Effect of Maternal Anaemia on Neonatal Anthropometry in Tikrit City

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Abstract

There are several types of anemia can develop during pregnancy. These include iron-deficiency anemia, folate-deficiency anemia & vitamin BHYPERLINK "http://www.webmd.com/food-recipes/guide/vitamin-b12-deficiency-symptoms-causes"12 HYPERLINK "http://www.webmd.com/food-recipes/guide/vitamin-b12-deficiency-symptoms-causes"deficiency, iron deficiency is the most common one. Folate deficiency can cause birth defects, such as neural tube abnormalities (spina bifida) and low birth weight.Vitamin B12 deficiency could lead to preterm labor and birth defects.

This study aim to evaluate the association between maternal anaemia during pregnancy and neonatal anthropometry. This study has been carried from April, 2016 to July, 2016 in Al-Razy Health Care Center in Tikrit city on 32 anaemic (haemoglobin < 11 gram/dl) mothers and 38 mothers served as controles (haemoglobin >11 gram/dl). Haemoglobin concentration was measured in the third trimester of pregnancy.

The anthropometric measurements of neonates of anemic and non anemic mother groups showed a statistically significant differences.That is mean, the anemic mothers deliver smaller babies than non anemic mother. So anemia should be diagnosed and treated in each mother to avoid this morbidity.

Introduction

The supplementation of iron to pregnant women is one of the most widely practiced public health measures, but little is known about the benefits of supplemental iron for the mother or her offspring during fetal or postnatal life. Transfer of iron from the mother to the fetus is supported by a substantial increase in maternal iron absorption during pregnancy and is regulated by the placenta (1). The relation between maternal anemia and birth weight has been reviewed more extensively elsewhere in this issue(2). In several studies, a U-shaped association was observed between maternal hemoglobin concentrations and birth weight(3). Lower birth weights in anemic women have been reported in several studies (4-6). When pregnant women were treated with iron, Apgar scores were significantly higher in those infants whose mothers received iron(7). There is

little known concerning the effects of maternal iron status during pregnancy on the subsequent health and development of the infant.The aim of this study is to find any association between maternal anaemia during pregnancy and the weight, crown-heel length & mid arm circumference of neonate.

Patients & methods

This study has been carried from April, 2016 to July, 2016 in Al-Razy Health Care Center in Tikrit city on 32 anaemic (haemoglobin < 11 gram/dl) mothers and 38 mothers served as controles (haemoglobin >11 gram/dl). All the women had singleton live births at term gestation and haemoglobin concentration was measured in the third trimester of pregnancy.The age of the mothers was between 20-35 years.The parity, maternal body mass index and the type of the anemia was not included in this study. Maternal hemoglobin status was assessed by haemoglobin estimation.There were 15 male & 17 female neonates of anemic mothers group, While there were 20 male & 18 female neonates of non anemic mothers group. The weight, crown heel length and mid-arm circumference were measured for neonates in the vaccination unit.

Results

There were 70 women, 32 (45.7%) mother found to be anemic.The anthropometric measurements (weight , crown heel length and mid-arm circumference) of neonates of anemic and non anemic mother groups showed a statistically significant differences (p value <0.05) ,tables (1). The anemic and non anemic mother neonates were categorized into male and female groups.The anthropometric measurement were measured for male and female groups and compared statistically.There was significant differences (P value < 0.05) between male of anemic and non anemic mothers, and also for female.Tabels (2), (3) and (4).

Discussion

Physiologic anemia, or dilutional anemia of pregnancy, is common in healthy pregnant women due to blood volume expansion to support the growing fetus.Overall prevalence of iron deficiency in pregnant women in the United States is near 18%, and rates of iron deficiency increasing across

trimesters from 6.9%-14.3% to 28.4%(8,9).

Pregnant women with clinically significant iron deficiency or IDA may present with fatigue, weakness, pallor, tachycardia, and shortness of breath. Maternal iron requirements average 1000 mg/d (10). Primary prevention for average-risk populations includes adequate intake of dietary iron and oral, low-dose (30 mg/d) iron supplements early in pregnancy (11).

Although many older observational studies, including uncontrolled and cross-sectional studies, have shown an association between various measures of iron status and negative perinatal outcomes, such as low birthweight, premature birth, and perinatal death (13,14), more rigorous trial evidence is inconsistent. In summary, this study showed that maternal anemia during pregnancy negatively affects the anthropometric measurements of the neonates. Anthropometric measurement of male neonates of anemic mother group were the mean (±SD) value of weight was 3.31(± 0.38), length 49.25 (± 3.7) and mid arm circumference 10.6 (± 0.5).While the anthropometric measurement of female neonates of anemic mother group were the mean (±SD) value of weight was 3.28 (± 0.78), length 50.4 (± 3.04) and mid arm circumference 10.62 (± 0.91). The neonatal anthropometric measurement of anemic mothers were less than non anemic mothers,so in this study the neonatal length, weight and even the mid arm circumference all affected by maternal anemia. On multivariate analysis by ANOVA test, maternal anemia had highly significant effect (P value < 0.05) on neonatal weight, length, and mid arm circumference.as showen in the tables (2), (3) and (4).Telatar B et al. (2009)(15) found that the anthropometric measurements (weight,length) of neoborn of anemic and non anemic mother group showed a statistically significant difference as we compared with this study. In contrast to this study,Steer et al(16) found that the highest birth weight was in neonates with maternal hemoglobin level of 8.5-9.5mg/dl. On comparing maternal anemia effect on male and female neonatal anthropometry, there was no significant differences between them (P value > 0.05) ,Table (5). So, in this study there is no sex difference in the effect of

maternal anemia.

Conclusion

Anemia during pregnancy negatively affect the anthropometric measurements of neonates.

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Table (1) The Mean & Standard Deviation of weight , crown heel length and mid-arm circumference :-

	Anemic N=32	Non-anemic N=38	P-value
Weight (Kg)	3.3±0.6	3.9±0.6	P<0.05
Crown heel length(cm)	50±3.3	51±3.9	P<0.05
Mid-arm circumference(cm)	10.4±0.8	10.8±0.7	P<0.05

N=number of subjects

Table (2) The Mean & Standard Deviation of length (cm) of Male and Female groups:-

	Anemic N=32	Non-anemic N=38	P-value
Male group	49.25± 3.7	52.3± 3.88	P<0.05
Female group	50.4 ± 3.04	51.5 ± 3.9	P<0.05

Table (3) The Mean & Standard Deviation of weight (Kg) of Male and Female groups:-

	Anemic N=32	Non-anemic N=38	P-value
Male group	3.31 ± 0.38	4 ± 0.8	P<0.05
Female group	3.28 ± 0.78	3.9 ± 0.61	P<0.05

Table (4) The Mean & Standard Deviation of mid-arm circmference (cm) of Male and Female groups:-

	Anemic N=32	Non-anemic N=38	P-value
Male group	10.6± 0.51	11.75 ± 2.7	P<0.05
Female group	10.62± 0.91	10.9 ± 0.5	P<0.05

Table (5) The Mean & Standard Deviation of anthropometric measurements of Male and Female groups of anemic mothers:-

	Male Group	Female group	P-value	Significancy
Weight (Kg)	3.7 ±49.25	3.04 ± 50.4	0.6	Non significant
Crown Heel Length (cm)	49.25± 3.7	50.4 ± 3.04	0.5	Non significant
Mid Arm	10.6± 0.51	10.62±	0.3	Non

Circumference(cm)		0.91		significant