Effects of IUD on iron status in IUD users in Gorgan, Iran

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Abstract

Background: CuT380A intra uterine device Intra Uterine Device (IUD) is used in the health system of Iran. The most important and frequent side effects of the IUDs are hypermenorrhea and polymenorrhea. In Iran, iron supplement are not prescribed for the IUD users and there are no documents indicating their iron reservation status. This study was performed to determine the iron status in Gorganian IUD users.

Methods: This historical cohort study was performed on 100 IUD users (exposed group) and 100 non-IUD users (non-exposed group) in the Golestan province in north east of Iran in 2008. To evaluate the iron status hemoglobin and ferritin levels were measured. Data was analyzed by SPSS 13 by using Chi square and Independent T-test. A p-value less than 0.05 were considered as statistically significant.

Results: Hgb less than 10.5 was seen in 5% and 6% of IUD users and non-IUD users respectively which was not statistically significant (OR: 1.43, 95% CI: 0.39-5.25). Low Ferretin Level (less than 15) was seen in 53% of IUD users and in 35% of non-IUD users which was statistically significant (OR: 2.35, 95% CI: 1.28-4.29) Duration of menstrual period in the two groups was statistically significant (7.5±2.4 vs. 6.4±1.8, p= 0.005) but interval of menstruation (days) was not statistically significant (26.7±4.7 vs. 28±11.2, p> 0.05).

Conclusion: On the basis of the results obtained we suggest either routine iron supplementation following application of IUD, or use of the hormone releasing IUD as an alternative for copper IUDs.

Keywords: IUD, Anemia, Iron Deficiency

Introduction

Intra uterine device (IUD) is one of the most effective modern contraceptives with less than 1% failure rate and about 10 years of effectiveness. This method is used by about 109 million women all over the world. In Iran, CUT380A IUD is offered by the state health system, which is used by 6% of the eligible women. One of the most im-portant side effects of this type of IUD is an increase in duration and/or amount of menstrual bleeding and iron deficiency anemia. Iron deficiency anemia has been reported frequently by other researchers in many parts of the world; however the rate of iron deficiency anemia in IUD users in the developed countries is much lower than the developing ones, due to a better nutritional and economic status. Although Milman et al in

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Denmark [1], EL-Hussinie et al in Egypt [2] and the WHO in various countries [3] have shown the decrease in iron reservoir and increase the rate of iron deficiency anemia among IUD users, Milson in Sweden [4] showed that despite the increase in menstrual bleeding there is no significant change in the amount of reserved iron. Due to the side effects of copper releasing IUDs, they have been substituted by progesterone releasing IUDs in many parts of the world. However, in iran CUT380 A IUD still is being used and there are no documented studies about Iron deficiency anemia among IUD users in Iran. There are many studies which have been carried out in Iran only about the complaints of IUD users [5-8]. Additionally, in Iran IUD users do not receive iron supplement as a routine practice.

This study has been designed to determine the rate of iron deficiency anemia and the level of Iron in our IUD users in comparison with the non-IUD users in Gorgan, Iran.

Methods

This historical cohort study was performed on 100 IUD users (exposed group) who had used IUD for at least 1 year and 100 women who had neither used IUD nor hormonal contraceptives, as a non exposed group. Women whom we studied were selected by multi-stage random sampling of the clients of urban health centers in the Golestan Province, north east of Iran, in 2008. The study group had received their IUDs in those health centers and their data was registered in health centers, and non exposed group were the clients who referred for other services in the centers. Data were collected by questionnaire via personal interview. Each person who agreed to participate in our study signed an informed consent. The questionnaire included the variables like age, number of their pregnancies, number of children, duration of menstrual period, the interval of two menstrual periods, and some questions exclusively for IUD users, e.g. duration of using IUD, and whether they have experienced hypermenorrhea and polymenorrhea after insertion of IUD.

Whole blood sample were taken for hemoglobin (Hgb) determination and serum was used for ferritin measurement, Hemoglobin and ferritin were measured by Sysmex K-21 cell counter and Elisa method by Antho fluid Elisa reader. Women with Hgb less than 10.5gr/dI and/or ferritin below 15ng/ml were considered as anemic patients respectively [9].

Exclusion criteria were use of Iron supplementation and presence of any condition that could cause anemia and bleeding in any part of the body.

Inclusion Criteria for IUD users, were insertion of IUD at least one year before the study and the control group included women who used neither hormonal nor copper IUD for contraception.

Data was analyzed by SPSS-13 software. Chi square and independent T-test were used for analysis, p value less than 0.05 was considered as statistically significant.

Results

This study showed that 70% of the IUD users who had used IUD between 12-100 months (mean: 38±26 months) had either increase in the amount of menstrual bleeding and/or duration of menstrual period, and 54% of them had visited their clinic.

According to tables 1 and 2 there was no significant difference between the two studied groups about the interval of menstrual periods and Hgb level, but the Ferritin level in IUD users was significantly lower and duration of menstruation was longer than control group.

Our research revealed that generally the mean value of Hgb among subjects who used IUD for three years was in its lowest point (12.3±1.3gr/dI) and the mean ferritin level was the lowest among subjects who used IUD for two year (14.47±12.1ng/ml). Our study also indicates that the rate of anemia based on Hgb level was 3% after a period of 3 years and 23% in the second year based on the ferritin level.

Table1. Interval and duration of menstrual period in IUD users and Non-IUD users, Iran 2008.

Interval of menstruation(days)	IUD users	Non-IUD users	P value
<20	12	13	>0.05
20-24	24	16	
25-29	60	62	
≥30	4	9	
All	100	100	
Mean	26.7±9.4	28±11.2	>0.05
Duration of menstruation(days)			
≤5	16	29	0.001
6	4	8	
7	36	48	
8	16	7	
≥9	28	8	
All	100	100	
Mean±2SD	7.5±4.8	6.4±3.6	0.005

Discussion

According to this study, the mean interval between two menstrual periods in IUD users was lower than control group, but it was not significant. However, the mean duration of menstrual period in IUD users was significantly more than non-IUD group. This indicates the presence of hypermenorrhea in IUD users which was similar to other studies, Khani Robati et al [5], Afkari et al [6] and Bradley et al. study [10]. In their studies the most frequent complaint and side effect after insertion of IUD was an increase in the menstrual bleeding. Similarly, in Milson's study [4] hypermenorrhea has been demonstrated by measuring the amount of bleeding before and after of insertion of IUD. Identical result has been reported in Imperato's study [11]. In longitudinal study in Egypt showed that using IUD increase menstrual bleeding and majority of IUD users reported an increase of several days in the length of their usual periods [12].

According to previous studies bleeding and dysmenorrhea are the most frequent rea-sons for copper IUD discontinuation. In the first year 4% to 15% of women using a cop-per T-380A had to removed it for these rea-sons [13-15]. In a multinational study which included United States and the European countries, 6.9 per 100 women discontinuing its application because of pain or bleeding [16]. In another multinational study in Pan-ama and Yugoslavia, the main cause of dis-continuation was pain and bleeding [17].

Our result showed the lowest level of he-moglobin occurs in the second year of apply-ing the IUD. This result revealed that peak increase in amount of bleeding occurs in the first two years after using the IUD and sub-sequently bleeding and related anemia de-creases; however there was no significant difference in amount of hemoglobin level between the target and control groups.

Our investigation also showed the mean level of ferritin was significantly lower among IUD users which is concordant with Milsom et al. Study [4]. Based on this find-ing and the fact that duration and amount of bleeding increases in IUD users, these wom-

Table 2. Hemoglobin and ferritin levels in IUD users and control group, Iran 2008.

Hgb (gr/dl)	IUD users	Non-IUD users	Odds ratio(95%CI)	P-value
<10.5	5	6	1.43 (0.39-5.25)	
≥10.5	95	94		>0.05
Mean±2SD	12.32±1.2	12.37±1		>0.05
Ferritin (ng/ml)				
<15	53	35	2.35 (1.28-4.29)	
≥15	47	65		0.005
Mean±2SD	20±16.2	29.6±22.4		0.007

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en clearly face iron depletion without any alteration in their hemoglobin level. In spite of hemoglobin being in normal range, ferritin is at its lowest level in the third year after insertion of IUD. These results are the same as findings of the study carried out by the WHO [3] in women using different contraceptive methods in other countries. Our results about the rate of anemia in IUD users is concordant with El-Hossein's study in Egypt [18], Milman's in Denmark [1] and the WHO study in other countries [3]. Also Andrade [19] in his study has shown that anemia is more frequently seen after using the copper releasing IUD and suggested the use of hormone releasing device as the first choice.

In Iran most of the studies have been done on the complaints of IUD users [5-8] and no study have been conducted on the frequency of anemia among them, and majority of studies revealed that increased the menstrual bleeding, as a major complaint.

In Iran copper releasing IUD has not been substituted by hormonal IUD yet. It should also be mentioned that the dietary sources of iron are limited in Iran like the majority of the developing countries.

Conclusion

According to results of present study we suggest either routine iron supplementation after insertion of IUD (in order to decrease the rate of anemia with lower costs), or substitution of hormone releasing IUD as the first choices in family planning program of the state health system.

Acknowledgment

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