ORIGINAL ARTICLE

Role of Folic Acid Supplementation in Preventing Placental Abruption

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ABSTRACT

Aim: To determine the frequency of placental abruption in patients with extended use of folic acid supplementation.

Methodology: A total of 270 patients were recruited for study coming to outdoor department of Jinnah hospital Lahore. These patients were given extended dose of folic acid during pregnancy, (instead of only 14 weeks, the patients in this group continued to take folic acid till end of pregnancy) They were asked to report in emergency if they developed above mentioned signs and symptoms. The participants who found to have placental abruption during the course of study managed according to hospital protocol. Frequency of placental abruption was recorded.

Results: In our study, out of 270 cases, 158(58.52%) were between 20-25 years and 112(41.48%) were between 26-30 years of age, mean+sd was calculated as 24.93+2.86 years, frequency of placental abruption in patients with extended use of folic acid supplementation was recorded in 76(28.15%) while 194(71.85%) had no findings of placental abruption.

Conclusion: We concluded that the frequency of placental abruption in patients with extended use of folic acid supplementation is lower in pregnancy and by prescribing this cheap easily available medicine can reduce the extra burden of this morbidity.

Keywords: Placental abruption, folic acid supplementation, prevention, frequency

INTRODUCTION

Placental separation partial or complete before delivery is known as “placental abruption”. It is one of the most significant causes of perinatal mortality and maternal morbidity. Approximately 10% of all preterm and upto one third of all perinatal deaths are caused by placental abruption. It occurs in 0.5% to 1% of all pregnancies. Etiology is unknown but defective trophoblastic invasion of spiral arteries and consequent poor vascularization may play a role[1].

Among other risk factors folic acid deficiency is considered to be a strongest risk factor[2]. Several epidemiological studies have shown that pregnancies exposed to folic acid antagonist have higher incidence of placental related complications including placental abruption[3]. During 1960s and 1970s, result from several observational studies have shown low folate intake or low circulatory folate increases the risk of placental abruption. Many studies have shown that hyperhomocystienemia (a responsive marker of impaired folate status) has close association with increase risk of placental abruption[6].

Folate or vitamin B6 cannot be synthesized denavo in body, it has to be taken either in food or by supplements, it is involved in number of functions within the body including synthesis of proteins required in DNA replication. As such it is essential for cell multiplication and differentiation process. It may also have important role in other physiological pathway, needed for successful pregnancy, incluging angiogenesis and vasculogenesis, methylation of harmful sulphur containing homocystiene, antioxidant production, and endothelial dependent vascular relaxation. It is also able to induce angiogenesis in part via nitric oxide dependent mechanism. Development of placental circulation requires vasculogenesis from preexisting vasculature[5].

Increasing the folic acid intake and prolonging the period of folic acid supplementation from currently recommended first 12 week of pregnancy to throughout the length of gestation may allow optimal placentation[4].

Multiple regression analysis showed that women who had taken folic acid and multivitamin supplement throughout pregnancy had 26% reduction in risk of overall placental abruption and 40% reduction in risk of pre-term abruption. Another study showed that use of folic acid and other multivitamins before or any time during pregnancy was reported for 36.4% of abruptions, 44.4% of non abruptions. In this study only 22.1% of women were using folic acid during pregnancy that had placental abruption as compared to 27.3% of women using folic acid during pregnancy with no placental abruption[4].

This study was planned with the view that folic acid intake throughout pregnancy reduces the risk of placental abruption and in our setting placental abruptions is a common complication during pregnancy that can be prevented by judicious use of folic acid. No such local studies have been conducted to highlight the role of folic acid in placental abruption. This study highlighted the importance of folic acid supplementation during pregnancy and prescribing this cheap easily available medicine can prevent complications.

METHODOLOGY

A total of 270 cases between 20 to 30 year of age, Primigravidas with singleton (on ultrasound) pregnancy with gestational age 4-5 weeks were included in the study while those with polyhydramnios, fetal malformation, diabetes that develops during pregnancy, chronic hypertension, renal disease and placenta previa were excluded from the study. These cases were given extended

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dose of folic acid during pregnancy, (instead of only 14 weeks, the patients in this group continued to take folic acid till end of pregnancy) Their time of enrolment was at their first antenatal visit i.e. during 5 to 6 weeks of pregnancy. These patients followed up in antenatal clinic in a routine manner. These patients were looked for any signs and symptoms of placental abruption at each antenatal visit (monthly till 14 week, twice a month till 28 week and weekly till 40 week) and followed up till delivery. They were asked to report in emergency if they developed above mentioned signs and symptoms. The participants who found to have placental abruption during the course of study managed according to hospital protocol. Frequency of placental abruption was recorded.

RESULTS

A total of 270 cases fulfilling the inclusion/exclusion criteria were enrolled to determine the frequency of placental abruption in patients with extended use of folic acid supplementation.

Age distribution of the patients was done which shows that 158(58.52%) were between 20-25 years and 112(41.48%) were between 26-30 years of age, mean+sd was calculated as 24.93+2.86 years (Table 1).

Frequency of placental abruption in patients with extended use of folic acid supplementation was recorded in 76(28.15%) while 194(71.85%) had no findings of placental abruption (Table 2).

Stratification for frequency of placental abruption in patients with extended use of folic acid supplementation with regards to age was recorded which shows that out of 76 cases of placental abruption 43 were between 20-25 years and 33 were between 26-30 years of age, p value was calculated 0.68, which shows insignificant difference (Table 3).

Table 1: Age distribution (n=270)

Age (in years)	n	%age
20-25	158	58.52
26-30	112	41.48
Total	270	100
Mean+sd	24.93+2.86	

Table 2: Frequency of placental abruption in patients with extended use of folic acid supplementation (n=270)

Placental abruption	n	%age
Yes	76	28.15
No	194	71.85
Total	270	100

Table 3: Stratification for frequency of placental abruption in patients with extended use of folic acid supplementation with regards to age (n=76)

Age (in years)	Placental abruption		P value
	Yes	No	
20-25	43	115	0.68
26-30	33	79	

DISCUSSION

This study was conducted with the view that folic acid intake throughout pregnancy reduces the risk of placental abruption and in our setting placental abruptions is a common complication during pregnancy that can be prevented by judicious use of folic acid. No such local studies have been conducted to highlight the role of folic acid in placental abruption.

Our results reveal that out of 270 cases, 158(58.52%) were between 20-25 years and 112(41.48%) were between 26-30 years of age, mean+sd was calculated as 24.93+2.86 years, frequency of placental abruption in patients with extended use of folic acid supplementation was recorded in 76(28.15%) while 194(71.85%) had no findings of placental abruption.

Our findings are in agreement with a study showed that women who had taken folic acid and multivitamin supplement throughout pregnancy had 26% reduction in risk of overall placental abruption. Another study showed that only 22.1% of women were using folic acid during pregnancy that had placental abruption as compared to 27.3% of women using folic acid during pregnancy with no placental abruption[4].

Effects of vitamin use on placental abruption appeared to be stronger for preterm abruption than for overall abruption. One could argue that women who delivered early did not have the opportunity to take vitamins in time, thus resulting in an artificially larger reduction in the risk of preterm abruption compared with that of term abruption.[7] However, in Norway, nearly all users of folic-acid-containing supplements start supplementation during the first 4 months of pregnancy[8] which is before any abruption was recognized in our study.

Our study suggests that women who use folic acid during pregnancy are significantly less likely than nonusers to develop placental abruption.

However, our results highlighted the importance of folic acid supplementation during pregnancy and prescribing this cheap easily available medicine can prevent complications.

CONCLUSION

We concluded that the frequency of placental abruption in patients with extended use of folic acid supplementation is lower in pregnancy and by prescribing this cheap easily available medicine can reduce the extra burden of this morbidity.

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