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STUDY OF FETOMATERNAL OUTCOME IN PREGNANT WOMEN WITH SEVERE ANEMIA AT A TERTIARY HOSPITAL

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ABSTRACT

Background: Anemia in pregnancy is defined as hemoglobin levels less than 11gm/dL. Severe anaemia is responsible for 20-40% of direct and indirect maternal deaths because of increased susceptibility to cardiac failure, sepsis and association with preeclampsia, antepartum haemorrhage, postpartum haemorrhage and thromboembolism. Present study was carried out to fetomaternal outcome in pregnant women with severe anemia at a tertiary hospital. Material and Methods: Present study was single-center, prospective, observational study, conducted in pregnant women with Hb < 7gm/dL, with gestational age > 28 weeks, delivered at our hospital. Results: Total 72 women with severe anemia were studied, majority were from 19-25 years age group (52.78 %), mean age was 25.4 ± 3.5 years, had completed primary education (70.83 %), from lower Socio-economic status (84.72 %). Though Un-booked (13.89 %) pregnancies were less than booked cases (86.11 %), majority had less than 4 antenatal visits (75 %). Majority of patients were Para 2 (34.72 %), Para > 2 (31.94 %), had spacing between pregnancy was < 2 years (71.93 %). Vaginal (70.83 %) was most common Mode of delivery, followed by LSCS (26.39 %) & Instrument delivery (2.78 %). In present study, maternal complication/ high risk factors noted were premature delivery (52.78 %), postpartum hemorrhage (34.72 %), preeclampsia (20.83 %), prolonged labor (19.44 %), congestive cardiac failure (16.67 %), puerperal pyrexia (15.28 %). One maternal mortality (1.39 %) was noted. We noted total 7 deaths (3 Intrauterine fetal death/ Stillbirth & 4 Early neonatal deaths), while Low birth weight (<2500 gm) (65.28 %), NICU admission (48.61 %), Apgar score <7 (at 5 minute) (8.33%)
Conclusion: Anemia in pregnancy is a major health problem in developing countries.
Severe anemia during pregnancy is associated with maternal and fetal health outcomes fetomaternal morbidity and mortality.

Keywords: severe anemia, maternal outcome, fetal outcome, postpartum hemorrhage

INTRODUCTION

Anemia in pregnancy is defined as hemoglobin levels less than 11gm/dL.1 Severe anemia is defined as hemoglobin levels less than 7 gm/dL.1 Anaemia is a major public health problem

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especially among the poorer segments of the population in developing countries like India and it is one of the major challenges for an obstetrician to deal. Anemia during pregnancy is commonly associated with poor pregnancy outcome and may lead to complication of mother like Prolonged labour and increase incidence of post partum haemorrhage and also lead to preterm birth, low birth weight and small-for-gestational age babies and prematurity. 2 Anemia is not the only risk to mothers but low haemoglobin levels may lead to unfortunate consequences including low Apgar score, compromised birth weight, small for gestational age (SGA) babies, preterm labor, intrauterine growth retardation or intrauterine death.3 Severe anaemia is responsible for 20-40% of direct and indirect maternal deaths because of increased susceptibility to cardiac failure, sepsis and association with preeclampsia, antepartum haemorrhage, postpartum haemorrhage and thrombo-embolism.4,5 Present study was carried out to fetomaternal outcome in pregnant women with severe anemia at a tertiary hospital.

MATERIAL AND METHODS

Present study was single-center, prospective, observational study, conducted in Department of Obstetrics and Gynaecology, at XXX medical college & hospital, XXX, India. Study duration was of 2 years (January 2020 to December 2019). Study approval was obtained from institutional ethical committee.

Inclusion criteria

1. Pregnant women with Hb < 7gm/dL, with gestational age > 28 weeks, delivered at our hospital, willing to participate in present study

Exclusion criteria

1. Pregnant women with severe anaemia at term or at the time of delivery due to acute bleeding (antepartum haemorrhage),
2. Pregnant women with history of hemoglobinopathy
3. Delivered outside & referred to our hospital Study was explained to patients in local language & written consent was taken for participation & study.

All women at the time of admission underwent history taking (age, clinical symptoms, obstetric history, details of present pregnancy, history of iron and folic acid intake), physical examination (general, systemic, per abdomen, if required per vaginal), assessment of fetal well-being, Laboratory & radiological investigations (complete hemogram, Peripheral blood smear, Routine urine examination, Iron profile, Ultrasonography for fetalwell being). Labour was monitored by partograph, with strict watch on fetal heart rate pattern and progress of labor. Regular intrapartum and postpartum assessment was done. Maternal outcomes (preterm labour, preeclampsia, antepartum haemorrhage, infections if any, cardiac failure, requirement of blood, labour details, complications during labour, post-partum complications, duration of hospital stay) were recorded in a pre-designed proforma. Neonatal outcome including APGAR score and fetal weight estimation, congenital anomaly if any, need for NICU, neonatal mortality was also recorded. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

Total 72 women with severe anemia were studied, majority were from 19-25 years age group (52.78 %), mean age was 25.4 ± 3.5 years, had completed primary education (70.83 %), from

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lower Socio-economic status (84.72 %). Though Un-booked (13.89 %) pregnancies were less than booked cases (86.11 %), majority had less than 4 antenatal visits (75 %).

Table 1: General characteristics

Characteristics	No. of patients	Percentage
Age groups (in years)		
19-25	38	52.78%
26-30	19	26.39%
31-35	8	11.11%
>35	7	9.72%
Mean age (mean ± SD)	25.4 ± 3.5 years	
Literacy status		
Illiterate	7	9.72%
Primary	51	70.83%
Secondary	13	18.06%
Graduate and above	1	1.39%
Socio-economic status		
Lower	61	84.72%
Middle	11	15.28%
Upper	0	0.00%
Registration status pregnancy		
Booked	62	86.11%
Less than 4 antenatal visits	54	75.00%
4 or more antenatal visits	8	11.11%
Un-booked	10	13.89%

Majority of patients were Para 2 (34.72 %), Para > 2 (31.94 %), had spacing between pregnancy was < 2 years (71.93 %). Vaginal (70.83 %) was most common Mode of delivery, followed by LSCS (26.39 %) & Instrument delivery (2.78 %).

Table 2: Obstetric factors

Obstetric factors	No. of patients	Percentage
Parity		
Nuliparous	15	20.83%
Primipara	9	12.50%
Para 2	25	34.72%
Para > 2	23	31.94%
Spacing between pregnancy (in year) (n=57)		
< 2	41	71.93%
> 2	16	28.07%
Mode of delivery		
Vaginal	51	70.83%
LSCS	19	26.39%
Instrument delivery	2	2.78%

In present study, maternal complication/ high risk factors noted were premature delivery

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(52.78 %), postpartum hemorrhage (34.72 %), preeclampsia (20.83 %), prolonged labor (19.44 %), congestive cardiac failure (16.67 %), puerperal pyrexia (15.28 %), respiratory infection (5.56 %), wound gaping (2.78 %) & sub involution of uterus (2.78 %). One maternal mortality (1.39 %) was noted.

Table 3: Maternal Complication/ High risk

Complication/ High risk	No. of cases	Percentage (%)
Premature delivery	38	52.78%
Postpartum hemorrhage	25	34.72%
Preeclampsia	15	20.83%
Prolonged labor	14	19.44%
Congestive cardiac failure	12	16.67%
Puerperal pyrexia	11	15.28%
Respiratory infection	4	5.56%
Wound gaping	2	2.78%
Sub involution of uterus	2	2.78%
Maternal mortality	1	1.39%

We noted total 7 deaths (3 Intrauterine fetal death/ Stillbirth & 4 Early neonatal deaths), while Low birth weight (<2500 gm) (65.28 %), NICU admission (48.61 %), Apgar score <7 (at 5 minute) (8.33 %) & Intrauterine growth restriction (51.39 %) were also noted.

Table 4: Fetal outcome.

Fetal outcome	No. of cases	Percentage (%)
Low birth weight (<2500 gm)	47	65.28%
NICU admission	35	48.61%
Apgar score <7 (at 5 minute)	6	8.33%
Intrauterine growth restriction	37	51.39%
Intrauterine fetal death/ Stillbirth	3	4.17%
Early neonatal death	4	5.56%

DISCUSSION

Iron deficiency during pregnancy is thought to be caused by a combination of factors such as previously decreased iron supply, the iron requirements of growing fetus and expansion of maternal plasma volume. Factors contributing to anaemia in obstetrics are: increased physiological and fetal demands, inadequate intake, poor absorption due to endemic diseases, viz., malaria, hookworm infestation, and blood loss because of multiple pregnancy losses or during and after labour.[6]

Also, women from low socioeconomic classes are likely to be poorly educated and often have financial constraints, they are more likely to suffer the adverse effects of poor / inadequate nutrition, acute / chronic infections and worm infestations associated with anaemia.[7] In India, according to National Family Health Survey-4,(NFHS-4) the prevalence of anemia is estimated to be 50.3%.There has been a reduction in the prevalence of anemia from 58.3 (NFHS-3) to 50.3% (NFHS-4), there is not much difference in the prevalence of anemia reported in NFHS-2 (49.7%) and NFHS-4 (50.3%).[8]

In study by Rawat K *et al.*,[9] 17,552 second and third trimester pregnant females were evaluated and prevalence of anemia was found 48.4%. The percentages of mild, moderateand severe

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anemia were 35.1%, 51.3% and 13.4% respectively. Most common morphologicaltype was microcytic hypochromic anemia (51%) followed by normocytic normochromic anemia (32%), dimorphic anemia (13%) and macrocytic anemia (4%). In study by Ruchika Singh *et al.*,[10] no maternal mortality and still birth was observed. Pretermlabor pains, hypertensive disease, occurred more in severe anaemia cases (p value 0.003, 0.037 respectively). Blood transfusion was the commonest intervention required. Congestive heart failure developed (CHF) in 3 women. Mean birth weight was more in normal cases as compared to severe anaemia cases (p value 0.002). Birth asphyxia and NICU admissions were more in severe anaemia cases neonates (p value 0.012, 0.017 respectively). Puerperal morbidity was high in severe anaemia women (p value 0.001). Eight women had severe maternal morbidity and 1 woman had near miss event in severe anemia group.

Rameshwari M *et al.*,[11] studied 50 women with hemoglobin <7gm/dl with gestational age > 28 weeks, majority were unbooked (76%) belonged to 20-24 years (38%), lower socioeconomic group (78%), illiterate (60%) majority of them being 2nd and 3rd gravida most of study subjects had signs and symptoms of severe anemia. The hemoglobin ranged from 2.5 to 6.9 gm%. Microcytic hypochromic anemia (94%) was commonest followed by Dimorphic anemia (6%). Maternal outcome was noted in study cases and (40%) of patients had preterm labor, puerperal pyrexia (18%), postpartum hemorrhage (44%), CCF (8%), one parturient had wound gaping (2%) and there was one maternal death (2%). Perinatal outcome were preterm neonate (40%), fetal growth restriction (14%), Still birth (8%) and 50% babies born to severe anemia are low birth weight.

In study by Rehana R *et al.*,[12] mean age of patients was 30.63±4.97 years maximum patients 30.7%) were unbooked and 19.3% were booked. The inter pregnancy interval was <2 years in31.4% patients and >2 years in 18.6% patients. Kanwar G *et al.*,[13] noted that common maternal outcome related to anemia was low birth weight (25.2%) followed by premature delivery (22.96%) and fetal outcome in anemic mother in the form of preterm (22.9%) followed by NICU admission (14.37%) and FGR (8.6%).

Aggarwal M *et al.*[14], noted that out of 314 patients, 7.6% patients fall in severe category. The mean haemoglobin level was 8.65 gm/dl. The mean age was 23.49 yrs. Majority of women belongs to upper lower class around 48.7%, according to Kuppuswamy classification. The severity of anaemia was significantly associated with low socioeconomic group. Majority of patients were multigravida and prevalence of anaemia was higher in them. 108 anaemic mothers had PPH. 83.3% patients with severe anaemia had PPH, which was highly significant. 62.5% severely anaemic patients had puerperal sepsis. There was significant association between severity of anaemia and development of puerperal sepsis. Out of 314 patients, 24% had lactation failure and 50% had subinvolution, which were both significantly associated.

Although anaemia occurring anytime during pregnancy is a risk factor for poor neonatal outcomes, anaemia especially during the third trimester is an important factor in determining birth weight. Rapid fetal growth occurs in the third trimester, increasing the iron and other micronutrient requirement. This pathophysiology explains the association of third trimester Hb levels with LBW and neonatal deaths.[15,16]

Prevention and management of maternal anemia is crucial, especially Iron deficiency anemia that accounts for the most cases of anemia in pregnancy. There are four strategic approaches that have been established to prevent anemia and iron deficiency. These include dietary change in order to increase iron intake, weekly iron supplementation regime to prevent gestational anemia, food fortification such as wheat and rice and lastly general public health

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measures. Secondary prevention in antenatal women can be made possible by early diagnosis and treatment of anaemia.

CONCLUSION

Anemia in pregnancy is a major health problem in developing countries. Severe anemia during pregnancy is associated with maternal and fetal health outcomes fetomaternal morbidity and mortality. To improve maternal and fetal outcome, health system should be strengthened, for prevention, early diagnosis, and treatment of anemia in pregnancy at the earliest

REFERENCES

1. Worldwide database of anemia 1993-2005. WHO Global Database on Anemia.
2. Haider BA, Olofin I, Wang M. Nutrition Impact model study group (anaemia). Anemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. Br Med J. 2013;346:f3443.
3. Paudel, Gautam, 2020. Prevalence, Risk Factors and Consequences of Newborns Born Small for Gestational Age: A Multisite Study in Nepal. BMJ Paediatrics Open 4, 607.
4. Maka SS, Tondare SB, Tondare MB. Study of impactof anemia on pregnancy. Int.J Reprod Contracept Obstet Gynecol. 2017; 6(11): 4847-4850.
5. Singh S, Kaur K. Maternal outcome in cases of severe anaemia in labour. Int J Reprod Contracept Obstet Gynecol. 2018; 7(3): 1201-1204.
6. Milman N: Prepartum anaemia: prevention and treatment. Ann Hematol. 2008, 87:949- 59.
7. Shah RK, Deep JP, Rahman Z, Shah P, Nayak N, Gupta RS. Prevalence of anaemia among pregnant women in third trimester and its effect on pregnancy outcome at Tertiary Level Teaching Hospital, Birgunj. Medphoenix, 2020;5(1): 54-63
8. NFHS-4, 2015-16. Rchiips.org; 2016. Available at:http://rchiipsorg/NFHS/pdf/NFHS4/India.pdf, Accessed on 8 August 2022.
9. Rawat K, Rawat N, Mathur N, Mathur M, Chauhan N, Kakkar R, *et al.* Prevalence and pattern of anemia in the second and third trimester pregnancy in Western Rajasthan. Int J Res Med Sci 2016; 4:4797-9.
10. Ruchika Singh, Mamta Gupta, Vandana Saini, Women with Severe Anemia in Labor: Adverse Clinical Outcomes, International Journal of Innovative Research in Medical Science (IJIRMS), 04 (01) Jan 2019,
11. Rameshwari M. Nisty, Gangambika M. Nisty, Amrutha Patil. "Maternal and Fetal Outcome in Pregnancy with Severe Anemia". Journal of Evolution of Medical and DentalSciences; 3 (15), April 14; Page: 4132-4136,
12. Rehana Rashid, Ufaque Muzaffar, Javid Ahmad Sofi and Zohra Younus, Fetomaternal outcome in cases of severe anemia in labour, International Journal of Clinical Obstetrics and Gynaecology 2021; 5(2): 121-124
13. Kanwar G, Prasad SR, Ratnani R. Incidence of anemia in pregnancy and its maternal-fetal outcome in admitted ANC patients in tertiary care center, Bhilai, Chhattisgarh, India. Int J Reprod Contracept Obstet Gynecol 2021;10:1411-4.
14. Aggarwal M, Jain P, Mahadik K. Study of prevalence of anaemia in pregnant female and association of adverse maternal outcome with severity of anaemia. International Journalof Contemporary Medical Research 2021;8(7):G1-G5.
15. Kumar KJ, Asha N, Murthy DS, *et al.* Maternal anemia in various trimesters and its effect on newborn weight and maturity: an observational study. Int J Prev Med 2013;4:193–9.

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 05, 2022

16. Kumar A, Chaudhary K, Prasad S. Maternal indicators and obstetric outcome in the north Indian population: a hospital-based study. J Postgrad Med 2010;56:192–5.