(table 1). In group A, 71 (50.7%) and in group B, 39 (27.9%) patients were anaemic. The difference between two groups was statistically significant (P<0.001) (table 2).

Table-1: Distribution of cases by age

Age (year)	**GROUP-A (>24 to <37 weeks of Gestation)**		**GROUP-B (> 37 weeks of Gestation)**	
	No.	**%**	**No.**	**%**
<20	15	10.7	13	09.3
21-25	73	52.1	77	55.0
26-30	40	28.6	45	32.1
31-35	12	08.6	05	03.6
Total	140	100	140	100
Mean+_SD	28.3 +_ 5.1		29.5+_3.7	

Table-2: Distribution of cases by presence of anaemia

Anaemia	**GROUP-A (>24 to <37 weeks of Gestation)**		**GROUP-B (> 37 weeks of Gestation)**	
	No.	**%**	**No.**	**%**
Yes	71	50.7	39	27.9
No	69	49.3	101	72.1
Total	140	100	140	100

Chi square : 15.33
Df: 1
P value: <0.001

DISCUSSION

There are many factors that are associated with preterm labour delivery. These include maternal conditions such as maternal illness, anaemia and uterine malformations. Preterm birth is the major cause of perinatal mortality and morbidity in both high and low income countries[11]. The causes of preterm labour are multiple but anaemia is important.

The role of maternal anaemia in preterm birth remains poorly defined. Zhang et al examined if maternal anaemia exposure both within and across trimesters during gestation is associated with preterm birth. They demonstrated that anaemia in early pregnancy was found to be associated with increased risk for preterm, whereas exposure in late pregnancy was associated with reduced risk for spontaneous preterm labour[12].

Prematurity is major cause of perinatal mortality[13]. Our results suggested that there is an increased risk of preterm labour when level of Hb is less than 10g/dL. In this study, an analysis was done to determine the association between maternal anaemia and preterm labour.

According to Scholl and Hediger, the relationship between anaemia during pregnancy, evaluated in third trimester and poor obstetric outcome is not strong[14]. Defining maternal anaemia as maternal Hb lower than 10g/dL in a study done in Hong Kong, Lao and Pun[15] concluded that pre-natal anaemia is not associated with a poor obstetric outcome for both nulliparous and multiparous pregnant women.

Lumley[16] suggested that it is important to point out that nearly all of our pregnant women have a low income status. This could be the hidden biological reasons causing nutritional maternal anaemia, i.e., multiparity, starvation, hookworm and other intestinal parasites, low PCV number etc. It is necessary to improve the health of women with maternal anaemia of the third trimester. The iron and folate supplements could be beneficial in countries with a high prevalence of iron deficiency anaemia[17].

During pregnancy, what should the daily supply of folic acid be? During pregnancy a daily intake of 400microgram has been advised, and it has been argued that synthetic folic acid is much better absorbed and more readily available than natural folic acid[18]. Cuadill et a[19] suggest that 450 microgram/day folic acid is sufficient to maintain folate status in pregnant women. In brief, folic acid supplementation does fluctuate between 400 and 450 microgram/day.

CONCLUSION

The study concludes that anaemia has a significant effect on the occurrence of preterm labour. Correlation of even mild anaemia might improve the poor fetal and neonatal outcome. Correction of anaemia will also decrease the incidence of APH, PPH and infections. Anaemia might indirectly cause preterm labour as it increases the risk of infections. So greater effort should be made towards prevention and correction of anaemia especially in underdeveloped countries like Pakistan so that maternal and child health can be improved.

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