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Evaluation of iron deficiency anemia in pregnancy-A clinical study

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Abstract

Background: Anemia is the most common nutritional deficiency disorder in the world. The prevalence of anemia in pregnancy varies considerably because of differences in socioeconomic conditions, lifestyles and health seeking behaviors across different cultures. The present study was conducted to assess the hemoglobin level in pregnancy.

Materials & Methods: The present study was conducted on 280 pregnant women in age range from 18 to 48 years. Estimation of Hb level was done by cyanmethaemoglobin method and on the basis of the hemoglobin concentration, anemia was classified into three degrees: mild degrees (9.0-10.9 gm %), moderate degree (7.0-8.9 gm %) and severe degree (<7 gm %).

Results: Age group 18-28 years had mild (80), moderate (15) and severe (2) anemia, 28-38 years had mild (107), moderate (20) and severe (5) anemia and age group 38-48 years had mild (30), moderate (18) and severe (3) anemia. The difference was significant ($P<0.05$). 1st trimester had 60 cases, 2nd had 125 cases and 3rd had 95 cases. The difference was significant ($P<0.05$). Patients had lower (160), middle (70) and upper (50) socio-economic status. The difference was significant ($P<0.05$).

Conclusion: Anemia is quite common in pregnancy. Common cause is excessive bleeding through menstrual in females. During pregnancy, efforts should be made towards early diagnosis and treatment of all anemic pregnant women before delivery.

Keywords: Anemia, Iron, Pregnancy

Introduction

Anemia is the most common nutritional deficiency disorder in the world. WHO has estimated the prevalence of anemia in pregnant women in developed and developing countries, and that is 14% in developed and 51% in developing countries. About one-third of the global populations are anemic. Incidence of anemia in South Asian countries is highest in the world [1].

Pregnancy is a physiological condition and usually has no effect on general health of a pregnant woman. However pregnancy results in hormonal, hemodynamic and hematological changes. These physiological changes need to be viewed as normal adaptations determined by nature. Increased total blood volume and haemostatic changes help to combat the hazards of hemorrhage at delivery. The increase is less in iron deficient women than in those with iron reserves. In some iron deficient women this inability to expand plasma volume may mask a decrease in hemoglobin concentration [2].

WHO estimates that even among the South Asian countries, India has the highest prevalence of anemia. About half of the global maternal deaths occur due to anemia in South Asian countries. Many researches in different parts of developing countries have documented iron deficiency as the leading cause of death in pregnancy. The prevalence of anemia in pregnancy varies considerably because of differences in socioeconomic conditions, lifestyles and health seeking behaviors across different cultures [3].

The lowest normal hemoglobin in the healthy non-pregnant woman is defined as 12 g/dl. The World Health Organization (WHO) recommends that hemoglobin ideally should be maintained at or above 11.0 g/dl, and should not be allowed to fall below 10.5 g/dl in the second trimester. Pregnancy usually induces a slight increase (2-3 fl) in mean red cell volume (MCV), independent of folate status [4]. The present study was conducted to assess the hemoglobin level in pregnancy.

Materials & Methods

The present study was conducted in the department of Gynaecology & Obstetrics. It comprised of 280 pregnant women in age range from 18 to 48 years. All were informed regarding the study

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and written consent was obtained. Ethical clearance was taken from institutional ethical committee.

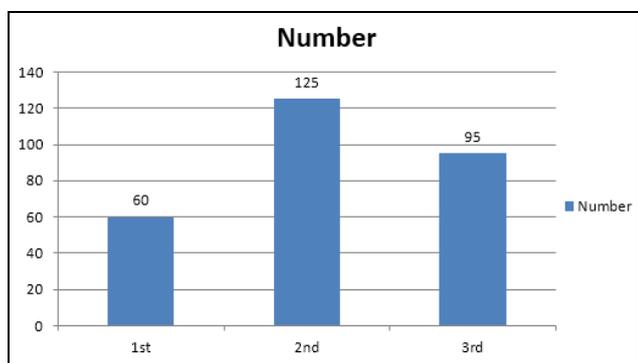
General information such as name, age etc. was recorded. Estimation of Hb level was done by cyanmethaemoglobin method and on the basis of the hemoglobin concentration, anemia was classified into three degrees: mild degrees (9.0-10.9 gm %), moderate degree (7.0-8.9 gm %) and severe degree (<7 gm %). Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

Results

Table 1: Age wise distribution of cases

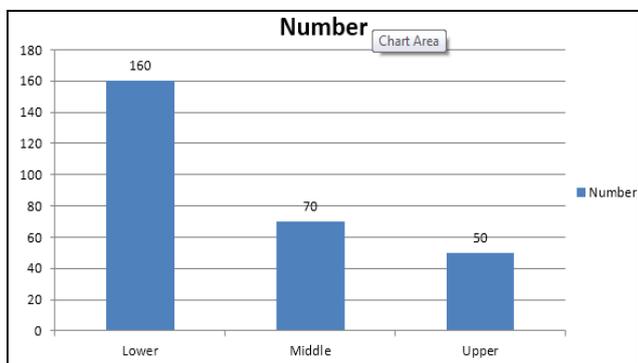
Age group	Mild	Moderate	Severe	P value
18-28 years	80	15	2	0.01
28-38 years	107	20	5	
38-48 years	30	18	3	
Total	217	53	10	

Table I shows that age group 18-28 years had mild (80), moderate (15) and severe (2) anemia, 28-38 years had mild (107), moderate (20) and severe (5) anemia and age group 38-48 years had mild (30), moderate (18) and severe (3) anemia. The difference was significant ($P<0.05$).



Graph 1: Trimester wise distribution of cases

Graph I shows that 1st trimester had 60 cases, 2nd had 125 cases and 3rd had 95 cases. The difference was significant ($P<0.05$).



Graph 2: Socio-economic status

Graph II shows that patients had lower (160), middle (70) and upper (50) socio-economic status. The difference was significant ($P<0.05$).

Discussion

Anemia in pregnancy is considered as one of the major risk factors for contributing to maternal death in developing countries. Hemorrhage, eclampsia and infections are being the

three major causes of maternal deaths. Bonevik *et al* [5] showed that prevalence of anemia is 62.2%) in a study conducted in Kathmandu, Nepal. Anemia is the common problem in female population which is understood that the occurrence of anemia is due to regular monthly menstrual blood loss. If we see anemia in non-pregnant female, most common causes are due to excessive blood loss during menstruation, hookworm infestation, chronic nutritional deficiency and rarely malignancy. In pregnancy it is more severe because of increased demand and decrease in intake either due to nausea or a decrease in appetite or lack of knowledge, chronic diseases or due to poverty [6].

In present study, age group 18-28 years had mild (80), moderate (15) and severe (2) anemia, 28-38 years had mild (107), moderate (20) and severe (5) anemia and age group 38-48 years had mild (30), moderate (18) and severe (3) anemia. This is similar to Murthy *et al* [7].

Iron deficiency is normally the result of inadequate bio available dietary iron and increased iron requirements during a period of rapid growth in pregnancy and infancy. Anemia of pregnancy has a significant impact on the health of foetus as well as mother, especially if severe, may impair the oxygen delivery to placenta and foetus interfering with intrauterine growth. Placental weight, volume and surface area are reduced if expecting mother is moderately anemic. It results in 12-28% of foetal loss, 30% prenatal deaths and 7-10% of neonatal deaths [8].

During the second trimester anemia is associated with preterm birth, incidence of which is increased five-fold for iron deficiency anemia and double for other anemia. The risk of iron deficiency is particularly high in women with high parity and short intervals between pregnancies. We found that 1st trimester had 60 cases, 2nd had 125 cases and 3rd had 95 cases. This is similar to Marti [9].

A study by Neha [10] found 150 pregnant women were taking Iron-Folic Acid supplementation throughout pregnancy. The percentage of anemia was 43.4 with more prevalence of moderate anemia in 2nd & 3rd trimester. Lone *et al.* in their study, hemoglobin (Hb) levels were used to estimate the incidence of anemia in these pregnant women. Out of 364 subjects, 172 (47.25%) were diagnosed as anemic. The majority (68.60%) of these anemic pregnant women were mildly anemic whereas 29.06% were moderately and 2.32% were severely anemic. Prevalence of anemia was higher in these pregnant women at the second trimester (51.1%) and also at the 20-35 years age group (62.79%).

Conclusion

Anemia is quite common in pregnancy. Common cause is excessive bleeding through menstrual in females. During pregnancy, efforts should be made towards early diagnosis and treatment of all anemic pregnant women before delivery.

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