ORIGINAL ARTICLE

Feto-Maternal Outcome in Pregnancy with Anemia

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ABSTRACT

Objective: To determine the frequency of women having pregnancy with severe anemia, its maternal complications and feto-maternal outcome.

Study Design: Descriptive Case Series study.

Place and Duration of Study: This study was conducted at Obstetrics and Gynecology department, CMH / SKBZ Al-Nayhan Hospital Muzaffarabad from 15th April 2014 to 20th Oct 2014.

Materials and Methods: A total of 186 pregnant women admitted for delivery with gestational age ≥ 34 weeks were included in the study. Demographic information regarding age, gestational age and parity was taken on predesigned Performa. Intra-partum and post-partum observations were made for maternal complications like pregnancy-induced hypertension and postpartum hemorrhage. Perinatal complications like low birth weight and APGAR score < 7 at 5 minutes were noted.

Results: Mean age of women in the study sample was 26.76±3.36 years. Mean gestational age of women was 38.46±0.63 weeks. Thirty-five (19%) women were diagnosed with anemia among which 12(6.5%) women had severe anemia, 4(2.2%) had mild, and 19(10.2%) had moderate anemia. The frequency of PIH (37.14%), PPH (17.14%), Low birth weight (62.68%) and APGAR score < 7 (60%) was noted higher in anemic patients.

Conclusion: Severe anemia during pregnancy significantly increases the chance of adverse perinatal and maternal outcomes in terms of PIH, PPH, Low birth weight and APGAR score.

Key Words: *Apgar Score, Fetomaternal Outcome, Induced Hypertension, Low Birth Weight, Pregnancy, Post-Partum Heamorrahge, Severe Anemia.*

Introduction

Pregnancy is a vital part of a woman's life but it is period of greater risks of different complications for mother and fetus. One of the most prevalent complication is anemia, which is being faced throughout the world. This challenge is more commonly faced in developing countries due to poor nutritional status.[1]

According to the estimates of (WHO), anemia has a prevalence of 23% in developed countries with almost double in developing countries.[2] The average prevalence rate is 56% in developing countries with a great variation with respect to different regions of the world ranging from 35% to 100%.[3]

Some women have iron deficiency anemia at start of pregnancy, which begins to exacerbate due to physiological changes of mother due to pregnancy. This complication begins in first trimester and increases with passage of pregnancy. According to WHO definition the women having hemoglobin level of 11 gm/dl or less is considered as anemic during pregnancy.[4]

There are many risk factors which contribute to pregnancy anemia including iron deficiency which is considered main cause of anemia. Other contributing factors are deficiency of B12 or thalassemia trait, which are also a very common causes of anemia. The prevalence of anemia is very high especially in third trimester and have a very significant adverse impact on maternal health during pregnancy and fetal outcome.[5]

Very severe adverse consequences are related with anemia in pregnancy for mother and fetus. These adverse effects are not bounded during pregnancy, neonatal and infant period only, but this increases

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the chances of non-communicable diseases during adulthood as well. Studies have also shown relationship of low birth weight in next generation with anemia during pregnancy. Anemia is preventable complication of pregnancy and it can easily be diagnosed and treated with easily available techniques and tools which are affordable and can be implemented in even primary health care settings. [6,7]

The frequency of maternal complications is very high among sever anemic pregnant women in comparison with normal pregnant women. In a study it was noted that in anemic pregnant patients the maternal complications like pregnancy induced hypertension (36% vs. 10%), infections (16% vs. 5%) and Post-Partum Heamorahhge (14% vs. 5%) was significantly higher in contrast to normal pregnant women. [5] Similarly the fetal outcome like low birth weight (57.62% vs. 42.37%), and apgar score < 7 (57.57% vs. 42.42%) was also significantly distressed in Anemic patients. Some studies have shown significantly very high difference in low birth weight (64% vs 10%) in anemic and non-anemic pregnant women.[8] Antenatal iron-folic acid supplementation reduces low birth weight and preterm in both developed and developing country settings.[9]

Studies conducted in Pakistan show a high percentage of anemia during pregnancy so this study had been planned to find out the adverse effects of anemia during pregnancy on maternal complications (like pregnancy induced hypertension and post-partum hemorrhage) and fetal outcome in terms of low birth weight in our local target population in comparison with normal controls. The aim of this stud is to determine the frequency of women having pregnancy with severe anemia, its maternal complications and feto-maternal outcome.

Materials and Methods

In this Descriptive Case Series study, a total of 186 pregnant women were included from Obstetrics and Gynecology Dept. CMH / SKBZ Al-Nayhan Hospital Muzaffarabad. This study was conducted in a period of seven months from 15th April to 20th Oct 2014. The sample size was calculated by using WHO sample size calculator taking Confidence level of 95 %, Anticipated population proportion P = 14%[2], and Absolute precision required = 5%.

All the women were recruited for the study by non-probability consecutive sampling method. The study was started after taking formal written permission from hospital ethical committee. Informed written consent was taken from all patients who fulfilled the inclusion and exclusion criteria. All women admitted for delivery with gestational age ≥ 34 weeks were included in the study. Pregnant women with known history of thalessemia and sickle cell anemia, women with ante-partum hemorrhage and no available previous report of Hb were excluded from the study.

Demographic information regarding age, gestational age and parity were taken on predesigned Performa. Blood sample was taken from each patients and sent to the laboratory for hemoglobin level. The WHO's anaemia classification and categorization was adopted for functional definition of haemoglobin conditions; anaemic (serum Hb 5-11g/dL), and non-anaemic (serum Hb>11g/dL) the anemic group was further divided into Mild (9-10.9 g/dL), Moderate (7-8.9 g/dL) and severe anemia (< 7 g/dL). Intra-partum and post-partum observations were made for maternal complications like hypertension and postpartum hemorrhage. Perinatal complications like low birth weight and APGAR score < 7 at 5 minutes were noted.

All data was analyzed using SPSS Version 21. Mean and standard deviation was calculated for numerical variables. Frequency and percentages were calculated for categorical variables. Effect modifiers like age, parity and gestational age was controlled by stratification. Post stratification Chi square test was applied to compare pregnancy induced hypertension, PPH, Mode of delivery, APGAR score (< 7) at 5 minutes, low birth weight in anemic pregnant and non-anemic pregnant women. P-value <0.05 was considered significant.

Results

In this sample of 186 women the mean age was 26.76±3.36 years with minimum and maximum age of 22 and 37 years respectively. Parity status showed that most of the 62(33.3%) women had 2 children, followed by 61(32.8%) women with parity 3, and 21(11.3%) women had parity 1, there were 17(9.1%) women whose parity was 0, and 16(8.6%) & 9(4.8%) women had parity 4 & 5 respectively. Mean gestational age of women was 38.46±0.63 weeks, ranging from 37 to 40 weeks. In our study sample,

35(19%) women diagnosed with anemia. As per WHO criteria there were 151(81.2%) women who had normal Hb level, among anemic women 4(2.2%) had mild, 19(10.2%) had moderate and only 12(6.5%) women had severe anemia. (Fig 1).

There were 29(16%) women with pregnancy induced hypertension. Post-Partum heamorahhge was seen in 17(9%) women. There were 62(33%) fetus who had low birth weight. APGAR score <7 was observed in 84(45%) babies. (Fig 2).

In our study sample 35 women were anemic and among these 13 (37.14%) women had pregnancy induced hypertension. While Among 151 non-anemic women only 16 (10.59%) had pregnancy induced hypertension. A statistically significant (p-value=0.000) association was present between anemia and pregnancy induced hypertension. Among anemic women 6 (17.14%) suffered from Post-Partum Hemorrhage, while among non-anemic only 11 (7.29%) suffered from Post-Partum Hemorrhage. Which shows statistically insignificant *(p-value=0.068)* association between anemia and Post-Partum Hemorrhage. (Table I).

The results showed that among anemic women the fetal outcome was significantly poor as compared with non-anemic women. Among women with anemia 22 (62.86%) had low birth weight babies as compared to non-anemic mothers in which 40 (26.49%) had low birth weight babies showing a statistically significant *(p-value=0.000)* association between mother's anemic status and low birth weight babies. Similarly, among babies of anemic mothers, APGAR score <7 at 5 minutes was observed in 21 (60%) babies as compared to 63 (41.72%) babies of non-anemic mothers who had APGAR score <7 at 5 minute. There was no statistically significant *(p-value=0.05)* association between anemia and APGAR score <7 at 5 minutes. (Table II).

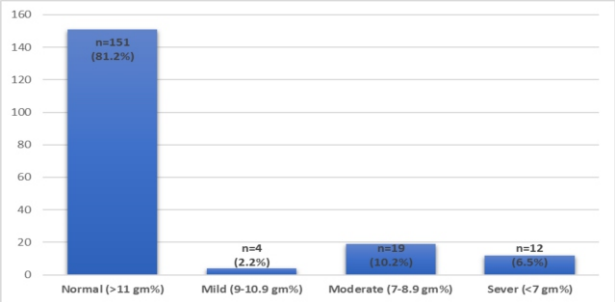

Fig 1: Bar Chart Showing Frequency Distribution of Different Categories of Anemia

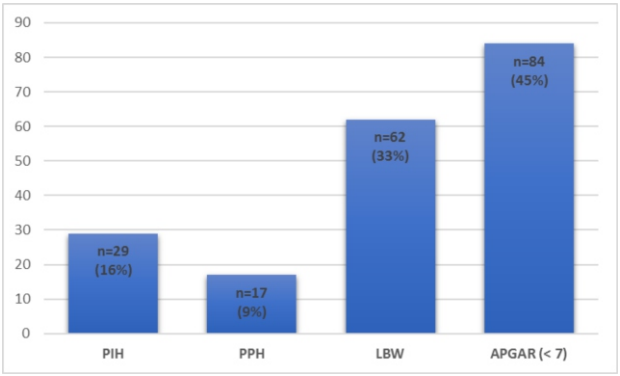

Fig 2: Bar Chart Showing Distribution of Maternal Complications & Fetal Outcome

Table I: Maternal Complications in the Cases of Pregnancy with Anemia (n= 35)

Complications	Anemia		Total	P-Value
	Pregnancy with Anemia (n=35)	Pregnancy with Normal Hb (n=151)		
Pregnancy induced Hypertension	13(37.14%)	16(10.60%)	29	0.000 *
Post-Partum Hemorrhage	6(17.14%)	11(7.28%)	17	0.068 **

* Difference is significant at 5% level of significance

** Difference is not significant at 5% level of significance

Table II: Perinatal Complications like Low Birth Weight and Apgar score < 7 At 5 Minutes in Pregnancy with Anemia

Complications	Anemia		Total	P-Value
	Pregnancy with Anemia (n=35)	Pregnancy with Normal Hb (n=151)		
Low Birth Weight	22(62.86%)	40(26.49%)	62	0.000 *
APGAR Score (<7)	21(60%)	63(41.72%)	84	0.050 **

* Difference is significant at 5% level of significance

** Difference is not significant at 5% level of significance

Discussion

Anemia is a pregnancy complication which can be prevented easily and fetal and maternal morbidity and mortality related to anemia can be minimized.

The prevalence of anemia is very high with great variations in different regions around the globe. It varies from 15% in western countries to 75% in developing countries of Africa and Asia. In developing countries its prevalence ranges from 33% to 75% in different regions. [5,10,11]

The incidence of iron deficiency anemia in Pakistan has been report quite high by different studies. A high incidence of 50% was found despite routine iron therapy in a study conducted in Karachi. Similar high incidence of iron deficiency anemia among pregnant women has been reported from other developing countries of Africa and India. [12-14]

Women having anemia during pregnancy often feel body aches and fatigue. There are many causes of anemia in Pakistan. The main contributing causes are poor economic conditions, repeated pregnancies with short interval, gender bias, worm infestation and lack of health seeking behavior. The major causative factor for anemia in Pakistan is iron deficiency during and at the start of pregnancy. [15] The anemia a common pregnancy complication increases the risk of low birth weight and intra uterine growth retardation.[16]

In this study 35(19%) women had anemia. As per WHO criteria 151(81.2%) women had normal Hb level, 4(2.2%) had mild, 19(10.2%) moderate and only 12(6.5%) women had severe anemia.

Two local studies one from Sindh and the other from Multan reported (52%) of patients presented with moderate anemia, 12% with severe anemia requiring blood transfusions, and 36% of pregnant women were mildly anemic. 3 While study from Multan showed severe anemia in 8%, mild anemia in 44% and moderate anemia in 48% of patients.[12] This prevalence of anemia in this study 19% was comparable to studies conducted in Trinidad and Tobago (15.3%), Thailand (20.1%), Zurich (18.5%), Hawassa (15.3%), and Gondar town (22%).[17-21]

In this study pregnancy induced hypertension was present in 37.14% women who were anemic and present in 10.60% in women who were not anemic. Post-Partum Heamorahhge was seen in 17.14% women who were anemic and in 7.28% women who were not anemic. Among 62.86% anemic mothers the babies were low weight while 26.49% among non-anemic women babies had low birth weight. There were 60% women whose fetus had APGAR score <7 at 5th minute and 41.72% non-anemic women's babied had APGAR score <7 at 5minute.

Ram Hari Ghimire in his study explored the association between anemia and maternal and perinatal complications. In his results he reported that pregnancy induced hypertension and Post-Partum Hemorrhage was significantly high is women who were anemic (PIH =36%, PPH= 14%) as compared to (PIH=10%, PPH=5%) in non-anemic women. Results regarding fetal complication among anemic and non-anemic mothers showed that APGAR score <7 was 18% and 5% among anemic and non-anemic mothers and low birth weight of fetus was observed as 22% and 9% in anemic and non-anemic mothers.[5]

Lone *et al*, in a multivariate analysis of their study population showed that the risk of low birth weight babies in the anemic population was 1.9 times higher.[22] A local study from Rawalpindi reported the number of low birth weight infants (64%) was highly significant in the anemic mothers than the non-anemic (10%).[23]

The anemia during pregnancy increases the chances of obstetric haemorrhage, infection rate and obstetric shock and trauma due to labour complication etc. This increases the chance of maternal mortality by five times as compared with non-anemic women. Similarly, in severe anemic patients having hemoglobin less or equal to 6 gm/100ml the chance of high cardiac output failure rises significantly specifically in cases of hypertension and pre-eclampsia. These complications are less likely to occur in patients having mild or moderate anemia. But in these patients having mild or moderate anemia the child can come up with some speech learning or behavioral problems.[24]

Anemia in pregnancy has been found as a significant contributing risk factor for adverse perinatal and maternal outcomes. Special attention should be given to minimize the anemia especially during pregnancy.

Conclusion

In this study anemia was observed in 19% pregnant women, in which 2.2% women had mild, 10.2% moderate and 6.5% women had severe anemia. There were significantly higher maternal complications among anemic women as compared

with non-anemic women. The fetal complications that is Low Birth Weight and APGAR <7 at 5 minute has also been found significantly associated with maternal anemia.

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