

ASSOCIATION OF MATERNAL ANEMIA WITH MATERNAL AND NEONATAL OUTCOME

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ABSTRACT

Objectives: To find out the association between maternal anemia and maternal and neonatal outcome.

Study Design: Cross sectional prospective study.

Place and Duration: This study was conducted at Gynae and Obstetrics department of Qazi Hussain Ahmed Medical complex (QHAMC) Nowshera from 20th April to 20th October 2017.

Materials and Methods: This cross sectional prospective study was carried out on three hundred and twenty five (325) pregnant women, who were admitted to labor ward of QHAMC. Their demographic and obstetric data entered on a pre-structured proforma. Blood was drawn to assess their haemoglobin (Hb) status and were classified according to World Health Organization (WHO) criteria into normal (> 11 gm/dl), mild (10-10.9 gm/dl), moderate (7 to 9.9 gm/dl) and severe (<7 gm/dl). Association of anemia with adverse maternal and neonatal outcome was measured in the form of postpartum haemorrhage (PPH), low birth weight (LBW), still birth and early neonatal death.

Results: 88 % of all the pregnant women were anemic with 36.9 %, 46.8% and 4.3% having mild, moderate and severe anemia respectively. Women with moderate anemia were more prone to develop pre-term labor and giving birth to low birth weight babies and also had high risk of developing PPH.

Conclusion: High prevalence of anemia with its dire consequences for both the mother and the baby is an alarming situation. Low cost and high impact interventions like increased uptake of quality antenatal care is direly needed to plug the gaps.

Key words: Maternal anemia, Neonatal outcome, maternal outcome, Haemoglobin concentration.

INTRODUCTION

Anemia is the commonest haematological problem in pregnancy specially in developing countries; with its prevalence ranging from 51 to 90.5 %.^{1,2} According to WHO a pregnant women is considered to be anemic when her Hb level is below 11 gm/dl as compared to 12 gm/dl in non-pregnant women. Anemia is further categorized as mild, moderate and severe when Hb concentration is < 10-10.9 gm/dl, 7-10 gm/dl and less than 7 gm/dl respectively.³ Major cause of anemia in pregnancy is iron deficiency, however other causes like worm manifestation, folate, Vit. B 12 deficiency and disorders of Hb Synthesis also contribute.^{4,5} Anemia is considered to be a risk factor for maternal and neonatal morbidity and mortality. It predisposes the women to increase risk of PPH, which is a leading cause of maternal mortality in our country.^{6,10} It is also responsible

for low birth weight, premature births and high perinatal mortality.⁷⁻¹¹ The present study was carried out to show the nexus between the maternal anemia and its adverse maternal and neonatal affects which will help to make some interventions based on evidence to improve the uptake and quality of antenatal care.

MATERIALS AND METHODS

This 6 months study was carried out at Gynae and Obstetrics department of QHAMC Nowshera from 20th April to 20th October 2017. It was prospective cross sectional study carried out on all the pregnant women admitted in labor ward. All the pregnant women after the age of viability were included in the study group. Women with chronic illnesses like chronic renal or liver diseases, any blood dyscrasias and placenta previa in current pregnancy were excluded from the study. Demographic and obstetric data of 325 patents was entered on pre-structured proforma. Blood was taken from all the patients and sent to the hospital laboratory for all the baseline investigations including full blood count using automated full blood count analyzer to assess the Hb status. Main outcome for the mother and baby were: a) primary PPH which is defined as blood loss of more than 500 ml from genital tract after delivery of the baby within first 24 hours, b) Low birth weight (baby weight < 2.5 Kg), c) Still birth and early neonatal death. Descriptive statistics were applied using SPSS version

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20 and results were displayed in the form of means, frequencies and percentages.

RESULTS

Based on available information 88 % of the women were anemic at the time of admission. 36.9% had mild anemia, 46.8% moderate and 4.3% with severe anemia. In socio-demographic data 48% (94) of multigravida while 42% (37) of primigravida were having moderate anemia. Majority of anemic patients were uneducated (88.3%) and house wives (87.9%) belonging to low socio economic group (88.1%).

Compared with women with mild anemia, women with moderate anemia had more pre term deliveries 16/325. There is increased risk of low birth weight (LBW) and small for gestational age (SGA) with increasing severity of anemia. Out study had LBW incidence of 5.9%

(9/325) in moderate anemia. So preterm deliveries and LBW babies are found to be increasing in number as severity of anemia increases.

Among labor complication, postpartum haemorrhage was found in 8.6% of moderately anemic group which was more than found in women with mild anemia (5.8%).

DISCUSSION

The prevalence of anemia in developing countries like Pakistan is very high and is considered to be a risk factor for maternal and neonatal morbidity and mortality.¹² In this six months study, prevalence of anemia was found to be 88% which is similar to a study conducted by Iven EA¹ who reported the study to be 83%. Similar results were found in a study done by Kalaivani et al.¹³

		Maternal Anemia				p-value
		Normal	Mild	Moderate	Severe	
Parity	Primigravida	12	36	37	3	0.662
		13.6%	40.9%	42.0%	3.4%	
	multigravida	20	72	94	8	
		10.3%	37.1%	48.5%	4.1%	
	Grand multi-gravida	7	12	21	3	
		16.3%	27.9%	48.8%	7.0%	
Maternal Education	Nil	31	99	122	13	0.971
		11.7%	37.4%	46.0%	4.9%	
	Primary	0	2	3	0	
		.0%	40.0%	60.0%	.0%	
	Middle	1	3	3	0	
		14.3%	42.9%	42.9%	.0%	
	Matric & Above	7	16	24	1	
		14.6%	33.3%	50.0%	2.1%	
Occupation	house wife	39	119	149	14	0.681
		12.1%	37.1%	46.4%	4.4%	
	Employed	0	1	3	0	
		.0%	25.0%	75.0%	.0%	
Socioeconomic Status	unsatisfactory	28	90	108	10	0.907
		11.9%	38.1%	45.8%	4.2%	
	Satisfactory	11	30	44	4	
		12.4%	33.7%	49.4%	4.5%	
Gestational Age	FTP	37	115	134	13	0.039
		12.4%	38.5%	44.8%	4.3%	
	PTP	2	5	16	0	
		8.7%	21.7%	69.6%	.0%	
	Postdates Pregnancy	0	0	2	1	
		.0%	.0%	66.7%	33.3%	

Fetal Outcome and Maternal Anemia

		Maternal Anemia				p-value
		Normal	Mild	Moderate	Severe	
Fetal Birth Outcome	alive	39	115	144	14	0.763
		100.0%	95.8%	94.7%	100.0%	
	still born	0	4	5	0	
		.0%	3.3%	3.3%	.0%	
	ENND	.0%	1.0%	3.0%	.0%	
		.0%	.8%	2.0%	.0%	
Weight of Baby	LBW	1	1	9	0	0.114
		2.6%	.8%	5.9%	.0%	
	Normal weight	38	119	143	14	
		97.4%	99.2%	94.1%	100.0%	

MATERNAL OUTCOME AND MATERNAL ANEMIA

		Maternal Anemia				p-value
		Normal	Mild	Moderate	Severe	
Mode of Delivery	NVD	31	101	120	9	0.011
		79.5%	84.2%	78.9%	64.3%	
	VBAC	2	4	3	0	
		5.1%	3.3%	2.0%	.0%	
	Breech	0	1	3	0	
		.0%	.8%	2.0%	.0%	
	Elective C.S	5	9	16	3	
		12.8%	7.5%	10.5%	21.4%	
	Emergency C.S	1	5	10	1	
		2.6%	4.2%	6.6%	7.1%	
Twin delivery	0	0	0	1		
	.0%	.0%	.0%	7.1%		
Labor Onset	Spontaneous	38	117	148	13	0.791
		97.4%	97.5%	97.4%	92.9%	
	Induced	1	3	4	1	
		2.6%	2.5%	2.6%	7.1%	
Labor Complication	Nil	35	112	139	13	0.835
		89.7%	93.3%	91.4%	92.9%	
	APH	0	0	0	0	
		.0%	.0%	.0%	.0%	
	PPH	4	7	13	1	
		10.3%	5.8%	8.6%	7.1%	
	Dysfunctional Labour	0	1	0	0	
		.0%	.8%	.0%	.0%	

Relationship between maternal Haemoglobin concentration and neonatal birth weight is a subject of debate. Many studies report inverse relationship, probably due to high blood viscosity and suboptimal placental perfusion. While others suggest adverse birth outcome that is low birth weight with increasing severity of anemia.¹⁴ In a study done by Nair M,¹⁵ women with severe anemia had high odds of giving birth to LBW babies as well as had higher odds of PPH. In our study, we found that LBWs delivered more to women with moderate anemia (5.8%) as compared those with mild anemia. Moreover, moderately anemic women suffered more from PPH (13%).

Low haemoglobin concentration at the end of second trimester usually due to increased plasma volume is associated with reduced risk of still birth. This was supported by a study done by Maghsoudlou et al,¹⁶ while in our study the still birth risk was not increased and remained the same in both mildly and moderately anemic groups (3.3%).

CONCLUSION

Early detection of anemia in pregnancy is vital to prevent adverse maternal and neonatal outcome if timely intervention is done earlier in pregnancy than PPH which is the leading cause of maternal mortality in our country can also be overcome to great extent.

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