Effect of Maternal Hemoglobin on Gestational Age of Newly Born Babies in Baqubah City

Sabah Mohsin Ali (MBChB, FICPS)[1], **Mohammad Abdul Qader Al_Chalabi** (MBChB, FICMS)[2] **and Falah Mkhaiber Mustafa** (MBChB, CABP)[3]

Abstract

Background: Maternal hemoglobin during pregnancy is well established to be contributors to affect gestational age of newly born babies. Anemia is one of most prevalent nutritional deficiency problem afflicting pregnant women in both developed and developing country.

Objective: To study the relationship between maternal hemoglobin during pregnancy and gestational age of newly born babies.

Patients and Method: This is a cross- sectional study included 200 pregnant women collected from Al- Batool Teaching Hospital for Maternity and Children, Baqubah city, Diyala, Iraq, during the period between 1st of January 2014 to 1st of April 2014 delivered at hospital. One hundred sixteen delivered by vaginal delivery, and eighty four were delivered by caesarian section.

Result: Total number of cases 200 mother with their new born baby which delivered at hospital hemoglobin of mother to anemic mother classified as severe anemia 4 (2.0%), moderate anemia 19 (9.5%) and mild anemia 60 (30.0%) while normal mother hemoglobin 117 (58.5%). full term baby 157 (78.5%), preterm baby 38 (19.0%) and abortion 5 (2.5%). Correlation between maternal hemoglobin and gestational age was in term baby with normal hemoglobin 99 (63.1%) while anemic 58 (36.9%), in preterm baby with normal hemoglobin 15 (39.5%) while anemic 23 (60.5%) and in abortion with normal hemoglobin 3 (60%) while anemic 2 (40%) which is statistically significant p-value = (0.03).

Conclusion: Low maternal hemoglobin levels are associated with increased risk of preterm delivery.

Key Words: Pregnancy, anemia, preterm, hemoglobin.

Corresponding Author: Sabahma2002@yahoo.com

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[1] Pediatric Department - College of Medicine - Diyala University - Diyala - Iraq.

[2,3] Pediatric Department - Al-Batool Teaching Hospital for Maternity and Children - Diyala - Iraq.

Introduction

Anemia is a public health issue for developing countries, especially for child bearing age women [1].

In Iraq anemia prevalence in pregnant women was found to be 30.5% [2]. The worldwide prevalence of anemia in child bearing age group is quite high (30.2%) [1].

The World Health Organization (WHO) estimates that averages of (56%) of pregnant women in developing countries are anemic. This percentage ranges from (35%-75%) in specific areas, and is much higher than the

(18%) of pregnant women diagnosed with anemia in developed countries [3].

Maternal anemia is considered as a risk factor for poor pregnancy outcome and threatens the life of mother and fetus [4].

According to WHO, pregnancy anemia exists if hemoglobin (Hb) is lower than 11mg/l and hematocrit (Htc) lower than (31.7) anemia in pregnant women classified to mild anemia (9.0-10.9g/dl), moderate anemia (7-8.9g/dl) and Severe anemia (<7.0g/dl) [5].

Some studies have demonstrated a strong association between low hemoglobin before delivery and adverse outcomes, low maternal hemoglobin levels are associated with increased risk of preterm delivery [6].

This study aim to know the relationship between maternal hemoglobin during pregnancy and gestational age of newly born babies.

Patient of Methods

This is a cross- sectional study included 200 pregnant women who attended to the obstetrical ward in Al-Batool Teaching Hospital for Maternity and Children Baqubah city during the period between the 1st of January2014 to the 1st of April 2014, one hundred sixteen delivered by vaginal delivery (VD) and eighty four were delivered by caesarian section (C/S). Maternal blood sample aspirated before labor by nurse send for measuring the level of hemoglobin at the laboratory in the same hospital. By using electronic counting by electrical device cell-dynruby.

The gestational age of newborn babies immediately after birth was estimated by using both.

1. Ballard score method
2. Calculation of gestational age according to LMP count by mother.

Ballard scoring system: in which estimation of gestational age by physical examination by assessment of physical and neurological criteria of prematurity, this scoring system is accurate up to ±2 wk. [7].

Statistical analysis

The data was performed using the Statistical Package for the Social Sciences (SPSS), version 22, IBM, US, 2013. Descriptive statistics were presented as frequencies (No.) and proportions (%). Chi-square. Level of significance, (p-value) was set at ≤ 0.05 to be considered as significant.

Result

Total number of cases 200 mother with their newborn which delivered at hospital. Table 1 which show distribution of maternal (Hb) to anemic mother which classified as severe anemia 4 (2.0%), moderate anemia 19 (9.5%) and mild anemia 60 (30.0%) normal mother (Hb) 117 (58.5%).

Table (1): Distribution of maternal hemoglobin according to the types of anemia

		No	%
Hb of mother (g/dl)	**Severe anemia (<7.0g/dl)**	4	2.0
	Moderate anemia (7-8.9g/dl)	19	9.5
	Mild anemia (9.0-10.9g/dl)	60	30.0
	Normal (=>11.0g/dl)	117	58.5

Table 2: Show outcome of each pregnancy according to gestational age full term baby 157 (78.5%), preterm Baby 38 (19.0%) and abortion 5 (2.5%).

Table (2): Outcome of pregnancy according to gestational age.

Outcome	No	%
Term	157	78.5
Preterm	38	19.0
Abortion	5	2.5

Table 3: Show correlation between mother (Hb) and gestational age in term baby with normal maternal (Hb) 99 (63.1%) while anemic 58 (36.9%), in preterm baby with normal maternal (Hb) 15 (39.5%) while anemic 23 (60.5%) and in abortion with normal maternal (Hb) 3 (60%) while anemic 2(40%) which is statistically significant p-value = (0.03).

Table (3): Maternal hemoglobin in relation to outcome of pregnancy.

		Hb of mother (g/dl)				P value
		Anemia (<11.0g/dl)		Normal (=>11.0g.dl)		
		No	%	No	%	
Outcome	**Term**	58	36.9	99	63.1	0.030
	Preterm	23	60.5	15	39.5	
	Abortion	2	40.0	3	60.0	
*Significant using Pearson Chi-square test at 0.05 levels.						

Discussion

Anemia is a common problem in pregnant women in developing countries. Pregnancy outcomes vary depending upon the types of anemia [8].

The study show that 117 (58.5%) was normal while 83 (41.5%) was anemic and this due to decrease use of iron supplement during pregnancy or prior that as result of that the outcome was 157 (78.5%) was term while others was preterm and abortion 43 (21.5%) which statistically significant.

This result show as in other study in the world specially in developing country as in study in Pakistan Umber *et al* (2007) who found out of the(860)patients, (402) were anemic show risk of preterm among anemic women was (3.4) times more than non-anemic women [9].

Study done in India by Kumar *et al* (2013) who revealed that (50%) of the mothers were anemic show (11.5%) increase in preterm deliveries in mothers who were anemic statistically significant (P<0.004) in all pregnancy [10].

Other study done in Bangladesh by Shireen *et al* (2010) who observed that (36 %) of the pregnant women were anemic. Statistically significant association between (Hb) level and gestation age (r =0.61; p<0.001) [11].

In East China study of Zhang Q *et al* (2009) showed preterm birth rates of preterm birth were (4.1%) for anemic and (5%) for non-anemic women statistically significant (P<0.05) [12].

Study in Bolivia performed by Elise *et al* (2011) showed maternal anemia was associated with lower gestational age at birth statistically significant association between (Hb) level and gestation age (P=0.0284) [13].

In conclusion, maternal anemias during pregnancy have strong relationship with fetal outcome as preterm delivery.

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