Singapore Journal of Obstetrics and Gynaecology
2012; 43(1): 9-12

Is There A Role For Haematinics In Asymptomatic Antenatal Patients In Second Trimester In Singapore?

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ABSTRACT

Objective : To determine the role of routine haematinics in second trimester antenatal patients.

Methods : A total of 110 antenatal patients were recruited in KK Hospital at 12 weeks gestation. They were randonized into those taking haematinics (Spatone) and those not taking haematinics. Serum ferritin was taken at 12 weeks and 20 weeks of gestation. Subjects were also asked to fill up a Glasgow Dyspepsia Questionnaire at 12 weeks and 20 weeks gestation.

Results : There was no significant change in serum ferritin levels between the control group and Spatone group. There was no difference in gastrointestinal symptoms between the two groups.

Conclusion : Routine iron supplements appears to have no role in the 12th to 20th weeks of pregnancy in our local population. Spatone does not appear to increase gastrointestinal upset in pregnancy.

Keywords : Ferritin, Oral iron supplements, Pregnancy, Spatone, Ferritin levels in pregnancy

INTRODUCTION

Iron deficiency is a common condition in pregnancy due to the physiological effects of haemodilution. During pregnancy, the demands for absorbed iron increase from 0.8 to 7.5mg/day.[1] It is therefore important to identify and effectively treat pregnant women with iron supplements during there course of pregnancy. Iron deficiency is associated with increased risk of preterm delivery, low birth weight, increased maternal and perinatal morbidity and mortality.[2,3] However, conventional iron supplements in the form of tablets has side effects such as constipation, gastritis and vomiting.[4,5,6] Coupled with early pregnancy symptoms such as vomiting, many pregnant women would be non-compliant to their iron supplements.

The aim was to determine whether routine iron supplements are of benefit in the second trimester of pregnancy. Our haematinic of choice is Spatone which is from the Trefriw Wells Spa in Conwy County, North Wales, UK. It contains 0.2mg of iron per ml in the form of ferrous sulphate. It comes in a sachet containing 24mls of liquid iron which is equivalent to 5mg of iron.[7,8] We chose Spatone because it has been shown from studies in the United States and United Kingdom to have better bioavailability and absorption with minimal gastrointestinal side effects.

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METHODS

This is a randomized trial where 110 antenatal patients were recruited from KK Hospital. A power calculation was done and a sample size of 110 patients was sufficient. Patients are recruited at 12 weeks of pregnancy and followed up till the 20th week of pregnancy. Exclusion criteria includes multiple pregnancies, any chronic medical disorders, preexisting anemia, fetal anomaly, and past history of gastrointestinal disorders. Randomization was done with sealed opaque envelopes .The patients were randomized into those taking Spatone and those not taking any form of supplements. 55 patients were recruited into each arm. Those in the Spatone arm were given 2 sachets of Spatone to be taken each day from 12 to 20 weeks of pregnancy. Serum ferritin and hemoglobin was taken at 12th and 20th week of pregnancy and subjects will fill up a Glasgow Dyspepsia Questionnaire at 12th and 20th week of pregnancy.[9,10] This is an IRB approved randomized trial.

STATISTICS

Prior studies suggest that in pregnant women without iron supplementation, serum ferritin is around 25 μg/l at 12 weeks and decreases to about 12 μg/l at 20 weeks of gestation, with standard deviation of 5 μg/l. With an anticipated difference of 4 μg/l in patients receiving iron therapy, a sample of 68 patients is needed at 90% power and 5% significance level. After accounting for a drop-out rate of 20-30%, a total number of 110 patients are needed. A two-sample t test will be used to compare the difference between the treatment and control groups.
Paired t test was the statistical method used to tabulate the Glasgow Dyspepsia Score and independent sample t test was used to tabulate the percentage change in serum ferritin levels.

RESULTS

We recruited a total of 110 subjects in the trial. There was a drop out rate of 23.6%. Of the 84 remaining subjects, there were 45.2% Chinese, 35.7% Malay, 16.7% Indian, and 8.3% Others. The mean age was 30.01. Mean gravidity and parity was 2.13 and 0.95 respectively. (See Table 1)

The percentage decrease in serum ferritin in the control group was 20.8% and in the Spatone group was 37.4%. There was no significant difference (p-value was 0.077). (See Table 2)

The Glasgow Dyspepsia Score was not significant at 12 and 20 weeks between those in the control group versus Spatone group. (See Table 3)

DISCUSSION

From our data, it seems that the percentage drop of serum ferritin in the Spatone arm was more than the Control arm 37.4% and 20.8% respectively. This seems to conflict our understanding of normal physiology in pregnancy. Upon closer analysis of the data, there were 9 subjects in the control arm whose serum ferritin increased during the study period. We interviewed them and 5 subjects admitted to taking some form of herbal remedies during the study period. This may have skewed our data significantly. We are unsure of the effect of herbal supplements on serum ferritin levels in pregnancy. In a multi-racial society like Singapore, there are bound to many traditional practices which are difficult to break and these may affect the treatment results. Perhaps more studies needs to be conducted on the effect of herbal supplements in pregnancy. Although only 5 subjects admitted to taking herbal supplements, there could have been more which were unreported. Another hypothesis would be the control group are more likely to take herbal supplements as they feel they were not given supplements to take by the doctors.

It has been estimated that 7-55% of expectant mothers use herbal remedies. The popular herbal remedies used are garlic, aloe, chamomile, peppermint, ginger and ginseng.[11]

The period of our study from 12 to 20 weeks of gestation may have been too short and too early for haemodilution to occur. Maximum haemodilution occurs at 28 weeks gestation. Non anemic patients during that period may have already had adequate iron reserves which have not been affected by haemodilution yet and by giving additional iron supplements did not show any significant changes.

In our control group, the percentage decrease of serum ferritin from 12 to 20 week gestation was 20.8%. This decrease in ferritin is lower than what was quoted from similar studies. This may be due to our Asian diet that consists of more iron rich foods such as liver and seafood.

Finally, it has been well documented that giving oral iron supplements is associated with increased gastrointestinal side effects such as constipation. The iron supplement that was used in our study period was Spatone. This could have accounted for the fact that there was no increase in gastrointestinal side effects while taking it.

ACKNOWLEDGEMENT

1. United Italian Trading Corporation for provision of Spatone
2. Mr Ng Mor Jack for statistical help

Table 1. Demographics of Study Population

Characteristics of Spatone and Control Group	Overall	Control (n = 39)	SPATONE (n = 45)
Valid (%) Drop-out (%)	84/110 (76.4%) 26/110 (23.6%)	39/39 (100%)	45/45 (100%)
Chinese Indian Malay Others	38/84 (45.2%) 14/84 (16.7%) 30/84 (35.7%) 7/84 (8.3%)	18/ 39 (46.2%) 5/ 39 (12.8%) 14/ 39 (35.9%) 2/ 39 (5.1%)	18/ 45 (40.0%) 7/ 45 (15.6%) 15/ 45 (33.3%) 5/ 45 (11.1%)
Age ± SD (range)	30.01 ± 5.2 (19-44)	29.13 ± 5.1 (19-40)	30.78 ± 5.2 (21-44)
Gravida ± SD (range)	2.13 ± 1.7 (1-5)	1.92 ± 1.1 (1-5)	2.31 ± 1.2 (1-5)
Parity ± SD (range)	0.95 ± 1.2 (0-4)	0.87 ± 1.1 (0-4)	1.02 ± 1.2 (0-4)

Table 2. Ferritin & Hemoglobin Level of Control Group and SPATONE Group

	Control (n = 39)	SPATONE (n = 45)	P value
Ferritin at 12 weeks ± SD (range) Ferritin at 20 weeks ± SD (range)	48.85 ± 41.7 (11-223) 30.31 ± 23.8 (7-106)	58.78 ± 48.0 (13-216) 34.41 ± 32.2 (4-154)	
Hemoglobin at 12 weeks ± SD (range) Hemoglobin at 20 weeks ± SD (range)	12.37 ± 0.8 (11-14) 11.42 ± 0.8 (10-13)	12.59 ± 0.8 (11-15) 11.44 ± 0.8 (10-13)	
% Change Ferritin 12 weeks – 20 weeks	-20.78% ± 52.6 (-81% to 209%)	-37.44% ± 32.5 (-80% to 60%)	P = 0.077 (N.S.)
% Change Hemoglobin 12 weeks – 20 weeks	-7.60% ± 5.9 (-23% to 4%)	-9.03% ± 4.3 (-22% to1%)	P = 0.197 (N.S.)

Table 3. Glasgow Dyspepsia Score

	Control (n = 39)	SPATONE (n = 45)	P value
mGDSS Score for 12 weeks	4.22 ± 3.0 (0-12)	4.27 ± 2.9 (0-11)	$P = 0.143$
mGDSS Score for 20 weeks	1.54 ± 1.6 (0-5)	1.52 ± 1.5 (0-5)	$P = 0.592$

REFERENCES

1. *Milman N, Bergholt T, Eriksen L, Ahring K, Graudal NA. Iron requirements and iron balance during pregnancy. Is iron supplementation needed for pregnant women? Ugeskr Laeger. 1997 Oct 6;159(41):6057-62.*

2. *Milman N, Hertz J. Pregnancy and iron prophylaxis-how and how much? Ugeskr Laeger. 2010 Feb 8;172(6):433-6.*

3. *Bánhidy F, Acs N, Puhó EH, Czeizel AE. Iron deciency anemia: Pregnancy outcomes with or without iron supplementation. Nutrition. 2010 Apr 7*

4. *Halksworth G, Moseley L, Carter K, Worwood M. Iron absorption from Spatone (a natural mineral water) for prevention of iron deciency in pregnancy. Clin Lab Haematol. 2003 Aug;25(4):227-31.*

5. *Bayraktar UD, Bayraktar S. Treatment of iron deciency anemia associated with gastrointestinal tract diseases. World J Gastroenterol. 2010 Jun 14;16(22):2720-5*

6. *Reveiz L, Gyte GM, Cuervo LG. Treatments for iron-deciency anaemia in pregnancy. Cochrane Database Syst Rev. 2007 Apr 18;(2):CD003094.*

7. *McKenna D, Spence D, Haggan SE, McCrum E, Dornan JC, Lappin TR A randomized trial investigating an iron-rich natural mineral water as a prophylaxis against iron deciency in pregnancy. Clin Lab Haematol. 2003 Apr;25(2):99-103.*

8. *Worwood M, Evans WD, Villis RJ, Burnett AK. Iron absorption from a natural mineral water (Spatone Iron-Plus). Clin Lab Haematol. 1996 Mar;18(1):23-7.*

9. *S J O Veldhuyzen van Zanten. Assessment of outcome in dyspepsia: has progress been made? Gut 2002;50:iv 23-iv25 doi:10.1136/gut.50.suppl_4.iv23*

10. *el-Omar EM, Banerjee S, Wirz A, McColl KE. The Glasgow Dyspepsia Severity Score--a tool for the global measurement of dyspepsia. Eur J Gastroenterol Hepatol. 1996 Oct;8(10):967-71.*

11. *Eeson Sinthamoney et al. Use of herbal remedies in pregnancy and post partum – current perspectives. Obstetrics peer review 2010. Journal of Paediatrics, Obstetrics & Gynaecology. 2010*