Basrah Journal of Surgery
Bas J Surg, March, 10, 2004

ANAEMIA IN WOMEN ATTENDING LABOUR. FREQUENCY AND RISK FACTORS EVALUATION

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Summary

The aim of this prospective study was to determine the frequency and degree of anaemia among pregnant women attending labour. One hundred-seventy seven pregnant women were included. We found that 78 (44.1%) women were anaemic, of them 64 (36.2%) having mild anaemia, 10 (5.6 %) with moderate anaemia and 4 (2.3%) with sever anaemia. The study revealed that low educational level, lack of antenatal care, increasing parity, lack of iron supplementation, close spaced pregnancy and antepartum haemorrhage were significant predisposing factor for the development of anaemia. On the other hand, the effects of the maternal age, lactation and postpartum haemorrhage on the development of anaemia were not significant. In conclusion, the frequency of anaemia among pregnant women at labour was high which necessitates an active intervention toward modifying the risk factors of anaemia.

Introduction

Anaemia is the commonest medical disorder to occur in pregnant women[1]. It is a major public health problem in developing countries,and generally accepted as resulting from nutritional deficiencies, particularly iron deficiency[2]. The incidence of anaemia during or following pregnancy is generally less than 5%[1].

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The pregnant women require additional iron for the fetus, placenta, her own red cell mass and blood loss at parturition. The daily requirement is about 2.5mg plus the basic need of 1mg/day giving a total of 3.5mg. This increased demand of iron rises as pregnancy progresses, being greatest in the second half of pregnancy[1]. There is an increase in the plasma volume during pregnancy to a plateau between 30-34 weeks. This increase is more profound in multiparous and multiple pregnancy, whereas unusually small increase may occur in association with placental insufficiency

and intrauterine growth retardation (IUGR). There is a gradual linear increase in total red cell mass, this increase is augmented if supplemental iron is taken. The preferential expansion of plasma volume compared with red cell volume causes progressive haemo-dilution up to about the 30th-35th weeks which may reduce haemoglobin (Hb) to 11 g/dl [1,3,4,5].

Anemia in pregnancy is associated with a variety of maternal complications like increased risk of preeclampsia, eclampsia, abruptio placenta, infection, thromboembolism, heart failure, preterm labour as well as fetal complications including increased risk of IUGR, intrauterine death and neonatal anaemia[5,6,7].

The aim of this study was to determine the frequency of anaemia among pregnant women at labour and to determine its risk factors.

Material and Methods

This is a prospective study conducted in Basrah maternity and children hospital during the period from August 2001 to may 2002. A systematic random sample of 177 pregnant apparently healthy women were included, their age ranged from 15-44 yrs (mean 26.7±6.3 years). All had a term singletone pregnancy and presented in labour. Each pregnant women completed a questionnaire from which included the following information: age, parity, educational level, lactation, obstetric and gynaecological history, socio-economic status and history of present pregnancy.

A blood sample was drawn for each women. The hemoglobin concentration was determined according to the cyanmethemoglobin method[8]. The WHO category for the diagnosis of anaemia was used in this study[9]. The cutoff Hb concentration for anaemia was 11.0g/dl. Anaemia was categorized in 3 classes of severity: mild (Hb= 10-11g/dl), moderate (Hb=8-10g/dl), severe (Hb< 7g/dl.).

Blood grouping, complete blood picture, blood film morphology and Hb typing were performed to exclude haemoglobinopathies and other causes of anaemia other than iron deficiency anaemia. Unfortunately serum iron, total iron binding capacity (TIBC) and serum ferritin mesurements were not available at the time of the study.

Results

The study revealed that 78 (44.1%) of pregnant women attending labour were anaemic, where 64 (36.2%), 10 (5.6%) and 4(2.3%) women having mild, moderate and severe anaemia respectively.

Table I present the age distribution of the studied women. There was no statistically significant effect of age on the development of anaemia.(P>0.05).

Table I. Age distribution of women under study.

Age	Anaemic	Non anaemic	Total
	n (%)	n (%)	n (%)
≤20	9 (11.5)	23 (23.2)	32 (18.1)
21-30	48 (61.5)	49 (49.5)	97 (54.8)
31-40	17 (21.8)	21 (21.2)	38 (21.5)
41-44	4 (5.1)	6 (6.1)	10 (5.6)
Total	78 (100.0)	99 (100.0)	177 (100.0)

$X^2 = 4.51$, $P>0.05$

The educational level among the studied women is shown in table II. The frequency of illiterate women in the anaemic group was higher than that in the normal group; while the frequency of both educated and highly educated women in the normal group were higher than those in the anaemic group. These

differences were statistically significant (P<0.001).

Table II. The effect of education level on the development of anaemia.

Type	Illiterate n (%)	Educated n (%)	High education n (%)	Total n (%)
Anaemic	23 (29.5)	52 (66.7)	3 (3.8)	78 (100.0)
Non anaemic	7 (7.1)	81 (81.8)	11 (11.1)	99 (100.0)
Total	30	133	14	177

$X^2 = 17.19$, $P < 0.001$

The frequency of primigravidae in the normal group was higher than that in the anaemic group, while the frequency of grandmultiparae was higher in the anaemic group compared to normal one (P<0.05), Table III

Table III. The effect of parity on the development of anaemia.

Type	Primigravida n (%)	1-5 n (%)	>5 n (%)	Total n (%)
Anaemic	21 (26.9)	43 (55.1)	14 (17.9)	78 (100.0)
Normal	41 (41.4)	52 (52.5)	6 (6.1)	99 (100.0)
Total	62	95	20	177

$X^2 = 8.13$, $P < 001$

The frequency of those with no antenatal care (ANC) attendance was higher in the anaemic group than in normal group while that of women with adequate ANC attendance was higher in the normal than in anaemic group (P<0.01),Table IV.

Table- IV. The effect of ANC attendance on the development of anaemia.

Women	-ve n (%)	Inadequate n (%)	Adequate n (%)	Total n (%)
Anaemi c	17 (21.8)	31 (39.7)	30 (38.5)	78 (100.0)
Normal	6 (6.1)	41 (41.4)	52 (52.5)	99 (100.0)
Total	23	72	82	177

$P < 0.01$ $X^2 = 10.19$

The frequency of those without or with irregular iron supplementation was higher in the anaemic group than in the normal group, while the frequency of those with regular iron supplementation was higher in the normal group compare to the anaemic group (P<0.001).Table V

Table V. Effect of iron supplementation on the development of anaemia.

Women	-ve n (%)	Irregular n (%)	Regular n (%)	Total n (%)
Anaemic	24 (30.8)	36 (46.1)	18 (23.1)	78 (100.0)
Non anaemic	17 (17.2)	31 (31.3)	51 (51.5)	99 (100.0)
Total	41	67	69	177

$P < 0.001$ $X^2 = 15.07$

Table VI shows the effect of lactation on the development of anaemia.

Primigravidae were not included, as they have no history of lactation. There was no significant effect of lactation on the development of anaemia (P>0.05).

Table- VI .The effect of lactation on the development of anaemia.

Type	Lactating +ve n (%)	Non lactating -ve n (%)	Total n (%)
Anaemic	50 (87.7)	7 (12.3)	57 (100.0)
Non anaemic	48 (82.8)	10 (17.2)	58 (100.0)
Total	98	17	115*

** Primigravidae *excluded*

P<0.05 $X^2 = 0.56$

As shown in table VII, about 28% of the anaemic women had short interpregnancy interval compared to 10.3% in the normal group who had long interpregnancy interval compared to 17.5% in the anaemic group, and the difference was statistically significant. (P<0.05).

Table-VII .The effect of the inter pregnancy interval (year) on the development of anaemia.

Women	<1yr n (%)	1-2yrs n (%)	>2yrs n (%)	Total n (%)
Anaemic	16 (28.1)	31 (54.4)	10 (17.5)	57 (100.0)
Non anaemic	6 (10.3)	32 (55.2)	20 (34.5)	58 (100.0)
Total	22	63	30	177

P<0.05, $X^2 = 7.89$

There was statistically significant effect of a history of antepartum haemorrhage (APH) in the present pregnancy on the development of anaemia as the frequency of women with history of APH was higher in the anaemic group compared to that in the normal one. (P<0.05), (Table VIII).

Table.VIII. Relation of APH " in present pregnancy"

Women	+ve n (%)	-ve n (%)	Total n (%)
Anaemic	8 (10.3)	70 (89.7)	78 (100.0)
Non anaemic	3 (3.0)	96 (97.0)	99 (100.0)
Total	11	166	177

P<0.05, X=3.91

Finally, the frequency of women with history of postpartum haemorrhage (PPH) in the past pregnancy was higher than that in the normal group.However, the relationship was statistically not significant (P>0.05),Table IX.

Table IX. R elation of history of PPH "in previous pregnancy".

Women	+ve n (%)	-ve n (%)	Total n (%)
Anaemic	10 (17.5)	47 (82.5)	57 (100.0)
Non anaemic	4 (6.9)	54 (93.1)	58 (100.0)
Total	14	101	115*

P>0.05 X2 = 3.91

Discussion

Anaemia is the commonest medical disorder to occur in pregnant women, it's incidence being particularly high in developing countries where it remain a major contributing factor to maternal mortality and morbidity[1]. Furthermore, iron deficiency anaemia is a serious public health problem affecting more than 700 million people in the world[10].

The present study reported a high frequency of anaemia (44%) in women attending labour. This figure is some what comparable to those reported in Bahrain (50%)[11] and Kuwait (39.7%)[10], and lower than the figures reported in Jordan (56.7%)[12], Ghana (54%)[13], India (over 70%)[14], Liberia (78%)[15], Guyana (73.9%)[16], and Jamaica (61.0%)[17]. On the other hand, this figure is distinctly higher than the reported ones in: Egypt (22.1%)[18] and Northern Ireland (19.8%)[19].

Several risk factors showed a significant association with the development of anaemia in this study. The effect of educational level seemed to be of importance as a predisposing factor for anaemia as illiterate women tend to have no or irregular ANC .In addition, increasing parity has adverse effect on the Hb level where the frequency of grandmultiparae is distinctly higher than non anaemic group. This finding could be attributed to increasing parity which mean more frequent pregnancies and depletion of iron stores, a similar result found among multiparous women in Jordan[12].

With regard to ANC we found that only 39% of women in the anaemic group had adequate ANC compared to 52% in the non anaemic group and the frequency of those women with no ANC was higher in the non anaemic group. This finding may reflect the role of adequate ANC in prevention of anaemia through prophylaxis, early detection and treatment of anaemia. Similarly regular iron supplementation during pregnancy is essential to prevent or retard the development of anaemia and this is reflected by the distinctly high frequency of regular iron supplementation among the non anaemic than anaemic women. Several studies emphasized the vital role of iron supplementation in preventing or reducing the occurrence of anaemia during pregnancies[20,21].

It has been found that daily iron supplementation is more effective than twice weekly iron supplementation in pregnant women[22], also iron supplementation only during early pregnancy may be insufficient to prevent anaemia in late pregnancy[23].

Lactation as illustrated in our study, seemed to have a minor effect on the development of anaemia in comparison to other factors. The reason might be that most of the anaemic women had short interval between pregnancies (less than 1 year), so they discontinued lactation early. On the other hand, APH is one of the important predisposing factor in the development anaemia during pregnancy and it is a well known that APH whether mild or moderate should be treated promptly to prevent the development of anaemia. Conversely history of PPH seemed to have no effect in the development of anaemia. This may be due to the low frequency of women had PPH in the past or those women who might had full and successful treatment for anaemia following that event and before the present pregnancy.

It is well known that the assessment of iron deficiency anaemia is best served by using multiple parameters including: serum iron and serum ferriten, rather than Hb estimation alone [24,25]. However, these tests are unnecessary for the diagnosis of frank iron deficiency anaemia which is characteristically microcytic and hypochromic. Anaemia is a late manifestation in the spectrum of iron deficiency,and when it is present,the situation can be diagnosed easily without the need for complicated and expensive investigations[5].

In conclusion: the frequency of anaemia in pregnant women at labour is distinctly high. This necessitates active intervention by modifying the risk factors of anaemia with the indispensable preventive role of adequate ANC and regular iron supplementation.

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