

PREVALENCE OF ANEMIA IN PREGNANT WOMEN AND ITS EFFECTS ON MATERNAL AND FETAL MORBIDITY AND MORTALITY

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ABSTRACT

Objective: To determine the frequency of anemia in pregnant women and its effect on maternal and fetal morbidity and mortality.

Methodology: It is a prospective study of 500 pregnant women attending OPD of obstetrics and gynaecology department, Muhammad Medical College Hospital, Mirpurkhas Sindh during one year from 1st April 2007 to 31st March 2008. The patients were selected randomly irrespective of their gestational age. Data was entered on a pro forma, blood CP was done and those with anemia were selected for further study.

Results: Out of 500 pregnant women randomly selected for the study, 375 were diagnosed to have anemia of different severity and etiology. About 20 % of them were in their first trimester, 25.8% in 2nd and 54.2% in the 3rd trimester. Majority of women had moderate anemia (i.e 52%) while 36% were mildly anemic. Severe anemia was seen in 12% of patients. About nine percent of women delivered before term, and 12.5% of babies were born with low birth weight. Prevalence of perinatal mortality was 2.1%. Two women suffered from abruption while 15 women had post partum haemorrhage (PPH).

Conclusions: There is a very high prevalence of anemia with pregnancy, especially during third trimester and significantly affects the maternal and fetal outcome in pregnancy

KEY WORDS: Anemia, Intrauterine growth retardation, Low birth weight, Abruption, perinatal mortality.

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INTRODUCTION

Various women start pregnancy with some degree of iron deficiency anemia which is further aggravated with physiological changes of haemodilution of pregnancy, beginning in the first trimester up to 32 weeks of pregnancy and so on. WHO standard of diagnosing anaemia in pregnancy is a hemoglobin level of 11gm/dl or less. The commonest cause being iron deficiency but folic acid deficiency, B12 deficiency and beta thalassemia trait besides other common contributing factors.

Detailed blood picture with absolute values and morphology of RBCs, in addition to

serum iron binding capacity of serum, serum iron content are other tests needed for complete evaluation of the disease. Malnutrition, inadequate intake of medications is another important aspect which need emphasis. Menorrhagia, poor spacing of children, multiparity, in addition to blood loss in pregnancy and child birth need attention. Anemia during pregnancy is a well known and considerable risk factor for both mother and the fetus and is associated with an increased incidence of maternal and fetal morbidity and mortality.^{1,2} It continues to be a major health problem in many developing countries and is associated with increased rates of maternal and perinatal mortality, preterm delivery, low birth weight, and other adverse outcomes.^{3,4} Maternal consequences of anemia are also well known and include cardiovascular symptoms, impaired physical and mental performance, reduced immune function, tiredness, preeclampsia and abruption.¹ In Pakistan like rest of the world, microcytic hypochromic anemia is well documented.⁵ Relationships between anemia and adverse birth outcomes have been inconsistent, some studies have shown anemia to be significantly associated with the risk of adverse birth outcomes,⁶⁻¹¹ whereas others have not.¹²⁻¹⁵

METHODOLOGY

Five hundred pregnant women from out patient department (OPD) were selected randomly, irrespective of their gestational age during the one year study period. Anemia was diagnosed on the basis of hemoglobin level, the cut off value of which was 11 gm/ dl, blood indices and peripheral film. Anemia was said to be mild at hemoglobin level of 10.9gm/dl, moderate with hemoglobin level of 7-10gm/dl and severe when hemoglobin level was <7.0gm/dl.

Data on age, parity, gestational age and clinical symptoms was obtained. Fetal well being was assessed clinically and by ultrasound. Maternal morbidity was assessed by pre eclampsia, abruption and PPH. Weeks at the time of delivery and birth weight were noted. Statistical analysis was performed using simple frequencies.

RESULTS

Out of 1043 women during study period, 500 pregnant women were selected randomly because many patients missed follow up. Twenty percent of them were in their first trimester and the prevalence increased as the pregnancy progressed and became 25.8% in 2nd and 54.2% in the 3rd trimester.

The prevalence was also higher in women with high parity and was maximum in women with 5 or more children. Majority of women had moderate anemia while 36% were mildly anemic. Severe anemia was seen in 12% of patients. About 8% of women delivered before term, while 12.5% of babies were born with low birth weight with majority in the range of 1.5- 2.5 kg. The prevalence of perinatal mortality was 2.1%. Two women suffered from abruption while 4% of women suffered from PPH. Table-I.

Table-II shows number of anaemic women in different trimesters while Table-III gives details regarding number of pre-term deliveries in anaemic women.

DISCUSSION

Anemia in pregnancy is an important and preventable cause of maternal and fetal morbidity and mortality. A very high prevalence of anemia (75%) has been observed in this study. Same results have been observed in another study.¹⁶ Although only 15% of pregnant women are anemic in western countries, the prevalence of anemia in developing countries is relatively high (33%-75%).¹⁷ High incidence of iron deficiency anemia has been repeatedly reported by various Pakistani studies^{5, 18}. In a study conducted at Karachi, prevalence of iron deficiency anemia was found to be 50% despite routine iron therapy.¹⁸ Studies from other developing countries specially India and Africa report a

Table: I Percentage of babies born with low birth weight

S.No	Weight in kg	No of patients(%)
1	<1.5	17(4.5)
2	1.5-2.5	30(8.0)
3	Total	47(12.5)

Table II Number of anaemic women in different trimester

S. No	Trimester	No. of patients (%)
1	1 st	75(20)
2	2 nd	97(25.8)
3	3 rd	203(54.2)
4	Total	375(100%)

similarly high incidence of iron deficiency anemia among pregnant women.¹⁹

Majority of patients 54% presented in 3rd trimester, while 26% in 1st trimester and 20% in 2nd trimester. This high prevalence of anemia in 3rd trimester could be due to maximum demand of micronutrients in this time period combined with already existing iron deficiency in our socioeconomic setup because majority of patients in this area belong to poor socioeconomic class and also majority of women have their first antenatal visit when they are reaching term. Within the first trimester of pregnancy, 10–13% of this population had anemia as evidenced by hemoglobin concentrations of <11g/dl. This increased dramatically in adolescents studied during the third trimester of pregnancy; 57–66% of this population had anemia.

Majority of patients presented with moderate anemia (52%), 12% with severe anemia requiring blood transfusions, 36% of pregnant women were mildly anemic. Somewhat similar results have been seen in a study conducted at Multan where severe anemia was observed to be 8%, mild anemia in 44% and moderate anemia in 48% of patients.⁵ In contrast to this 90% of women were mildly anemic while no case of severe anemia was seen in another study.²⁰ There is substantial evidence showing that maternal iron deficiency anemia early in pregnancy can result in low birth weight subsequent to preterm delivery. In our study low birth weight was seen in 13% of cases, while preterm delivery was seen in 9% of cases. This supports the conclusion of other studies that maternal anemia especially before mid pregnancy increases the risk of preterm delivery.^{21,22} Perinatal mortality was seen in 2.1% of cases which was due to prematurity mainly.

Current knowledge indicates that iron deficiency anemia in pregnancy is a risk factor for

Table III Number of preterm deliveries in anaemic women

S. No	Duration of gestation	No. of patients(%)
1	<35 weeks	7(1.9)
2	35-37 weeks	26(6.93)
3	>37 weeks	342(91.2)

preterm delivery, and subsequent low birth weight. We did not go for the iron studies in our patient due to its cost but because many studies have indicated that >80% of anemia during pregnancy is because of iron deficiency^{23,24}, it is most likely that iron deficiency was prevalent in this group of patients.

Welsh women who were first diagnosed with anemia (hemoglobin <104 g/L) at 13–24 week of gestation had a 1.18–1.75-fold higher relative risk of preterm birth, low birth weight, and prenatal mortality.²⁵ After controlling for many other variables in a large Californian study, Klebanoff et al²⁶ showed a doubled risk of preterm delivery with anemia during the second trimester but not during the third trimester. A study conducted in pregnant adolescents and adults from Camden, New Jersey, indicated that iron-deficiency anemia, but not anemia due to other causes, is associated with an increased risk of LBW and preterm delivery.²⁷ Preterm labour and low birth weight are the incidence all over obstetric world which are known as contributing factors. In very few situations the clinical scenario is self explanatory. Anemia in pregnancy cannot be blamed to excite oxytocic activity in itself.

The frequency of anemia in pregnancy speaks of the substandard health of our female population of childbearing age and shows the indifference on part of women themselves and their treating physicians toward an easily treatable pathology. By far majority of women suffer from iron deficiency anemia and superadded malnutrition.

Effects of anaemia in pregnancy on mother: Maternal mortality amongst anemic women is five times more than non anemic women as anemic women are less likely to withstand obstetric haemorrhage, obstetric shock and trauma of difficult and complicated labour and infection which badly handled women have

gone through. High cardiac output failure is likely when hemoglobin of the patient is 6gm/100ml or less specially in cases of pre eclampsia and hypertension.

Effects of maternal anaemia on fetus: With mild and moderate anemia harmful effects may not be seen immediately. There may be certain speech learning and behavioral problems as the child grows up. Severe anemia in mother with hemoglobin six grams per 100ml is associated with preterm labour and still birth. Fetus being a total parasite takes up essential iron from maternal circulation during its development and about 350 mg in total gestation and most of the time born with a cord blood hemoglobin of 14-16 grams at birth. During subsequent development in extrauterine life the iron deficiency may occur as breast milk is a poor source of iron hence neonatal anemia is common if not taken care of. In fetal life anemia can occur due to hemolysis due Rh incompatibility or viral infection of fetus leading to hydrops.

CONCLUSIONS

There is still a very high prevalence of anemia, especially during third trimester which significantly affects the maternal and fetal outcome during pregnancy. Anemia should be promptly prevented and treated in all women including adolescents to avoid unwanted effects on maternal and fetal health.

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