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Original Research Article

Maternal anemia as a risk factor for preterm labour

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Abstract

Preterm labour is occurrence of regular uterine contractions that produce either cervix dilation or effacement prior to 37 completed weeks of gestation. Incidence of premature delivery is about 10% of all birth. Objective of study is to determine an association between anemia and preterm labour. A Case-Control study was conducted at Unit 3 (III), Gynae and Obs., Lady Willingdon Hospital, Lahore, Pakistan for six months (March, 2009 to September, 2009). Pregnant patients of reproductive age group (18-35 years) of any parity, presenting with complaint of labour pains were selected and were being divided into two main groups. Group A was of patients between 24-37 weeks of gestation. Group B was of patients who were delivering after 37 completed weeks of gestation. Both groups were investigated for the presence or absence of anemia, polyhydramnios and UTI. During the period of this study, total 280 patients fulfilling the inclusion criteria were studied. Two groups were studied (Group A= Preterm/cases group and Group B= Term/control group) for anemia. In group A, 68 patients were found to be anemic while 72 had normal hemoglobin. In group B, 41 patients were found to be anemic while 99 were having normal hemoglobin. It was observed that among the patients studied, those with preterm labour are 2.3 times more likely to have anemia than patient with normal labour. There was significant difference between frequency/prevalence of anemia between controls and cases.

Keywords: Anemia, Bacterial vaginosis, Polyhydramniosis, Preterm Labour, UTI.

INTRODUCTION

Rupture of fetal membranes prior to 37 completed weeks of gestation and prior to onset of labour is called as Preterm Premature Rupture of Membranes (PPROM). PPROM is associated with 30% of preterm deliveries, 60-80% of patients go into labour within 48hr of PPROM. Preterm birth is also defined as birth before 37 completed weeks of gestation (Steer, 2005). There are multiple risk factors which are associated with preterm labour like age, race (Whitehead and Helms, 2010; Palomar et al., 2007) anemia (El Guindi et al., 2004), obesity (Madan et al., 2010), twin pregnancy (Kurdi et al., 2004), asymptomatic bacteriuria (Sheiner et al., 2009), cervical incompetence (Bagga et al., 2010), maternal habits/socio-economic status (Robinson et al., 2001), zinc intake (Scholl et al., 1993) and infectious organisms (Gibbs et al., 1992; Lewis and Mercer, 1995; Hauth et al., 1995; Hillier et al., 1995).

Anemia is defined as a reduction of total circulating red cells mass below the normal limits (Letshy, 1995). According to WHO, iron deficiency and iron deficiency anemia are most prevalent nutritional deficiency problems during pregnancy. Most women enter pregnancy with depleted iron stores. Nine out of ten anemia sufferers live in developing countries (WHO, 2002). Causes of anemia are lack of dietary iron, Vitamin B12 and folic acid. Iron deficiency anemia is most prevalent nutritional deficiency as it comprises of 95% of all anemia seen in pregnancy (WHO, 1992). Other causes are hookworm infection, malaria, schistosomiasis, chronic inflammations and hereditary anemia. Causes of anemia vary from population to populatin (Rasmussen, 2001; Massawe and Urassa, 1999).

Thus keeping the above facts in view, it can be said that anemia is one of the causes of maternal mortality in both developing and developed world. Purpose of the

Table 1. Distribution of patients on the basis of Anemia

Anemia	Group A (n=140)		Group B (n=140)	
	No.	%age	No.	%age
Hb < 9 (Anemic)	68	48.6	41	29.3
Hb > 9 (Non-Anemic)	72	51.4	99	70.7
Mean ± SD	91.3 ± 1.54		9.57 ± 1.29	

Table 2. Distribution of patients on the basis of Age

Age (years)	Group A (n=140)		Group B (n=140)	
	No.	%age	No.	%age
18-23	64	45.7	47	33.6
24-29	27	19.3	72	51.4
30-35	49	35	21	15
Mean ± SD	25.79 ± 5.50		25.32 ± 4.53	

study is to establish an association between anemia and preterm labour so that pregnant population at risk is identified and effective measures can be taken to prevent and treat anemia.

MATERIAL AND METHODS

280 patients were selected for study carried out in Unit III, Department of Obstetrics and Gynaecology, Lady Willingdon Hospital/King Edward Medical University, Lahore. An informed consent was taken from patients for using their data in study and research only. Demographic data was recorded, 140 patients were included in Group A (Cases) comprising of patients delivering between 24-37 weeks gestational age and 140 in Group B (controls) who were delivering after 37 weeks of gestation. They were evaluated for anemia and other variables like polyhydramnios (maximum vertical pool of ≥ 8cm), urinary tract infection- confirmed on microscopy and hemoglobin. All these information were recorded on specially designed performa for this purpose. Collected information was analyzed by using software SPSS.

RESULTS

Study population consisted of 280 patients which were divided into two groups. Group A comprises of cases (Preterm) and Group B comprises of controls (Term) patients. In distribution of patients according to anemia, in group A, 68 (48.6%) patients were anemic and 72 (51.4%) patients had normal hemoglobin. In group B, 41 (29.3%) patients were anemic while 99 (70.7%) patients had normal hemoglobin. Mean hemoglobin in group A was 9.13±1.54g/dl and in group B mean hemoglobin was 9.57±1.29g/dl (Table 1).

The mean age of patients in group A was 25.79±5.5 years and in group B was 25.32±4.53 years. In group A, there were 64 (45.7%) patients of age range of 18-23 years, 27 (19.3%) patients of age range of 24-29 years and 49 (35%) patients of age group 30-35 years. In group B, there were 47 (33.6%) patients of age range of 18-23 years, 72 (51.4%) patients of age range of 24-29 years and 21 (15%) patients of age range of 30-35 years (Table 2).

In distribution of parity, group A there were 56 (40%) patients who were primi gravidas and 84 (60%) patients who were multi gravidas. While in group B, 78 (55.7%) patients were primi gravidas and 62 (44.2%) were multi gravidas. In distribution of patients by polyhydromnios, in group A 11 (7.8%) were having polyhydramnios, while 129 (92.1%) patients had no polyhydramnios (i.e had normal liquor volume). In group B, 5 (3.6%) patients had polyhydramnios while 135 (96.4%) patients had normal liquor volume. In distribution of patients by UTI (Urinary Tract Infection), in group A, 44 (31.4%) patients had UTI while 96 (68.6%) had no UTI. In group B, 18 (12.8%) patients had UTI while 122 (87.1%) patients had no UTI. In distribution of patients by history of previous preterm delivery, in group A, 26 (18.6%) patients had history of previous preterm labour while 114 (81.4%) patients had no previous preterm delivery. In group B, 9 (6.4%) patients had previous preterm delivery while 131 (93.6%) had no history of preterm delivery. In distribution of patients by antenatal care, in group A, 44 (31.4%) patients got antenatal care while 96 (69.5%) patients received no antenatal care. In group B, 106 (75.7%) patients received antenatal care while 34 (24.3%) patients got no care. In distribution of patients by socio-

Table 3. Distribution of patients on the basis of some other related parameters

Parameters		Group A (n=140)		Group B (n=140)	
		No.	%age	No.	%age
Parity	Primi gravid	56	40	78	55.7
	Multi gravid	84	60	62	44.2
Polyhydramnios	Present	11	7.8	5	3.6
	Absent	129	92.1	135	96.4
UTI	Present	44	31.4	18	12.8
	Absent	96	68.6	122	87.1
History of previous pretem delivery	Present	26	18.6	9	6.4
	Absent	114	81.4	131	93.6
Antenatal care	Given	44	31.4	106	75.7
	Not given	96	68.5	34	24.3
Socio-economic status	Lower class	79	56.4	49	35
	Middle class	61	43.5	91	65
Perinatal outcome	Alive	96	68.5	136	97.1
	Dead	44	31.4	4	2.8

economic status, in group A, 79 (56.4%) patients belonged to lower class and 61 (43.5%) patients belonged to middle class while in group B, 49 (35%) patients belonged to lower class and 91 (65%) patients belonged to middle class. In distribution of patients by perinatal outcome, in group A, 96 (68.5%) patients had alive baby while 44 (31.4%) patients babies expired while in group B, 136 (97.1%) patients had alive babies and 4 (2.8%) patients babies expired (Table 3).

DISCUSSION

Anemia is defined as clinical abnormality characterized by loss/reduction in hemoglobin concentration below the normal for sex, age, altitude from sea level and physiological condition of a person (Idris and Rehman, 2005). Pregnant women constitute a high risk group for anemia. Major causes of anemia during pregnancy include iron deficiency, folate deficiency, malaria, AIDS and hemoglobinopathies. Maternal anemia is associated with poor pregnancy outcomes. Maternal anemia is associated with more frequent preterm birth, increased LBW (Low Birth Weight) (El-Guindi et al., 2006), IUGR, IUD, low APGAR and perinatal deaths (Lone et al., 2004).

In present study, mean hemoglobin in preterm group (Group A) was 9.13±1.54g/dl which is comparable to another study conducted at Allied Hospital, Faisalabad. About 163 clinically normal pregnant women and 77 admitted with complications of pregnancy were randomly selected, and mean hemoglobin was found to be 9.02±1.46g/dl in patients with premature labour (Saeed et al., 2001). Various cross-sectional and longitudinal observational studies show that moderate anemia i.e 9 to 10g/dl is associated with two to three fold increased risk of preterm delivery (Scholl and Hediger, 1994). In singapore, analysis of 3728 deliveries was done. It was observed that anemic women have high incidence/risk of preterm delivery at the time of delivery than non-anemic. No other difference in neonatal outcome was observed (Kalzzom et al, 1985). Older women are at greater risk of preterm birth and still birth (Lisonkova et al., 2010). Studies carried out in UK, France and USA showed that grandmultiparity and nulliparity were associated with increased rate of preterm labour (Susan et al., 1995). In present study, preterm labour was more common in multigravidas (60% patients) than in primigravidas (40% patients). In present study most of the patients (56.4%) presenting with preterm labour belonged to lower social class. Same is also the case in a study conducted in USA where higher incidence of preterm labour was in lower socio-economic group (Scholl et al., 1992). UTI is very common among pregnant females. A study conducted at Peshawar to see prevalence of UTI in pregnant females. 29.57% of the patients were found to be suffering from UTI (Bakhtiar et al., 2007). The prevalence of UTI in the present study was high (31.4%) among patients presenting with preterm labour while only 12.8% had UTI in term group.

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There is no conflict of interest.

CONCLUSION

From this study it is concluded that anemia is the most prevalent deficiency during pregnancy. Additionally anemia is strongly associated with preterm labour. Special educational programs should be launched in a developing country like Pakistan, so that to educate females about their health and associated risks during pregnancy especially anemia.

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