A comparative study of occurrence of anaemia in pregnancy among the tea-tribe communities and non tea-tribe communities attending Assam medical college and hospital, Dibrugarh

Deepa Borgohain^{**}, Himangshu Malakar^{*}

**Professor, Department of Obstetrics and Gynaecology, Assam Medical College and Hospital, Dibrugarh, Assam, INDIA.
* Medical Officer, Department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital, Guwahati, Assam, INDIA.
Email: <u>dr.himangshu_malakar@rediffmail.com</u>

Abstract

Objectives: To determine the occurrence of anaemia of pregnancy and common types of anaemia in tea tribe and non tea tribe communities attending Assam Medical College and Hospital, Dibrugarh. Methods: 200 anaemic pregnant women over 20 weeks of gestation attending AMCH OPD or labour room were divided into 2 groups of 100 patients each; Group A with women from tea tribe and Group B from non tea tribe communities. Proper history, thorough clinical examination and necessary investigations were carried out. Severity and common types of anaemia, relation of anaemia in pregnancy with different demographic variables and antenatal checkups; duration of onset of labour, neonatal outcome, occurrence of LBW and stillborn babies were studied in both groups. **Results:** Most common type of anaemia in both the groups was iron deficiency anaemia. Mean haemoglobin level in Group A patients was lower (7.31±1.83 g%) as compared to Group B patients (8.41±1.41 g%), p value<0.0001. Occurrence of severe anaemia was much higher in Group A patients (38%) as compared to Group B patients (10%). Mean number of antenatal checkups was much lower in Group A patients (1.83 ± 1.28) as compared to that of Group B patients (2.92 ± 1.18) . In both the groups, anaemia is more common among lower socioeconomic class and those with low educational status (p < 0.0001). Mean gestational period of onset of labour was lower in Group A patients (36.17±2.92 weeks) as compared to Group B patients (37.72±1.80 weeks);p<0.0001. Mean birth weight of babies from tea tribe communities was much lower $(2.34\pm0.61 \text{ kg})$ than the other communities (2.7±0.46 kg), p value 0.0007. No statistical significance was found in stillbirths from both communities. Conclusion: Severity as well as outcome of pregnancy was much worse in pregnant women of tea tribe communities as compared to non tea tribe communities.

Key Words: Anaemia in pregnancy, tea tribe communities.

*Address for Correspondence:

Dr. Himangshu Malakar, Medical Officer, Department of Obstetrics and Gynaecology, Gauhati Medical College and Hospital, Guwahati, Assam, INDIA.

Email: <u>dr.himangshu_malakar@rediffmail.com</u> Received Date: 17/04/2017 Revised Date: 25/05/2017 Accepted Date: 02/07/2017

Access this article online		
Quick Response Code:	Website	
	www.medpulse.in	
	DOI: 07 July 2017	

INTRODUCTION

India represents 15% of world's population but accounts for 20% of maternal mortality ratio worldwide. Assam has the country's highest maternal mortality ratio (MMR) with 300 per 100,000 live births (RGI-SRS-2011-13), which almost doubles the national average. One of the reason of maternal death is anaemia during pregnancy. Anaemia is associated with increased risk of PPH, low birth weight, small for gestational age babies and perinatal death. As per Food and Nutrition Bulletin 2005, iron deficiency anaemia was associated with 1, 15,000 of the 5, 10,000 maternal deaths (22%) and 5, 91,000 of 24, 64,000 perinatal deaths (24%) occurring annually around

How to site this article: Deepa Borgohain, Himangshu Malakar. A comparative study of occurrence of anaemia in pregnancy among the tea-tribe communities and non tea-tribe communities attending Assam medical college and hospital, Dibrugarh. *MedPulse – International Journal of Gynaecology*. July 2017; 3(1): 38-42. <u>http://medpulse.in/Gynaecology/index.php</u> (accessed 10 July 2017).

the world. WHO defines anaemia of pregnancy as haemoglobin level below 11g/dl. Incidence and types of show anaemia during pregnancy considerable geographical variation depending chiefly upon the socioeconomic and nutritional status of the people. India has among the highest number of cases of anaemia in the world, according to the National Family Health Survey (NFHS-3)¹ conducted in 2005-2006. The survey further revealed that among the states, Assam is the worst affected with 72% of married women being anaemic, followed by Haryana (69.7%) and Jharkhand (68.4%). Dibrugarh, also known as the tea city, is the first place in Assam where tea plantation was started by Britishers. Tea plucking is mostly a female dominated affair and constitutes more than 50% of the total workforce. Assam Medical College and Hospital, Dibrugarh caters to the needs of a vast population of tea garden workers, majority of whom are poor and illiterate. The objective of this study was to determine the occurrence of anaemia of pregnancy and the common types of anaemia in tea tribe communities and non tea tribe communities attending Assam Medical College, Dibrugarh, Assam.

MATERIALS AND METHODS

The present study was a hospital based comparative prospective study conducted in Assam Medical College, Dibrugarh, from 1st July 2011 to 30th June 2012. Approval from Institutional ethical Committee was taken prior to taking up the study. The study consisted of 200 pregnant women attending outpatient department or labour room of Assam Medical College and was selected randomly on lottery basis. The inclusion criteria were haemoglobin level less than 11g/dl, gestational age over 20 weeks, singleton pregnancies and patients who eventually delivered in Assam Medical College Hospital. The patients were divided into 2 groups of 100 patients each. Group A consisted of women from tea tribe communities and Group B consisted of women from the non tea tribe communities. Criteria for exclusion were haemoglobin 11g/dl or more, gestational age less than or equal to 20 weeks, multiple pregnancies, medical disorders like diabetes, heart disease, renal disease, malaria, tuberculosis etc, known case of leukaemia, aplastic anaemia etc, severe PIH (BP 160/110 mm of Hg or more). A detailed history was taken followed by a thorough clinical examination. The investigations done were: 1) Complete haemogram, Reticulocyte count, smear for cell morphology. Peripheral blood Haemoglobin typing by HPLC method, serum ferritin, serum protein and fractions, Sickling test (wherever indicated), Vitamin B12 and folate levels in serum (wherever indicated), 2) routine examination of urine, 3) examination of stool especially for ova, cyst and occult blood, 4) Bone marrow examination (wherever indicated) for cellular morphology and stainable iron. All patients were given a course of anti-helminthic treatment, followed by either IFA tablets or iron sucrose injections or blood transfusion (preferably packed cell volume) depending upon the period of gestation as per standard hospital protocol. Haemoglobin of all patients was again estimated after 4 weeks and the change in haemoglobin level was noted. The women in labour were admitted and labour recorded in a modified WHO partogram. Caeserean section was done for obstetric indications only. Active management of third stage of labour was done in all cases. Following delivery, newborn baby was examined thoroughly. The patient was monitored for 2 hours following delivery.

RESULTS

The occurrence of anaemia in pregnancy, the common types of anaemia in pregnancy and the outcome of pregnancy among the two groups were compared and any statistical difference in the performance in both the groups were noted by using Student "t" test and Chi- square test.

Table 1: Table showing the severity of anaemia in group a and group b						
	GROUP A		GROUP B			
GROUPS	No. of Cases(n=100)	Percentage (%)	Mean maternal haemoglobin (gm±SD)	No. of Cases (n=100)	Percentage (%)	Mean maternal haemoglobin (gm± SD)
Mild anaemia	9	9		11	11	
Moderate anaemia	53	53	7.31±1.83	79	79	8.41±1.41
Severe anaemia	38	38	Range: 2.9-10.6	10	10	капде: 3-10.7
Total	100	100	gm%	100	100	gm%

Table 1 shows that the mean haemoglobin level in Group A patients was lower $(7.31 \pm 1.83 \text{ g}\%)$ as compared to Group B patients $(8.41\pm1.41\text{ g}\%)$. The statistical significance of the severity of anaemia in between the two groups was found to be highly significant (p<0.0001). Also it was seen in the study that the occurrence of severe anaemia is much higher in Group A (38%) as compared to Group B patients (10%).



Figure 1: Showing the morphological types of anaemia in group a and group b

Figure 2: Showing the common causes of anaemia in group a and group b

Graph 1 shows that microcytic hypochromic anaemia was the commonest type among both the groups under study; 84 (84%) cases in Group A and 66 (66%) cases in Group B. Graph 2 shows that 86 (86%) cases in Group A and 61 (61%) cases in Group B suffered from iron deficiency anaemia showing that it was the commonest type of anaemia observed in both the groups. HbE trait and disease was identified in 30 (30%) cases from Group B and 7 (7%) cases from Group A. Number of patients with thalassemia was 6 (6%) in both the groups. Vitamin B12 and folate deficiency anaemia was observed in 1 (1%) and 3 (3%) cases in Group A and Group B respectively. The statistical significance of occurrence of iron deficiency anaemia and HbE trait and disease in between the two groups was studied and the p value was found to be highly significant.

Table 2: Showing the relation of	anaemia with different demograph	ic variables in both the group
----------------------------------	----------------------------------	--------------------------------

Demographic variables	Group A	Group B
Moon motornal ago (in yrs)	23.31±4.03	23.95±
Weath maternal age (in yrs)		4.59
Number of antenatal check ups	1.83±1.28	2.92±1.18
Patients from lower (class IV and V) socioeconomic groups	97 %	73 %
Patients who were illiterate	87 %	58 %
Mean age of marriage (in yrs)	19.52± 2.46	20.39±2.97

Table 2 shows that the mean maternal age of both the groups was almost similar, with a marginal increase of mean age in Group B (23.95 ± 4.59 years) as compared to Group A (23.31 ± 4.03 years). The association of anaemia and antenatal care was studied statistically in both the groups and p value was found to be less than 0.0001 which shows that it was highly significant. It was also seen that the mean number of antenatal check ups were much lower in Group A patients (1.83 ± 1.28) as compared to that of Group B patients (2.92 ± 1.18). Table 2 also shows that anaemia is more common in the lower socioeconomic class of people, majority belonging to class V and IV. The relation of anaemia between the two groups and the low socioeconomic classes was studied statistically and was found to be highly significant (p<0.0001). The mean age of marriage was little lower from Group A patients (19.52 ± 2.46 years) as compared to that of the Group B patients (20.39 ± 2.97 years).

Table 3: Showing the outcome of pregnancy in group a and group b patients

	Group A	Group B
Mean gestational period at the onset of	36.17	37.72 ±
labour (in weeks)	±2.92	1.82
Mean birth weight of babies (in kg)	2.34	2.70
	±0.61	±0.46
Babies with APGAR score < 7 (at 5 mins)	39.18%	8.16%
Stillborn rate	3 %	2 %

Table 3 shows that the mean gestational period of onset of labour was lower (36.17±2.92 weeks) in Group A patients as compared to Group B patients (37.72±1.80 weeks). This difference was statistically found to be highly significant (p<0.0001) showing preterm labour is more common in tea tribe communities. Regarding the neonatal outcome, the mean birth weight of babies born to Group A mothers was much lower (2.34±0.61 kg) as compared to those of Group B mothers (2.70±0.46 kg). The occurrence of LBW babies between the two groups was statistically found to be significant (p value 0.0007) showing that LBW babies are more common in tea tribe communities. Also it has been observed that majority of the babies with poor APGAR score at 5 minutes were from the tea tribe communities. The stillborn rate is also marginally more in tea tribe communities (3%) as compared to the non tea tribe communities (2%). The occurrence of stillbirth between the two groups was studied statistically and was, however, found to be insignificant (p>0.05). Also it has been seen from this study that the occurrence of adverse neonatal outcome and preterm labour is much higher in patients with severe anaemia. Majority of the patients who had preterm labour suffered from severe anaemia (71.05% cases from Group A and 60% cases from Group B). 36 (94.73%) severely anaemic Group A patients gave birth to LBW infants in contrast to 6 (60%) patients from Group B. None of the mothers having mild anaemia in either group delivered a LBW baby. Similarly, the occurrence of stillbirth is more in cases of severe anaemia. 2 (5.26%) patients from Group A and 2 (20%) patients from Group B having severe anaemia delivered a stillborn baby. Only 1 (1.89%) patient having moderate anaemia from Group A delivered a stillborn baby. No patients with mild anaemia in both the groups delivered a stillborn baby.

DISCUSSION

The overall incidence of mild and moderate anaemia observed was 10% and 66% respectively, which is similar with the study of FU Ahmed *et al*, 2006^2 . However the prevalence of severe anaemia (24%) is much higher in the present study. This is because 38% of the patients from tea garden communities suffered from severe anaemia as compared to only 10% from other communities. The increased prevalence of severe anaemia observed in the tea tribe communities (38%) can be explained by the fact that this group of people are from lower socio economic class, usually illiterate and are unaware of the importance of antenatal care; leading to late detection of anaemia among them. They also have an unique habit of taking tea with table salt which hinders the absorption of iron. Poor hygiene also leads to hookworm infestations which further contribute to the severity of anaemia. The present study shows iron deficiency anaemia as the commonest type of anaemia in both the groups which is similar to the studies of Fareh OI et al (2005)³. Occurrence of HbE trait and disease was only 7% in patients of tea tribe communities but was much higher in Group B patients (30%) which consisted of communities like Ahom, Kachari, Deori etc which is similar to that reported by Das BM et al $(1972)^4$. The incidence of thalasemia was 6% in both the groups which is unlike the study by SK Sharma, J Mahanta *et al* (2000-2005)⁵; who found an incidence of 2.3%. The higher incidence of thalasemia in the present study may be due to the fact that this region falls under the thalasemia belt (and AMCH gets referred patients from whole of upper Assam and neighbouring states). Majority of the patients from the study population were unbooked cases from lower income groups and were illiterate, which explains the prevalence of severe anaemia in the tea tribe groups similar to the observations of Judiath A et al (2005-06)⁶. Majority of the patients from the study population were in the age group of 20 to 30 years and this view is consistent with the findings of Sheldon WL et al $(1985)^7$. Maternal and fetal complications were more in the tea tribe communities. preterm labour 37% as compared with the other group(17%). This can be explained by the fact that more patients from group A are severely anaemic and had preeclampsia which may contribute to increase prevalance of preterm labour. Other demographic factors like low BMI, low socioeconomic status may also contribute to increase prevalence of preterm labour. The present study also shows that the risk of preterm labour increases with increasing severity of anaemia and this view is supported by the observations of Gunnar *et al* and Bondevick GT *et* $al (2001)^8$. The 47.5% occurrence of LBW babies in the study population was much lower than that found by Rathee S, Khosla A, Garg A et al (1987)⁹ which is 61.7%. This may be due to the improvement in health care facilities, increasing awareness in general population, early detection of complications and prompt treatment. This also supports the fact that more LBW babies were recorded in the tea garden communities (57%) as compared to the other communities (38%). The present study recorded slightly higher incidence of stillbirth in the tea garden communities (3%) as compared to the other communities (2%). Factors like low socioeconomic status, low BMI, lack of antenatal care, more severe anaemia and increase incidence of pre-eclamsia in tea garden communities may be a contributing factor.

CONCLUSION

This study reflects that iron deficiency anaemia is the commonest type of anaemia in both the groups. The severity as well as outcome of pregnancy is much worse in the pregnant women of tea tribe communities as compared to other communities. Institutional delivery is the key to reduce maternal death but the popular government schemes should reach the general population. This can be achieved only if these tea garden population, most of whom are poor and ignorant, can be brought to the mainstream. The severe health issues should be addressed. Anaemia being a treatable disease can be cured if awareness is created and the health schemes made accessible to the tea garden population and more stress is given on education, Through better nutritional intervention, better education and overall improvement of socioeconomic conditions we can combat this preventable disease and ensure that every pregnancy ends up in a healthy mother with a healthy baby.

REFERENCES

- 1. Rchiips.org>NFHS>nfhs3.
- Toteja GS, Singh P, Dhillon BS, Saxena BN, Ahmed FU, Singh RP, Prakash B, Vijayaraghavan K, Singh Y, Rauf A, Sarma UC, Gandhi S, Behl L, Mukherjee K, Swami SS, Meru V, Chandra P, Chandrawati, Mohan U (2006): Prevalence of anaemia among pregnant women and

adolescent girls in 16 districts of India; Food Nutr Bull.2006 Dec; 24 (4): 311-5.

- 3. Fareh OI Rizk DE, Thomas L, Berg B 2005: Obstetric impact of anaemia in pregnant women in United Arab Emirates; J Obstet. Gynaecol. July; 25 (5): 440-4.
- 4. Flatz G, Chakravarty MB, Das BM and Delbruck H (1972): Human Hered. 22:223.
- D. Mohanty, RB Colah, AC Gorakshakar, RZ Patel, DC Master, J Mahanta, SK Sharma, U Chaudhari, M Ghosh, S Das, RP Britt, S Singh, C Ross, L Jagannathan, R Kaul, DK Shukla, V Muthuswamy: Prevalence of β thalassemia and other haemoglobinopaties in six cities in India: a multicentre study: J Community Genet (2013) 4:33-42.
- Judiath A Naronha, A Bhaduri and H Vinod Bhat: Prevalence of anaemia among pregnant women: a community based study in Udupi District, Karnataka; Health and Population – Perspectives and Issues 31 (1): 31-40, 2008.
- 7. Sheldon WL et al (1985): Brit Jr of Obst and Gynae. 92:892.
- Bondevik GT, Lie RT, Ulstein M, Kvale G: Maternal haemoglobin and risk of low birth weight and preterm delivery in Nepal.Acta Obstet Gynecal Scand. 2001 May; 80 (5): 402-8.
- 9. Rathee S, Khosla A, Sharma R, Garg R (1987): Pregnancy outcome in severe anaemia: Jr Obst and Gynae India. 38: 478.

Source of Support: None Declared Conflict of Interest: None Declared