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RESEARCH ARTICLE

AN OBSERVATIONAL STUDY OF CONSEQUENCES OF ANEMIA IN PREGNANCY IN TERTIARY CARE CENTER IN CENTRAL INDIA

Parul Trichal and Gangwar Pooja

Obstetric and Gynecology, Government Medical College, Ratlam, Madhya Pradesh, India.

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Abstract

Introduction: This study is planned with aim to spot prevalence of Anemia in specified population in central India and to understand various adverse consequences of Anemia in mother and child.

Methods: the study is an observational study in which pregnant women indicates Anemia in pregnancy may be a risk factor for low birth weight (LBW), preterm delivery, poor apgar score and possibly early neonatal death.

Results: In the present study, total numbers of cases studied were 3400, out of which 1634 cases (40%) were primigravidae and 1766 were multigravidae (60%). In this study, 2244 cases were in age group 20 - 34 years, which comprises 66% of total. In this study, 1445 cases had moderate anemia giving an incidence of 42.5%. Maximum number of primigravidae (706) were Non-anemic while maximum number of multigravida (1518) have non anemic. In the present study in non anaemic group 63% of new born baby have birth weight >2.5 kg. Pre term delivery in non-anemic group was 20% while it was 3.5 times and 5.4 times more in moderately anemic group and severely anemic group respectively. Early neonatal death was 3 % in non-anaemic group and while it was 3.3 times and 15 times more in mild anaemic group and moderately - severely anemic group respectively.

Conclusion: This study conform the recommendations of varied previous studies that Anemia is strongly related to LBW, preterm delivery and early neonatal death.

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Introduction:-

Female in reproductive age group is most vulnerable for anemia. Anemia is that the commonest nutritional deficiency disorder within the world. WHO has estimated that prevalence of Anemia in developed countries is 14 % and in developing countries is 51 % in pregnant women. Prevalence of Anemia in India is 65-75% in pregnant women [1]. Specially Iron deficiency Anemia is vital public ill health for pregnant women, living in developing countries, affecting 2/3rd of pregnant women and contributes to maternal morbidity and mortality and to low birth weight [2-3]. the explanation behind these are poor health status, poverty, poor socioeconomic status, multiparty, less birth spacing and plenty of more. Anemia is defined by WHO as Haemoglobin (Hb) less than 11gm in pregnancy, and is split into three degrees mild (10.9-9.0 gm %), moderate (8.9-7.0 gm %) and severe degree (<7.0 gm %) [4] and that we used these parameter in study. Most of the studies have demonstrated a powerful association

Corresponding Author:- Dr. Pooja Gangwar

Address:- Department Of Obstetric And Gynecology, Government Medical College, Ratlam, Madhya Pradesh, India.

between maternal Anemia and adverse outcome like low birth weight, preterm delivery and intrauterine growth retardation [5-9]. This study is planned to search out the incidence and prevalence of Anemia in pregnant mother in specified population and to research their adverse outcome in mother and new born baby.

Methodology:-

This is an observational study which is conducted in Department of Obstetrics and Gynaecology, Government Medical College Ratlam, Madhya Pradesh, India and covered a period of 6 month from 1st September 2019 to 29 February 2020. During the study period, 3400 pregnant women included for this study, among which 1634 cases were primigravidae and 1766 cases were multigravidae. during this study, pregnant woman attending out patient's department or casualty after 12 weeks of gestation till delivery having singleton pregnancy were included within the study. Complete blood count was performed to assess Hb level after 12 week and at the time of engagement and average of both reading was taken in study.

Inclusion criteria

Pregnant woman who delivered in our institute were included during this study.

Exclusion criteria

- Multiparty (5 and above)
- Hypertensive disorders in pregnancy with DM
- Ante partum haemorrhage
- Pregnancy with chronic medical illness gestations
- Multiple
- HIV/HBsAg/VDRL positive cases

Observationstable:

Table No: 1:- Age wise distribution of patients.

GRAVIDA	Number of Patients	Percentage (%)
Primigravidae	1634	40
Multigravidae.	1766	60
Total No	3400	100

In the present study, total numbers of cases studied were 3400, out of which 1634 cases (40%) were primigravidae and 1766 were multigravidae (60%).

Table No 2:- Age wise distribution of patients.

Age Group	No of Patients	Percentage
< 19 Years	340	10
20-35	2244	66
>35	816	24
Total No	3400	100

In this table, 2244cases were in age group 20 - 34 years, which comprises 66% of total, Number of teenage pregnancies were 340 (10%) in the study.

Table No 3: Incidence & Severity of Anemia in study population

Hb	Non-Anaemic (>11 mg %)	Mild (10.9-9 gm %)	Moderate (8.9-7 gm %)	Severe (< 7 gm %)	
Primigravidae	706	220	640	16	N=1582
Multigravidae	518	439	805	56	N=1818
Total No	N=1224	N=659	N=1445	N=72	
Percentage	36%	19.3%	42.5%	2.2%	

In this table, 1445 cases had moderate anemia giving an incidence of 42.5%, 659 cases in the study group had mild anemia with an incidence of 19.3%, 72 cases had Hb<7gm giving an incidence of 2.2% which are severely anemic. Maximum number of primigravidae (706) were Non-anemic while maximum number of multigravida (1518) have non anemic.

Table No 4:- Comparison of birth weight between non-anaemic and anaemic groups.

Birth Weight	Non Anaemic	Mild Anaemic	Moderate Anaemic	Severe Anaemic	
< 2 Kg	123 (10%)	116 (20%)	316 (21%)	49 (54%)	N=604
2-2.5 Kg	330 (27%)	330 (57%)	813 (54%)	24 (26%)	N=1497
> 2.5 Kg	771 (63%)	134 (23%)	376 (25%)	18 (20%)	N=1299
Total	N=1224	N=580	N=1505	N=91	

In the present study in non anaemic group 63% of new born baby have birth weight >2.5 kg. In mild- moderate anaemic group about 57% of new born baby have birth weight 2-2.5 kg. But in severely anaemic group 54% of new born baby have birth weight <2kg. If we compare neonate with birth weight < 2 kg were 10 % in non-anaemic group and 54% in severely anaemic group; that is 5 times more than non-anaemic group.

Table No 5:- Comparison of neonatal outcome between non-anaemic and anaemic groups.

Variables	Non-Anaemic	Mild Anaemic	Moderate Anaemic	Severe Anaemic	
Preterm delivery	122 (9%)	204 (15%)	367 (27%)	667 (49%)	N=1360
Poor APGAR Score (at 5 min <7)	71 (10%)	157 (22%)	186 (26%)	307 (43%)	N=721
Early neonatal death	5 (3%)	17 (10%)	71 (42%)	77 (45%)	N=170

Pre term delivery in non-anaemic group was 20% while it was 3 times and 5.4 times more in moderately anaemic group and severely anaemic group respectively. Poor APGAR score (taken at 5 minutes <7) was 10 % in non-anaemic group and it was increased to 2.2 times in mild- moderately anaemic group and 4.3 times in severely anaemic group. Early neonatal death was 3 % in non-anaemic group and while it was 3.3 times and 15 times more in mild anaemic group and moderately - severely anaemic group respectively.

Results:-

In the present study, total numbers of cases studied were 3400, out of which 1634 cases (40%) were primigravidae and 1766 were multigravidae (60%) [TABLE- 1]. In this study, 2244 cases were in age group 20 - 34 years, which comprises 66% of total, Number of teenage pregnancies were 340 (10%) in the study [TABLE- 2]. In this study, 1445 cases had moderate anemia giving an incidence of 42.5%, 659 cases in the study group had mild anemia with an incidence of 19.3%, 72 cases had Hb<7gm giving an incidence of 2.2% which are severely anemic. Maximum number of primigravidae (706) were Non-anemic while maximum number of multigravida (1518) have non anemic [TABLE- 3]. In the present study in non anaemic group 63% of new born baby have birth weight >2.5 kg. In mild- moderate anaemic group about 57% of new born baby have birth weight 2-2.5 kg. But in severely anaemic group 54% of new born baby have birth weight <2kg. If we compare neonate with birth weight < 2 kg were 10 % in non-anaemic group and 54% in severely anaemic group; that is 5 times more than non-anaemic group [TABLE- 4]. Pre term delivery in non-anaemic group was 20% while it was 3.5 times and 5.4 times more in moderately anaemic group and severely anaemic group respectively. Poor APGAR score (taken at 5 minutes <7) was 10 % in non-anaemic group and it was increased to 2.2 times in mild- moderately anaemic group and 4.3 times in severely

anaemic group. Early neonatal death was 3 % in non-anaemic group and while it was 3.3 times and 15 times more in mild anaemic group and moderately - severely anaemic group respectively [TABLE- 5].

Discussion:-

In our study 66% of booked cases were between 20-35 years of age group it means child bearing is common at younger age group. In our study 64% of study population were anaemic in which 42.5 % have moderate Anemia as per WHO guidelines. Incidence of Anemia is more in multigravida as compared to primigravida. Many studies however, shown that young maternal age and parity are significant risk factors of LBW [10,11]. In our study the risk of low birth weight is more in anaemic group and it increases with severity of Anemia. In mild- moderate anaemic group about 54% of new born baby have birth weight 2-2.5 kg. But in severely anaemic group 54% of new born baby have birth weight <2kg. A similar condition was observed in Pakistan in which majority of the cases had mild Anemia (75.0%), moderate Anemia (14.8%) and severe Anemia (0.7%) [12]. Similarly, report from India in 2010 also showed the majority (50.9%) demonstrated moderate Anemia and followed by mild (30.17%) and severe Anemia (18.9%), respectively[6,13]. Low birth weight babies are more commonly associated with severe Anemia. These results are similar to studies done previously by Rani KU et al [14], Jain P. et al[5] and Levy et al[6]. In our study risk of preterm delivery is more in anaemic group and which increases with severity of Anemia from 50 to 70 %, these results shows similarity with study done by Rani KU et al [14], Jain P et al [5] and Umber et al[9]. There are many studies showing that maternal iron deficiency Anemia early in pregnancy can result in low birth weight subsequent to preterm delivery. One study on welsh women who were first diagnosed with Anemia (haemoglobin <10 g %) at 13–24 wk of gestation had a 1.18–1.75-fold higher relative risk of preterm birth, low birth weight, and prenatal mortality [15]. After controlling for many other variables in a large Californian study, Klebanoff et al showed a doubled risk of preterm delivery with Anemia [16]. In our study preterm and low birth weight among mild and moderate anaemic women was 3 and 5.4 times more than non-anaemic group. Which shows similarities with study done by Umber et al [9] that showed risk of preterm and low birth weight were 3.4 and 1.8 times more in anaemic group. They have taken two group for study, anaemic <11 gm% Hb and non-anaemic >11 gm% Hb. They have also shown poor APGAR score in anaemic group which supports our study. In our study chances of early neonatal death are increases with Anemia severity. An association between maternal Anemia and lower infant APGAR scores was reported in some study done by Rusia et al [8] in Indian women in the first stage of labour, higher maternal haemoglobin concentrations were correlated with better APGAR scores and with a lower risk of birth asphyxia. Study done by Ram Hari et al [17] showed perinatal death 5% in non-anaemic group & 11% in severely anaemic group. Present study also shows Early neonatal death was 3 % in non-anaemic group and while it was 3.3 times and 15 times more in mild anaemic group and moderately - severely anaemic group respectively.

Conclusion:-

In developing countries like India prevalence of Anemia is very high which adversely affect both maternal and foetal outcome. Anemia is directly linked to low birth weight, prematurity, poor APGAR score and neonatal death and maternal morbidity and mortality. To combat all these problems there is a need to prevent incidence of Anemia in pregnant women by giving, iron tablet, food supplements, better antenatal care and by giving health education. These measures are affordable and easily available in our country and by effective implementation of these we can save many lives of both mother and child.

Funding:

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Conflict of interest:

Nil

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