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Evaluation of anaemia in pregnancy study conducted in teaching hospital

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ABSTRACT

BACKGROUND

The mother at whose breast humanity is fed; her health is of vital concern to society. Anaemia in pregnancy is a major public health problem in the developing countries like India. Anaemia is the commonest haematological disorder occurring during pregnancy. It has been a major problem for the obstetricians both with regard to maternal as well as foetal health.

Material and Methods: One thousand twenty seven (1024) pregnant women and women in labour with haemoglobin concentration of 10gm and less were included in this study and investigated. Patients are again divided in three categories according to haemoglobin level

Results: In the present study out of 1024 pregnant patients 498 cases were an-anaemia and pregnancy outcome. Patient had Swelling on feet and fatigue weakness, giddiness, anorexia, and irritability were the most prominent symptoms in this study. Other symptoms were palpitation, breathlessness, swelling over abdominal wall swelling over vulva and per vaiginal bleeding.

Discussion: The cause for anaemia in age group 21 to 25 years was poor nutrition, frequent pregnancies & increased rate of abortions along with low socio-ecomic conditions. In another group i.e. less than 20 years the cause of anaemia was early pregnancy. The incidence of anaemia has been found 48.63% in present study. There were different predisposing and causative factors for occurrence of anaemia in these groups. These were low socio-economic conditions, early marriages, poor diet, poor antenatal care, worm infestations due to poor sanitation, chronic blood loss, etc

Conclusion: Anaemia is a 100% preventable condition. Before the mother becomes pregnant she should fave a good haemoglobin level with the help of proper nutrition. For this the social and family status of all women in our country will have to be raised. Increasing her level of education and literacy can bring this.

Keywords: Anemia, Nutritional status, Antenatal Patients, Foetal-maternal outcome, Pregnancy

INTRODUCTION

Anaemia is a physiological process of pregnancy in mild degree, but becomes pathological if left undetected and untreated. In developed countries, the incidence of anaemia is less than 10% as compared to 40-70% in developing countries like India as indicated by the surveys in different parts of country[3].

The incidence is more in rural population and in women belonging to poor socio-economic group, poor nutrition thus being the leading cause of anaemia. Other causes are worm infestation, frequent pregnancies at short intervals, early pregnancy (before age of 20 years), excessive loss of blood at previous deliveries or during menses, bleeding piles, peptic ulcer, chronic infection and other blood discrasias, malaria, etc[2]. Diet of an Indian female of average class is inadequate in iron, which gives very little opportunity to store iron & enable them to meet the demands of foetus when pregnancy supervenes. So due to a diet inadequate in iron combined with the factors mentioned above which are quite common in India; a female if not actually anaemic is already depleted of essential haemopoietic factors and is bordering on anaemia rapidly develops as a result of increased demands of pregnancy[7,9]. Commonly anaemia occurs with malnutrition. It is observed that certain food habits, customs, beliefs, religions, traditions and attitudes have a role to play in the causation of malnutrition and anaemia. In some countries, men eat first and women eat last and poorly. Consequently the health of women in these societies may be adversely affected[13]. Considering the socio-economic factors, malnutrition and anaemia is largely the by-product of poverty, ignorance, insufficient education, lack of knowledge regarding nutritive value of foods, inadequate sanitary environment, large family size, etc[19]. In severe anaemia the mother develops complications like cardiac failure, pre-eclampsia, accidental haemorrhage, puerperal sepsis, post-partum haemorrhage, pre-maturity, stillbirths, neonatal deaths, low birth weight and congenital malformations are the complications in the baby. Seriousness of anaemia lies in the fact that it accounts for 20-30% of maternal morbidity and in another 20% it is an associating factor in maternal deaths. In a study of perinatal morality survey in India, it was observed that anaemia complicating pregnancy accounted 29.3% of perinatal deaths[5,6]. With great advances in management i.e. antenatal iron and folic acid supplementation, nutrition-education and increased social awareness, the incidence of anaemia is gradually decreasing, but still it is a major problem in India. Though with its universal occurrence, anaemia affects men, but women are most seriously affected. In our country, anaemia is the commonest and more easily preventable medical disorder of pregnancy[15]. The present study was carried out to assess the maternal and foetal outcome in pregnancies complicated with anaemia. The various ways in which anaemia can alter the course of pregnancy, labour and puerperium is studied.

MATERIAL AND METHODS

This study was carried out at MNR Medical college sangareddy and Medicity Institute of Medical sciences, department of Obstetrics and Gynaecology from july 2002 to June September 2004 to find out the foeto maternal outcome in pregnancies with anaemia. Haemoglobin level of 10gm% was taken as the cut off limit for anaemia as mentioned by M.K. Menon. One thousand twenty seven (1024) pregnant women and women in labour with haemoglobin concentration of 10gm and less were included in this study and investigated. Patients are again divided in three categories according to haemoglobin level.

Mild	-8.1 to 10gm%,
Moderate	-6.8 to 8.0gm%
Severe	-< 6.5gm%

INCLUSION CRITERIA& EXCLUSION CRITERIA

Antenatal patients, Cases with severe anaemia ,foetal-maternal outcome were included in this study .All un-booked cases that were in labour were also studied accordingly for severity of anaemia and foeto-maternal outcome. Cases with twin pregnancies were, Cases with known cases of heart disease were excluded. All study group patients with mild and moderate anaemia were given oral iron and folate, B12 tablets. Severity anaemic patients were admitted for blood transfusion. After stabilisation of general conditions, they also receive parental haematinics and oral haematinics later on. These patients were followed till they delivered and outcome of mother and baby was noted whenever possible.

DETAIL HISTORY

Present history as regards the period of amenorrhea, the last menstrual period, the expected due date, parity and onset of symptoms. Post history of Koch's or other chronic infection, haemoptysis, haematemesis, haematuria, bleeding piles/

haemorrhoids, malaria, worm infestation, menstrual abnormalities etc. was elicited. Family history of anaemia, sickle cell anaemia and thallassemia was elicited. Antenatal complications such as infections, toxaemia, intrauterine growth retardation, antepartum haemorrhage, cardiac failure, pre-eclampsia, etc were noted.

1. Estimation of haemoglobin
2. Total red cell count
3. Pack cell volume (PCV)
4. Reticulocyte count
5. Sickling test
6. Peripheral smear (Leishman's Stain).
7. Blood Indices (MCHC, MCH, MCV)

Biochemical investigations like Serum iron estimation, Total iron binding capacity were done

OTHER INVESTIGATIONS

1.Total WBC count & differential count, 2.Urine examination – to rule out urinary tract infection 3.Stool examination – to rule out worm infestation and the presence of occult blood 4.Ultrsonography in selected cases. Labour record for duration of gestation of delivery, duration of labour, nature of labour, and any maternal complication – if any were noted. Foetal outcome was noted – baby's weight, APGAR scoring at birth, gestational age, any congenial malformation and any complications develops within first week of life. Any special care to be needed to new born was noted. Patients were observed for five to seven days during puerperium and the incidence of CCF, puerperal pyrexia, wound infection and other complications were noted. All maternal and perinatal deaths were recorded and their causes were analysed.

OBSERVATION TABLES

It is widespread belief that anemia adversely affects pregnancy and its outcome. In the present study 1024 pregnant patients were studied. Out of which 498 cases were an-anaemia and pregnancy outcome. For the purpose of simplicity we will take into consideration the observation tables for discussion.

Table 1: Age-wise distribution of anaemic patients

Age in years	Mild-	Moderate	Severe	Total %
< 20	94	27	17	138 (27.71)
21-25	157	52	32	241 (48.39)
26-30	54	16	15	85 (17.06)
31-35	16	9	6	31 (6.22)
>36	2	-	1	3 (0.62)
Total	323	104	71	498 (100)

Table 2: Gravidity wise distribution of anemic patients

Gravidity	Mild (%)	Moderate (%)	Severe (%)	Total (%)
1	139(69.16)	35 (17.41)	27 (13.43)	201 (40.36)
2	103(65.60)	38 (24.20)	16 (10.20)	157 (31.52)
3	43(60.56)	16 (22.53)	12 (16.91)	71 (14.25)
>4	38(55.08)	15(21.74)	16 (23.18)	69 (13.87)
Total	323	104	71	498 (100)

This table demonstrates gravidity wise distribution of anaemic patients.

Table No.3: Grades of Anemia

Hb in gm	No. of cases	Percentage
8-10 (Mild Anaemia)	323	31.54
6.6-7.9(Moderate Anaemia	104	10.15
< 6 (Severe Anaemia)	71	6.94
>10 (Normal)	526	51.37
Total	1024	100

This table shows incidence of anaemia of different type.

Table No.4 : Distribution according to antenatal visits

Severity of Anaemia	Booked (%) (> 4 ANC Visits)	Unbooked (%) (>ANC Visits)	Total (%)
Mild	190(75.69)	133 (53.64)	323 (64.85)
Moderate	52(20.71)	52 (21.05)	104 (20.88)
Severe	9(3.60)	62 (25.11)	71 (14.27)
Total	251100.00)	247 (100)	498 (100.00)

This table shows extent of antenatal care availed by the patients**.**

Table 5: Symptom wise distribution of anaemic patients

Symptoms	Mild	Moderate	Severe	Total (%)
Swelling on foot	306	101	71	478 (95.98)
Fatigue(weakness, Giddiness, anorexia, Irritability)	217	91	67	375 (75.30)
Palpitation	56	77	41	174 (34.93)
Breathlessness	16	16	62	94 (18.87)
Vulval swelling	6	22	19	47 (9.43)
P/V bleeding	16	13	16	45 (9.03)
Abd. Wall swelling	4	13	27	44 (8.83)

This table demonstrates the different symptoms the patient had swelling on feet and fatigue weakness, giddiness, anorexia, and irritability were the most prominent symptoms in this study. Other symptoms were palpitation, breathlessness, swelling over abdominal wall swelling over vulva and per virginal bleeding.

Table No.6 : Causes of anemia

No.	Cause of Anaemia	No. of cases	Percentage
1	Nutritional deficiency	384	77.10
2	Worm infestation	48	9.64
3	Infections	26	5.22
4	PIV bleeding	25	5.02
5	Menorrhegia	13	2.61
6	Bleeding piles	2	0.41
7	Total	498	100.00

This table shows the causes of anemia. The most common cause for anemia in this series was nutritional deficiency, which was in 77.10% case (384).

Table No.7: Clinical signs in anemic patients

No.	Clinical Signs	No. of cases	Percentage
1	Pallor	498	100.00
2	Pedal	477	95.78
3	Systolic murmur	192	38.55
4	Stomatitis/glossitis	103	20.68
5	Breathlessness	94	18.87
6	Vulval oedema	47	9.43
7	Koilonychial/platynychia	29	5.82
8	Knuckle pigmentation	23	4.61

This table shows different clinical signs those were present in anaemic patient. Pallor was the commonest sign observed in all patients.

Table No.8: PCV & Blood indices in anaemic patients

Blood indices	Mild	Moderate	Severe
Mean PCV (%)	26.42	23.00	18.24
M.C.V. (/cmm)	76.70	74.80	61.82
M.C.H.C. (%)	29.1	29.61	28.27
M.C.H (pg)	22.30	20.18	18.49

This table shows the mean packed cell volume (PC.V.) mean corpuscular volume (M.C.V.), mean corpuscular hemoglobin concentration (M.C.H.C.) and mean corpuscular hemoglobin 9M.(C.H.) in different types of anemia

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Table No. 9 : Types of anaemia

Sr No.	Type of Anaemia	Mild	Moderate	Severe	Total
1	Hypochromic, microcytic	130	70	46	246 (49.39)
2	Normocytic	132	11	-	143. (28.71)
3	Dimorphic	28	19	19	66 (13.25)
4	Megaloblastic	33	4	9	43 (8.65)
	Total	323	104	71	498 (100)

This table shows various types of anaemia.

Table No. 10: Serum iron levels in anaemic patients

S. Iron (ug/dl)	Moderate Anaemia No. of cases (Mean)	Severe anaemia No. of cases (Mean)	Total (Mean)
60-80	53(78.3)	21 (67.2)	74 (72.13)
40-60	42(52.1)	25 (52.3)	67 (52.01)
<40	9(39.0)	25 (36.1)	34 (37.3)
Total (Mean)	104(64.12)	71 (52.1)	175 (59.2)
T.I.B.C. (mean) (Total Iron binding capacity	399.13	434.32	

This table shows serum iron level and total iron binding capacity (T,I.B.C) in moderate and severely anaemic patients.

Table No. 11: Stool examination in anaemic patients

Stool Examination	No. of + ve cases (No. of samples send)
Worm	25 (71)
Occult	42 (71)

Out of 71 cases of which stool examination were done 26 cases were positive for worm and 42 cases were positive for occult blood

Table No. 12: Sickling test

Sickling test	Positive cases	Percentage of Positive cases
3	0	0.00

Sickle cell test was done only in suspected cases. All were found negative.

Table No.13: Mode of delivery in anaemic patients

Mode of delivery	No. of cases	Percentage
Normal delivery -- Vertex	341	68.45
--Breech	11	2.25
Instrumental --Ventouse	37	7.42
--Forceps	11	2.20
L.S.C.S – Emergency	91	18.24
-Elective	7	1.44
Total	498	100.00
Twin (Excluded from this study)	5	

This table shows mode of delivery in present study.

Table No. 14: Maternal morbidity in anaemic patients

Sr No.	Complication	Mild	Moderate	Severe	Total (%)
1	Pre-term Delivery/PROM	43	14	20	79 (15.96)
2	Puerperal Sepsis/Pyrexia	3	4	9	16 (3.21)
3	P.P.H	2	1	8	11 (2.20)
4	Wound gaping	1	3	5	9 (1.80)
5	Congestive Cardiac failure	-	-	4	4 (0.81)
6	Others PIH	32	15	24	71 (14.27)
7	Maternal death				
	- Direct	-	-	2	2 (0.40)
	- Indirect	-	-	2	5 (100)
	Total				

This table shows maternal morbidity in anaemic patients. The overall incidence of per-term delivery (or PROM) was 15.85% (79)

Table No. 15: Perinatal morbidity in anaemic patients

Foetal Complications	Mild	Moderate	Severe	Total (%)
Low birth Weight/IUGR	107	54	65	226(45.38)
Birth Asphyxia/Sepsis	4	7	8	19 (3.81)
IUD/Stillbirth	10	4	18	32 (6.42)
Neonatal death	7		25	14 (2.81)

In these patients, the mean haemoglobin concentration ar first ANC visit was 7.9 gm%. These patients are evaluated and treated appropriately. Out of 251 booked cases, 233 patients treated by oral iron and folate capsules while blood transfusion and then oral iron treated 18 patients who had severe anaemia. 224 patients who have treated with oral iron show good improvement in their haematocrit value whereas 9 patients did not show improvement. 18 severely anaempatients treated by blood transfusion shows well improvement in their haemoglobin concentration.

DISCUSSION

It is evident that anaemia was common in the age group 21 to 25 years and in age group less than 20 years. The cause for anaemia in age group 21 to 25 years was poor nutrition, frequent pregnancies & increased rate of abortions along with low socio-ecomic conditions. In another group i.e. less than 20 years the cause of anaemia was early pregnancy. R. Alli and M. Satyanarayana (1985) have noted percentage of anaemia is more prevalent in the age group of 20-25 years and this percentage is being 40%. The incidence of anaemia is almost equal in the age group of 25-30 years and the percentage being

36%. It is less common above 30 years (18%) and least below 20 years (6.6%)

It has also been found that as the gravidity increased the incidence of anaemia of high grade (moderate or severe) increased in this series, it was found that incidence of severe anaemia in multigravidae (more than three pregnancies) was 23.18% as against the incidence in primigravidae 13.43%, second gravidae 10.20% and in third gravidae 16.9% (Table :2). These findings definitely proved that as gravidity increased incidence and severity of anaemia increased. The incidence of anaemia has been found 48.63% in present study (Table: 3). There were different predisposing and causative factors for occurrence of anaemia in these group. These were low socio-economic conditions, early marriages, poor diet, poor antenatal care, worm infestations due to poor sanitation, chronic blood loss, etc. These findings are comparable with the studies done by different authors.

Author	**Mild**	**Moderate**	**Severe**
J. Joshi et al (1989)	40.0%	53%	3.0%
M. Matah et al (1989)	25.13%	15.9%	2.56%
Samir Roy et al (1991)	34.3%	12.3%	10.5%
Present study (1999)	31.54%	10.15%	6.94%

Severity of anaemia has been found increased in Unbooked cases (Table :4) The incidence of severe anaemia in Unbooked case was 25.11% and incidence in the booked cases was 3.60%. The same statistical difference has been found with moderate anaemia. Similar observations were made by Rangnekar and R. Darbari (1993)[26] and R. Alli and Satyanarayana (1985)[10] and also S. Rathee et al (1987)[14]. It is evident that the incidence and severity of symptoms increased with the severity of anaemia. Nutritional deficiency was the commonest cause for anaemia in present study. S. Rathee et al (1987)[14] observed that anaemia was due to nutritional cause in 84% of their patients, 43% due to malaria and 12.4% due to worm infestation. D. Yusuji et al (1973)[18] had found hookworm ova in the stool of 35% of the women. In the present sense pallor was present in all anaemic pregnant women. It was followed closely by pedal oedema. This was because of increased hydrostatic pressure in lower extremity caused by pressure of gravid uterus on inferior venacava along with decreased osmotic pressure due to moderate and severe anaemia. Iron deficiency anaemia was the commonest type of anaemia in this study which gives Hyochromic microcytic picture. This was followed by Nomocytic blood picture in which most of the patients were mildly anaemic where iron and folate & B12 deficiency was there but not reached to that level affect erythropoisis. These findings were comparable with following studies:

Workers	**Iron deficiency anaemia (Hypochromic Microcytic)**	**Dimorphic**	**Megalobi astic**	**Normocy tic**
Menon (1965)	-	60%	-	-
Yusufji et al (1973)	53%	21%	27%	34%
R. Alli & Satyanarayana (1985)	68%	30%	2%	-
	49.39%	13.25%	8.65%	28.71%

In the present study T.I.B.C in severely anaemic patient was 434 ug/dl, which is very high than normal which is about 200-300 ug/dl signifying increased affinity of blood for iron. As the saying goes "Prevention is better than cure", such cases of anaemia can be prevented by ensuring adequate nutrition supplementation of iron, folic acid and B12.Sickle cell anaemia was very rare during pregnancy. No case was found positive for Sickling test in this study. Anaemic patients could not withstand the average blood loss in normal labour hence their condition deteriorated. Preeti Pandya et al (1992) found incidence of PPH of 2.14%. Two mothers died of C.C.F due to anaemia and five died of other cause which was aggravated by anaemia like hepatic failure due to infective hepatitis, rupture uterus, septicaemia, etc. (Table 14). The incidence of PIH in present series was noted in 14.27% which was comparable with the results noted by R. Alli and Satyanarayana (1985) which is 16% The incidence of low birth weight of baby and IUGR was very high in anaemic patient especially in moderate (51.92%) and severe (91.54%) anaemia (Table : 15). The overall incidence being 45.38%. This is because of placement insufficiency and foetal hypoxia as already discussed. This again along with pre-term delivery predisposed to birth asphyxia and neonatal infections and sepsis increasing neonatal morbidity and mortality, Table: 17 very well evaluate that as the severity of anaemia increased the chances of babies delivering low birth weight increased. As already discussed the cause for low birth weight was placental insufficiency and foetal hypoxia. This low birth weight was common cause for perinatal mortality and morbidity. Anaemia is most commonly accompanied by malnutrition. Malnutrition is a manmade disease. It begins quite commonly in the womb and ends in the grave. Malnutrition is largely product pf poverty, ignorance, inadequate education, lack of knowledge regarding nutritive value of food poor inadequate sanitary environment, large family size etc.All these measures will definitely reduce the perinatal and maternal morbidity and mortality and to a considerable extent help us to achieve the goal of "Health for all by 2000 AD.

CONCLUSION

The above study reveals that anaemia (especially moderate and severe anaemia) in pregnancy give rise to a definite increase in material and foetal morbidity and mortality. Therefore, moderate and severe anaemia in pregnancy is definitely a high risk group needing aggressive antenatal treatment than the non-anaemic antenatal patient. Anaemia is a 100% preventable condition. Before the mother becomes pregnant she should have a good haemoglobin level with the help of proper nutrition. For this the social and family status of all women in our country will have to be raised. Increasing her level of education and literacy can bring this. In the present era no mother should ever die from a 100% preventable condition like anaemia. And the most important thing is it can be achieved if every individual, medical and or paramedical staff decides so.

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