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ANEMIA DURING PREGNANCY IS A MAJOR PUBLIC HEALTH PROBLEM-A PROSPECTIVE STUDY AT THOOTHUKKUDI MEDICAL COLLEGE HOSPITAL.

Gynaecology

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ABSTRACT

OBJECTIVES AND BACKGROUND: Anemia during pregnancy is a major public health problem especially in developing countries like India. This prospective study is aimed to find out the incidence of preeclampsia in mild, moderate, and severe anemia and to analyse the synergistic effect of anemia with preeclampsia in pregnancy associated Morbidity and Mortality .

METHODS; This prospective observational study was carried out at Govt.Thoothukkudi Medical College Hospital during the period of Jan 2016 to December 2016 on 200 patients Pregnant women attending the antenatal out patient department and labour ward with hemoglobin value less than 11gms and after 20 weeks of gestation were selected for the study. After recording the base line data, patients with moderate and severe anemia were advised admission for anemia evaluation and treatment .In these patients the incidence of preeclampsia at the time of admission were calculated. The patients with preeclampsia were admitted for preeclampsia evaluation The selected patients were monitored and followed till delivery

RESULTS; In this study 83% of the patients were in the moderate anemia with Hb 7.to 10 gms. 11% of the patients were in the severe anemia with Hb less than7grams and 6% of the cases were in the mild anemia (Hb 10-11gms). This study was showed the association between anemia and the preeclampsia, anemic patients were more prone to develop preeclampsia due to associated hypo proteinemia. More severe the anemia, greater the chance to get preeclampsia. Incidence of preeclampsia in the study was 18.5%, the p value shows .000 highly significant Incidence of severe preeclampsia was 11.5% and incidence of mild preeclampsia was 7%.Maternal outcome of the study showed that AtonicPPH - 6%.Pulmonary edema -1.5%, Death occurred in one case in the studypopulation.Both HELLP and DIVC occurred in one case 0.5%.Abruptio placenta occurred in 1%.Eclampsia occurred in 2% of the cases.20% of babies were low birth weight

CONCLUSION: Anemia during pregnancy is still continues to be a major problem in developing countries with maternal and fetal complications The coexistence of preeclampsia in anemic women's worsening the situation. In preeclampsia, there was already intravascular volume depletion hence anemia gets masked the patients are not able to cope up even with mild blood loss during delivery .Correct diagnosis and treatment of the underlying cause can improve the maternal outcome.We have to counsel the pregnant mothers during their antenatal checkup regarding the importance of blood pressure monitoring, screening and correction of anemia prior to pregnancy and Iron and folic acid supplementation. The Tenth plan strategies has to be effectively implemented to all pregnant women with anemia to reduce the maternal mortality and morbidity and long term consequences of anemia.

KEYWORDS

Anemia, pre Eclampsia.

INTRODUCTION

Anaemia in pregnancy is one of the most important public health problems. Anemia is the most common medical disorder in pregnancy especially in developing countries. It is responsible for 20% of direct cause of Maternal Mortality in developing countries. In recent years, worldwide an estimated five lakh women die as a result of pregnancy each year. Approximately one quarter of all pregnancy and delivery related maternal deaths Worldwide occur in India [1,2}.

The current estimated Maternal Mortality Ratio in India is 301 per 100,000 live births. This translates in to about 80,000 pregnant women dying annually. Most maternal deaths are preventable% In Asia .more than 70% of maternal deaths are due to direct complications .Hemorrhage 31%. Sepsis/infection 12% unsafe abortion 6% [3,4] .Eclampsia 9% obstructed labour 9%. Severe anemia is a critical underlying factor and important indirect cause of maternal deaths in India. Most maternal deaths occur between the third trimester and the first week after delivery[3]

Prevalence of anemia in India is about 60% which is increased to 80% during pregnancy. Most of the pregnant mothers attending a Antenatal outpatient department are anemic. During pregnancy the nutritional requirement of iron and folic acid is increased, pregnancy induced hypervolemia also causes physiological anemia.[4,5]

The increase in blood volume varies among different women. The increase in blood volume is mainly affected by an increase in plasma volume 40% much more than the red cell volume 20%resulting in relative hemodilution of pregnancy. This brings the haemoglobin decrease to almost by2 gms .This along with the increased demand for iron leads to physiological anemia of pregnancy.[6,7]

The women in the developing countries enter the pregnancy with depleted iron stores.because most women are not able to develop adequate iron stores during the growth period due to poverty ,inadequate intake of nutrients recurrent infections

,menstrual blood loss,and WHO defined anemia of pregnancy as a hemogolobin level of less than 11g/dl ,or hematocrit less than 33% at any point during pregnancy.[8,9]

Preeclampsia is a multisystem disorder of unknown etiology and is unique to pregnant women after 20 weeks of gestation. It is a progressive disease with variable mode of presentation and rate of progression . Preeclampsia is a clinical diagnosis consisting of 1)new onset hypertension systolic blood pressure >140,diastolic blood pressure >90mmHg recorded on two occasions at least 6 hours apart in a previously normotensive women 2) new onset proteinuria (defined as >300mg/24hour .or >2+ on a clean catch dipstick in the absence of urinary infection; and new onset significant nondependent edema. Preeclampsia is classified as either mild or severe " Preeclampsia complicates 6-8% of all pregnancies . Preeclampsia and eclampsia contributes to 12% of all maternal deaths in the developing countries(WHO1999) Perinatal outcomes were significantly higher in preeclampsia[7,8,9,10]

The present study was undertaken to find out the incidence of Preeclampsia in mild./ moderate/ severe anemia . and to analyse the synergistic effect of anemia with preeclampsia in pregnancy associated Morbidity and Mortality

Early detection and treatment of anemia in pregnant women significantly reduces the Mortality andMorbidity

AIM OF THE STUDY

To find out the incidence of preeclampsia in mild, moderate, and severe anemia. To analyse the synergistic effect of anemia with preeclampsia in pregnancy associated Morbidity and Mortality.

MATERIALS AND METHODS

This prospective observational study was carried out at Govt.Thoothukkudi Medical College Hospital during the period of January 2016 to December 2016 on 200 patients. The study was approved by the hospital ethical committee.

INCLUSION CRITERIA

All antenatal women diagnosed to be having anemia with singleton pregnancy after 20 weeks of gestation

EXCLUSION CRITERIA

Multiple pregnancies.Pre gestational diseases like renal disease, diabetes mellitus, autoimmune disease, Known hypertensive Immunocompromised individuals Gestational age less than 20 weeks Other hemolytic anemia and heritaryanemia

METHODS

Pregnant women attending the antenatal out patient department and labour ward in Govt.Thoothukkudi Medical College Hospital with hemoglobin value less than 11gms and after 20 weeks of gestation were selected for the study.The patients who selected were explained about the study and their consent obtained.

The base line data recored at the first antenatal visit included the following;
Maternal age
Gestational age at present
Parity status
Socio economic status
Associated pregnancy complications
Previous pregnancy
Interpregnancy interval
Family history of preeclampsia
Maternal weight H/o smoking Blood pressure
Hemoglobin value at first visit
Urine albumin

After recording the base line data, patients with moderate and severe anemia were advised admission for anemia evaluation and treatment .In these patients the incidence of preeclampsia at the time of admission were calculated. The patients with preeclampsia were admitted and the following investigations were carried out.

Complete haemogram with peripheral smearBlood sugar, urea ,serum creatinine, Liver function test Urine analysis 24 hours urinary protein Fundus examination ECG In all leads The selected patients were monitored and followed till delivery. According to the severity of anemia and the gestational age, patients were treated with oral iron, parenteral iron,or by blood transfusion. All preeclampsia patients were classified in to mild and severe type, according to the severity gestational age, they were treated with antihypertensives, prophylactic anticonvulsant regimen,and termination of pregnancy. They were followed through the antepartum,intrapartum,and post partum period . Finally I analysed the mode of delivery,pregnancy complications, maternal outcome ,morbidity and mortality and perinatal outcome.

Results:

TABLE 1 DISTRIBUTION OF GESTATIONALAGE

	No.of Cases	Percentage
TERM	153	76.5
36-38	15	7.5
34-36	25	12.5
28-34	5	2.5
< 28	2	1.0

76.5% Of the cases were in the term gestation.
12.5% of the cases were in the 34 to 36 weeks of gestation.
7.5% of the cases were in the 36 to 38 weeks of gestation.
2.5% of cases were in the 28 to 34 weeks of gestation.
1% of cases were in the<28 weeks of gestation.

TABLE 2: DISTRIBUTION OF SEVERITY OF ANEMIA

Hemoglobin		No.of Cases	Percentage
	10-11	12	6.0
	7-10	166	83.0
	< 7.0	22	11.0

83% of the cases were in the moderate anemia.(Hb 7.5-10gms).
11% of the cases were in the severe anemia(Hb < 7.0 gms).
6% of the cases were in the mild anemia (Hb 10-11gms).

TABLE 3: DISTRIBUTION OF PERIPHERAL SMEAR

	No.of Cases	Percentage
Microcytic hypo chromic	170	85.0
Normal	30	15.0
Total	200	100.0

TABLE4-DISTRIBUTION OF PLATELET COUNT –

Platelet	No.of Cases	Percentage
> 100000	195	97.5
100000-50000	4	2.0
< 50000	1	.5

Most of the cases were having the platelet count above 1 lakh count, it consistutes about 97.5%.2% of cases were having the platelet count between 1 lakh-50,000.

0.5% of cases were having thrombocytopenia(plate count <50.000).

TABLE: 5 DISTRIBUTION OF SEVERITY OF BLOOD PRESSURE:

	No.of Cases	Percentage
120/80	128	64.0
DBP 90	19	9.5
DBP 100	30	15.0
>160/110	23	11.5

64% of the cases were in the normotensive group in the blood pressure range of

TABLE:6 ONSET OF LABOUR

	No.of Cases	PERCENTAGE
ELECTIVE LSCS	13	6.5
SPONTANEOUS ONSET	146	73
INDUCTION OF LABOUR	41	20.5

73% of the cases were developed spontaneous onset of labour , followed by syntocinon acceleration.6.5% of cases were posted for elective LSCS. 20.5% of the cases were undervent induction of labour.

TABLE 7:MATERNAL OUTCOME

	No.of Cases	Percent
Labour natural	92	46.0
Primary LSCS	63	31.5
Breech	4	2.0
Rpt LSCS	15	7.5
Instrumental	8	4.0
Rpt LSCS with ST	10	5.0
Rpt LSCS with CuT	4	2.0
VBAC	1	.5
SpontaneousExpulsion	3	1.5

46% of the cases were delivered labour naturally. Primary LSCS constitutes about 31.5%.

Assisted breech delivery constitutes about2% Repeated LSCS delivery constitutes about 14.5%. Instrumental delivery constitutes about 4%. Vaginal birth after caesarean constitutes about 0.5%
Spontaneous expulsion of the fetus was occurring in 1.5%.
Labour natural Primary LSCS Breech
Repeat lscs Instrumental VBAC Spont.expulsion

TABLE:8 COMPLICATIONS.

Complications	No. of Cases	Percentage
ATONIC PPH	12	6
WOUND INFECTION	4	2
PULMONARY EDEMA	3	1.5
DEATH	1	0.5
HELP SYNSDROME		
DIVC	1	0.5
ABRUPTIO PLACENTA	2	1
ACUTE RENAL INJURY		
ECLAMPSIA	4	2

AtonicPPH occurs in 6% of the study population.Pulmonary edema occurred in 1.5%, Death occurred in one case in the studypopulation.Both HELLP and DIVC occurred in one case 0.5%.Abruptio placenta occurred in 1%.Eclampsia occurred in 2% of the cases.

TABLE: 9 FETAL OUTCOME.

	No.of Cases	Percentage	
Term	155	77.5	
	Preterm	15	7.5
	IUGR	24	12.0
	Still Birth	6	3.0

77.5% of the babies were term babies. Preterm babies constitutes about 7.5%. IUGR babies constitutes about 12%. 3% of the babies were still born.

TABLE: 10 BIRTH WEIGHT

KG	NO.OF CASES	PERCENTAGE
<1.5	7	3.5
1.6 – 2.0	17	8.5
2 – 2.5	63	31.5
2.5 – 3.0	62	31
3.0 – 4.0	51	25.5

31% of the babies born were in the birth weight 2.5 to 3Kg.
31.5% of the babies born were in the birthweight 2to 2.5.kg.
25.5% of the babies born were in the birth weight 3to 4Kg.
8.5%of the babies born were in the birth weight 1.6 to2Kg.
3.5% of the babies born were in the birthweight <1.5 Kg.

TABLE: 11: CROSS TABLE MATERNAL OUTCOME VS BLOOD PRESSURE GROUP

COMPLICATIONS	No.of Cases:	BLOOD PRESSURE mmHg			
		120/80	DBP 90	DBP 100	>160/ 110
1.ATONIC PPH	12	7	1	4	0
2.WOUND INFECTION	4	2	0	2	0
3.PULMONARY EDEMA	3	1	1	0	1
4.DEATH	1	0	0	0	1
5.HELLP SYNDROME&DIVC	1	0	0	1	0
6.ABRUPTIOPLACENTA	2	0	1	1	0
7.ECLAMPSIA	4	0	0	2	2

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	60.882(a)	30	.001
Likelihood Ratio	44.083	30	.047
Linear-by-Linear Association	9.644	1	.002
N of Valid Cases	200		

The cross table relates the maternal outcome with the severity of blood pressure, which was significant with the p value of0.001.

DISCUSSION:

This prospective study titled as Incidence of preeclampsia in 200 antenatal anemic mothers attending the tertiary care referral center and maternal mortality in anemia associated preeclampsia was conducted at Govt.KasturbaGandhi Hospital for women and children,Madras medical college, Chennai,during the period of December 2012 to December 2013 .

Sample size was 200 antenatal women with anemia (hemoglobin concentration less than11gms)

The observation of this study were the following Most o the patients in the study population were in the age group20-29 years (72%).48.5% of the patients were second gravida.77.5% of the patients were belonging to class IV socioeconomic class. 99.5% of the cases were booked Of this 70% were booked . 27% of the cases were referred from other hospitals of these 14.5% had hypertensive disorder,5.5% of the cases had severe anemia. 41.5% of the patients in the study population were in the weight group 60-70 kg . 76.5% of the study population were in the term gestation. 83% of the patients were moderately anemic. 11% of the patients were severely anemic. 85% of the study population were microcytic hypochromic peripheral smear picture and 15% were normochromic normocytic picture. Incidence of severe preeclampsia was 11.5%. 11.5% of the patients had 1-3gms of protein in 24 hours urinary collection. 13.5% of the patients were treated with Magnesium sulphate regimen along with antihypertensive drugs. 73% of the study population had spontaneous onset of labour,20.5% of the cases labour was induced . 46% of the cases delivered labour naturally,31.5% of patient had primary caesarean section,14.5% had repeat caesarean section, Instrumental delivery constitutes about 4%. Vaginal birth after caesarean constitutes about 0.5% .Spontaneous expulsion of the fetus were occurring in 1.5%. Indication for primary LSCS ;Fetal distress consistuted about 15.5%, Cephalo pelvic disproportion consistuted about 6.5%,Failed induction -3.5%, Severe oligohydraminos-3%, Preeclampsia-2%, of the study population Maternal outcome; AtonicPPH -6%.Pulmonary edema -1.5%, Death occurred in one case in the studypopulation.Both HELLP and DIVC occurred in one case 0.5%.Abruptio placenta occurred in 1%.Eclampsia occurred in 2% of the cases. 77.5% of the babies were term babies.Preterm babies constitutes about 7.5%. IUGR babies constitutes about 12%.3% of the babies were dead 1.5% intrauterine .1.5% perinatal death.

CONCLUSION:

In most of the developing countries, anemia during pregnancy is the major problem causing maternal morbidity and mortality and adverse neonatal outcome. Anemia is responsible for both direct and indirect cause of maternal mortality. Anemia was the direct cause for 20% of maternal deaths in India. The indirect causes of death due to anemia was constituted about 20% It may be due to cardiac failure, post partum hemorrhage, infection and preeclampsia .One of the most important complication of preeclampsia is eclampsia , which was the direct cause of maternal mortality of about13% in India. The incidence of preeclampsia was increased more so when it was associated with chronic severe anemia and hypoproteinemia.

The coexistence of preeclampsia in anemic women's worsening the situation. In preeclampsia, there was already intravascular volume depletion hence anemia gets masked the patients are not able to cope up even with mild blood loss during delivery, In anemia associated with preeclampsia, even a small volume of blood loss of about 200ml during the third stage of labour causes postpartum collapse and death if the blood loss was not adequately replaced with blood transfusion. The fluid management in severe preeclampsia with anemia is very difficult task in view of leaky pulmonary capillaries that would result in volume overload, and pulmonary edema.

Various researches had shown that, during the antenatal visits less than 50% of pregnant women were getting health education about preeclampsia and long term complications of hypertensive disorders of pregnancy in the western population. In India most of the pregnant women were unaware of the anemia and hypertensive disorders of pregnancy and its complications. We have to counsel the pregnant mothers during their antenatal checkup regarding the importance of blood pressure monitoring, screening and correction of anemia prior to pregnancy and Iron and folic acid supplementation.

The risk factors of preeclampsia, any excessive weight gain ,any pedal edema which was not relieved by rest and signs of imminent eclampsia should be informed to the antenatal women, so that when it appears ,they would reach the nearby Emergency obstetric center on right time, this requires community participation.

The data from National Nutritional Monitoring Bureau (NNMB) stated that the intake of iron and folic acid in all the age groups were still low even after the implementation of National Anemia prophylaxis programme.

In this study we had three near miss cases, all the cases were referred from primary Health Center as preeclampsia with anemia, during their stay in the hospital, they developed both the complications of anemia and preeclampsia like postpartum eclampsia, pulmonary edema, HELLP syndrome and DIVC. Being a Tertiary care Institute we were able to manage them successfully hence those cases were grouped under Near Miss cases .The delivery of the preeclamptic anemic patients , should be conducted in the Tertiary Care center with High dependency unit along with neonatal intensive care unit, and blood bank .Careful monitoring of both the mother and baby and anticipation of severe complications like eclampsia , postpartum hemorrhage, abruption placenta, pulmonary edema, HELLP syndrome readiness to tackle those complications will go a long way to reduce the maternal morbidity and mortality. The Tenth plan strategies has to be effectively implemented to all pregnant women with anemia to reduce the maternal mortality and morbidity and long term consequences of anemia.

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