

Original research

The Prevalence of Anticardiolipin Antibody in Patients with History of Habitual Abortion; a Cross-Sectional Study

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Abstract: **Background:** The probability of abortion in individuals with anticardiolipin antibody is estimated to be 4 times more than others. The present study was designed with the aim of evaluating the prevalence of anticardiolipin antibody positive cases among patients with habitual abortion.

Methods: The present retrospective cross-sectional study was done on all the women presenting to an educational hospital with complaint of habitual abortion during 2 years using census sampling. With the aid of a pre-designed checklist age, number of previous abortions, gestational age at the time of abortion, history and duration of infertility, causes of habitual abortion, number of infants born alive, type of infertility, and level of anticardiolipin antibody were collected for all the patients and were analyzed using SPSS 20 statistical software and descriptive statistics.

Results: 110 habitual abortion patients with the mean age of 29.2 ± 5.96 (range: 18-43) years were studied. 81 (73%) of the abortions were reported in the first trimester of pregnancy. Anatomic factors with 35.6% and endocrine factors with 7.3% were the most common causes of habitual abortion. Anticardiolipin antibody was positive in 15 (13.6%) of the patients with the mean age of 28.9 ± 6.27 years. In the end, 35 (31.8%) pregnancies occurred during the 2 years, 26 (74.2%) of which were successful and 9 (25.7%) were unsuccessful. 5 (33.3%) of the 15 patients with positive anticardiolipin antibody that were evaluated in this study got pregnant during the 2-year follow-up, only one of which was successful.

Conclusion: Based on the findings of the present study, prevalence of positive cases of anticardiolipin antibody was estimated to be 13.6% among those presenting to the mentioned hospital with habitual abortion. These patients were in a worse condition regarding probability of successful pregnancy compared to other cases of habitual abortion (with anatomic, infectious, or other reasons).

Keyword: Emergency service, hospital; abortion, missed; pregnancy; antibodies, anticardiolipin; antiphospholipid syndrome

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1. Introduction

Habitual abortion is defined as loss of pregnancy before the 20th week for 3 or more times. In reality, habitual abortion is a heterogeneous condition in the field of gynecology, obstetrics and midwifery, which in addition to inflicting harm on the

mother's body, imposes an emotional burden on the couple. Based on various studies, the prevalence of habitual abortion is estimated to be between 25% and 30% (1, 2). Premature birth, and fetal malignancies happen more often in women with a history of habitual abortion, but usually the chance of a successful pregnancy (infants born alive) after 3 consecutive miscarriages has been estimated to be about 55% to 60% (3). Clinical assessment of the reasons for loss of pregnancy is commonly started after 2 spontaneous abortions. Alt-

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though many studies have been done regarding the etiology of habitual abortion, there are still lots of vague points in its diagnosis that has made its treatment challenging. Currently, various factors such as genetics, anatomy, endocrine glands' activity, infections, environment, and immune system are thought to be effective in occurrence of habitual abortion (4). Out of the mentioned factors, the researchers believe that immunologic factors, especially antiphospholipid syndrome (that includes anticardiolipin antibody), largely influence the occurrence of habitual abortion (5). These kinds of antibodies act against platelets and vascular endothelium, and cause thrombosis and consequently lead to spontaneous abortion. These antibodies along with obstetric complications including miscarriage, pre-term labor, premature rupture of membranes and preeclampsia are collectively called antiphospholipid syndrome. Numerous studies exist regarding the correlation of anticardiolipin antibody and recurrent miscarriage (6-9). The probability of miscarriage among individuals that have anticardiolipin antibody has been estimated to be 4 times the normal individuals (10). In a study in Sari, the prevalence of anticardiolipin antibody positive cases was calculated to be about 11% (11). However, there are also studies that have not found any relationship between this antibody and recurrent miscarriage (12).

Considering the important role of this antibody in keeping and sustaining the fetus, this study was designed with the aim of evaluating the frequency of anticardiolipin antibody cases among patients with a history of habitual abortion.

2. Method

2.1. Study design

The present study is a retrospective cross-sectional study carried out on women presenting to Mirza Kuchak Khan Hospital, Tehran, Iran following habitual abortion during 2 years. Protocol of this study was approved by the ethics committee of Tehran University of Medical Sciences. Based on the principles of Helsinki Declaration all aspects of protecting personal data of the participants were considered by the researchers. Written informed consent was obtained from all the participants or their relatives.

2.2. Participants

Census sampling was done and all the women with a history of at least 3 recurrent miscarriages presenting to the mentioned hospital during 2 years, were included. No age limitation was set for the participants. Patients with incomplete medical profiles, unavailable data, and unknown history were excluded.

Table 1: Baseline characteristics of patients with habitual abortion

Variable	n (%)
Age (year)	
<25	34 (30.9)
25 -29	35 (31.8)
30 - 34	21 (19.2)
35 - 40	14 (12.7)
>40	6 (5.4)
Number of previous abortions	
3	77 (70)
4	15 (13.7)
5	11 (10)
6	5 (4.5)
8	1 (0.9)
11	1 (0.9)
Gestational age on abortion	
First trimester	81 (73)
Second trimester	29 (27)
History of infertility	
None	67 (61)
Primary	8 (7.3)
Secondary	35 (31.8)
Cause of habitual abortion	
(a) Anatomic	
Cervical incompetence	15 (13.6)
Bicornuate uterus	10 (9.1)
Septate uterus	6 (5.4)
Uterine fibroma	6 (5.4)
Asherman syndrome	(0.9)
(b) Endocrine	
Hypothyroidism	4 (4.5)
Diabetes mellitus	(4.5)
(c) Other	
Infectious	7 (6.3)
Anticardiolipin antibody	15 (13.5)
Genetics	1 (0.9)
Multiple reasons	24 (21.8)
Unknown	26 (23.6)
Infants born alive (number)	
0	86 (78.2)
1	22 (20)
2	1 (0.9)
3	1 (0.9)

2.3. Data gathering

With the aid of a pre-designed checklist demographic data (age) and baseline characteristics (number of previous abortions, gestational age at the time of abortion, history and duration of infertility, causes of habitual abortion, number of infants born alive, type of infertility) of the patients were gathered and recorded. The level of anticardiolipin antibody was also evaluated and recorded for the participants. All the studied patients were referred to a single laboratory and the same kit

was used to determine their level of anticardiolipin antibody. All the data were gathered by a single senior resident of gynecology and obstetrics.

2.4. Statistical analysis

Finally, the extracted data were analyzed using SPSS version 20 statistical software and a significance level under 0.05. Qualitative variables were reported as frequency and percentage and quantitative ones were presented as mean and standard deviation (SD).

3. Result

3.1. Baseline characteristics

110 habitual abortion patients with the mean age of 29.2 ± 5.96 (range: 18-43) were presented to the mentioned hospital throughout the study period. Mean number of abortions and infants born alive were 3.60 ± 1.19 and 0.25 ± 0.51 times, respectively. Time of abortion was reported to be in the first trimester of pregnancy in 81 (73%) cases and 67 (61%) of the patients had no history of infertility. Mean duration of infertility was reported to be 2.8 ± 1.36 (range: 1-8) years in the patients. Table 1 shows the baseline characteristics of the studied patients. Regarding the reasons for habitual abortion, anatomic factors with 35.6% and endocrine factors with 7.3% were the most common.

Anticardiolipin antibody was positive in 15 (13.6%) patients with the mean age of 28.9 ± 6.27 years. In table 2, the baseline characteristics of those with positive anticardiolipin antibody is depicted. Table 3 has compared the characteristics of habitual abortion patients with positive and negative anticardiolipin antibodies.

3.2. Outcome

In the end, 35 (31.8%) pregnancies occurred during the 2 years, 26 (74.2%) of which were successful and 9 (25.7%) were unsuccessful. 5 (33.3%) of the 15 patients with positive anticardiolipin antibody evaluated in this study got pregnant during the 2-year follow-up, only one of which was successful. Table 4 shows the 2-year outcome of the patients.

4. Discussion

Based on the findings of the present study, out of the 110 patients with habitual abortion, 15 cases (13.6%) were positive for anticardiolipin antibody. This is in line with numerous other studies that have reported its frequency to be between 5% and 20% (13-16).

As noted before, there is a strong correlation between habitual abortion and level of anticardiolipin antibody, to the point that immunologic factors have been found

Table 2: Baseline characteristics of patients with positive anticardiolipin antibody

Variable	n (%)
Number of Previous abortions	
3	9 (60)
4	2 (13.3)
5	2 (13.3)
6	2 (13.3)
Number of Infants born alive	
0	10 (66.6)
1	5 (33.4)
History of infertility	
None	9 (60)
Primary	1 (6)
Secondary	5 (34)
Time of abortion	
First trimester (8-11 weeks)	11 (73)
Second trimester	4 (27)

Table 3: Comparing the characteristics of habitual abortion patients with positive and negative anticardiolipin antibody

Variable	Anticardiolipin antibody	
	Negative	Positive
Age (year)	5.96 ± 29.2	6.27 ± 28.9
Previous abortions (number)	1.19 ± 3.6	1.14 ± 3.8
Infants born alive (number)	0.51 ± 0.25	0.48 ± 0.33
Duration of infertility (year)	1.36 ± 2.8	1.22 ± 2.5

to affect habitual abortion much more than genetic factors (13-17). Mean age of patients affected with habitual abortion was 29.2 years in this study and it can be said that habitual abortion is usually found in young women less than 30 years of age, which is in line with most studies carried out in this regard (13-17). In most cases, the incidence of this problem was reported in the first trimester, which is in line with a study by Ajami et al. (11). In the current study, for most of the studied patients abortion had occurred in the 8th to 11th week of their pregnancy. In a study on 15 cases of recurrent abortion, the results showed that in 62% of the cases, anticardiolipin antibody was positive, and in those that were negative for this antibody, antiphospholipid antibody was positive in 19% of the cases, which emphasizes the role and importance of these antibodies in recurrent abortions (7). In a similar study on 120 pregnant women, the results showed that the level of anticardiolipin antibody is higher in those with a history of habitual abortion. In these individuals, the rate of abortion was 4 times more than those with a negative anticardiolipin antibody

Table 4: Two-year outcome of the patients regarding pregnancy

Outcome	N (%)
Successful pregnancies (26 cases)	
Anatomic factor	16 (45.7)
Unknown cause	5 (14.2)
Endocrine factor	4 (11.4)
Positive antibody and infectious factor	1 (2.8)
Unsuccessful pregnancy (9 cases)	
Anatomic factor(cervical incompetence, bicornuate uterus, fibroma)	3 (2.7)
Unknown causes	2 (5.7)
Endocrine factor (diabetes) and positive antibody	1 (0.9)
Anatomic factor(cervical incompetence) and positive antibody	1 (0.9)
Infectious factor and positive antibody	1 (0.9)
Anatomic (bicornuate uterus) and infectious factors, and positive antibody	1 (0.9)

(10). In the study by Ajami et al., 512 women with a history of habitual abortion were evaluated, 11.1% of which were found to be positive regarding anticardiolipin antibody. 8 (1.5%) cases were suspected to being positive regarding this antibody and the rest were negative (11).

Regarding the outcome of pregnancy in patients with habitual abortion, 35 pregnancies occurred, 23.5% of which were successful. This rate was higher for anatomic factors, which has the highest rate of successful pregnancies. In the current study, in the 15 cases with positive anticardiolipin antibody only 1 successful pregnancy occurred, which may be indicative of bad prognosis regarding probability of pregnancy in these cases.

4.1. Limitation

For reaching more valuable and better results, it is suggested to carry out a study on a vast number of patients with habitual abortion in multiple centers. In addition, increasing the follow-up period to 5 years can bring about more accurate results.

5. Conclusion:

Based on the findings of the present study, prevalence of positive cases of anticardiolipin antibody was estimated to be 13.6% among those presenting to the mentioned hospital with habitual abortion. These patients were in a worse condition regarding probability of successful pregnancy compared to other cases of habitual abortion (with anatomic, infectious, or other reasons).

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7. Conflict of interest

No conflict of interest was declared.

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None.

9. Author contribution

Conception and design of the work: MA and BM; data gathering: MA and FA; data analysis: FS; drafting the work: MA; critically revised the manuscript: All authors. All authors agreed to be accountable for all aspects of the work.

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