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Obstetrical and Medical History of Pregnant Women with Toxoplasmosis in Al-Najaf Province, Case-Control Study

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Abstract

Background : Bad obstetric history implies previous unfavorable foetal results such as consecutive spontaneous abortions for two or more, early neonatal death, have intrauterine foetal death, stillbirth, intrauterine growth retardation, and congenital deformities. This study aims to assessment the obstetrical and medical history of pregnant women with toxoplasmosis in Al-Najaf province. **Materials and Methods:** A case control study was conducted in Al Zahra Teaching Hospital in Al-Najaf province. The cases in this study were the pregnant women with toxoplasmosis and the pregnant women without toxoplasmosis as (control). A number of 300 respondents were chosen using simple random sampling method. **Findings:** Most of the participants were in the age group (21-25) years for both groups. Most of participants in both groups have family income within range 401.000-800.000 IQD. Most of participants in both groups have primary level of education. Regarding to the occupations, most of the participants in both groups were housewives. Most of the participants in both groups were living in urban area without any statistical difference between groups. In addition, most of the cases have miscarriages (86%) following by stillbirth (18.7%), deformities (10.7%) and premature delivers (8%). While, the control group 11.3% had miscarriages 5.3% stillbirth and 45% premature delivers. It also shows that there are statistical significant differences between groups for items miscarriages stillbirth, deformities antiphospholipide syndrome and diabetes. **Conclusion:** The odds ratio indicated that there was almost 7 items of 9 of obstetrics and medical history of cases were risk factor. While, for control group was protective factors.

Keyword: Obstetrical, medical history, pregnant women, toxoplasmosis.

Introduction

Bad obstetric history (BOH) implies previous unfavorable foetal results such as consecutive spontaneous abortions for two or more, early neonatal death, have intrauterine foetal death, stillbirth, intrauterine growth retardation, and congenital deformities (1). The reasons of BOH might be related to hormonal effect, abnormal maternal immune response, genetic effect, and infection during pregnancy (2,3). The prenatal and perinatal infections are a medical acronym for a set of perinatal infections, such as infections that are passed to the fetus from the infected mother (4). Some pregnant women had some complicated such as pre-eclampsia or spontaneous preterm birth that might be increased risk of recurrence in the other pregnancies (5).

The other group of women with history of preterm premature rupture of membranes in their first pregnancy are at an increased risk for pregnancy-induced operative delivery, hypertension and pre-eclampsia (6). These outcomes lend further confirmation to the suggestion that all of these bad prognosis represent indicator to be more attention about these women (5). Morbidity during maternal period includes psychological and physical conditions that result from or are aggravated by pregnancy and have unfavorable effect on a woman's health. The most dangerous complications that been occur during pregnancy, generally can be called as severe maternal morbidity (7). This study aims to assessment the obstetrical and medical history of pregnant women who were infected with toxoplasmosis in Al-Najaf province.

Material and Method

Study Location

This study was conducted in Al-Najaf province, one of the eighteen provinces in Iraq. Al-Najaf Province consists of six districts (8). In 2006 Al Najaf had a population of 1,042,900, which represent 3.7% of total population in Iraq(9). The respondents in this study, were taken from the Obstetrics and Gynecology unit in Al Zahra Teaching Hospital in Al-Najaf city.

Study design and Sample

A case control study was conducted in Al Zahra Teaching Hospital in Al-Najaf province. The respondents in this study were the pregnant women with toxoplasmosis (cases) and the pregnant women without toxoplasmosis as (control).The sampling population consist of 860 pregnant women with toxoplasmosis that fulfilled the inclusion and exclusion criteria. A number of 300 respondents were chosen using simple random sampling method, 150 for cases and 150 for control. The p in the calculation of the sample size is taken from the previous study (10), with confidence interval $p = 0.05$ and power of study 1.645.

Inclusion and Exclusion Criteria

Inclusion criteria

Inclusion criteria is the pregnant women who were attended to the gynecological clinic at Al Zahra Teaching Hospital in Al-Najaf province during the peroid of this study and they were infected with toxoplasmosis.

Exclusion criteria

Exclusion is the pregnant women who were attended to the gynecological clinic at Al Zahra Teaching Hospital in Al-Najaf province during the period of this study and they werent infected with toxoplasmosis. And they werent from Al-Najaf province.

Data collection

Data was collected from 300 eligible respondents, who had given their consent to participate in this study. A self-administrated questionnaire in the Arabic Language was used to collect information. The whole questionnaire has three sections, section one was about sociodemographic characteristics which included age, education level, family income, living area and occupation. Section two was about obstetrical history and section three was about the past medical history.

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 23 was used to analyze the data(11). For descriptive and inferential statistical, the frequencies, percentages, mean and standard deviation, were calculated for selected numerical and categorical variables. T-test was used to test the difference between the numerical data and Mann-Whitney to test the difference between the categorical data. The dependent variable is the pregnant woman who has positive laboratory evidence of toxoplasmosis infection, whereas the independent variables are the socio-demographic characteristics, Obstetrical and medical history.

Findings

Table (1) Distribution of sociodemographic characteristics of respondents (Case and Control)

| P value a,b | No. and percentages | Age group Years | |
|-------------|---------------------|--------------------|---------------|
| | Control (N=150) | Cases (N=150) | |
| | | | Rang (15-≥50) |
| | 29.4 ± 7.9 | 26.2 ± 6.9 | Mean ± SD |
| 0.001a | 21(14%) | 33 (22%) | 15-20 |
| | 35(23.3%) | 51(34%) | 21-25 |
| | 35(23.3%) | 25(16.7%) | 26-30 |
| | 20(13.3%) | 25(16.7%) | 31-35 |
| | 24(16%) | 9(6%) | 36-40 |
| | 12(8%) | 6(4%) | 41-45 |
| | 3(2%) | 1(0.7%) | 46-50 |

Cont... Table (1) Distribution of sociodemographic characteristics of respondents (Case and Control)

| | | | |
|--------|---------------------|---------------------|---|
| | | | Family income*(IQD) |
| 0.001a | 729913.3 ± 270601.4 | 523493.3 ± 279475.1 | Mean ± SD |
| | 15(10) | 66(44) | 100-400 |
| | 84(56) | 62(41.3) | 401-800 |
| | 42(28) | 16(10.7) | 801-1200 |
| | 9(6) | 6(4) | ≥1201 |
| | | | Educational Level |
| 0.782b | 39(26) | 27(18) | Never been to school |
| | 55(36.7) | 66(44) | Primary level |
| | 21(14) | 34(22.7) | Secondary level |
| | 6(4) | 9(6) | Tertiary level |
| | 13(8.7) | 5(3.3) | Diploma |
| | 15(10) | 8(5.3) | Bachelor |
| | 1(0.7) | 1(0.7) | Master |
| 0.009b | | | **Occupation |
| | 128(85.3) | 142(94.7) | Not working\Housewife |
| | 6(4) | 1(0.7) | LSOM |
| | 8(5.3) | 2(1.3) | professionals |
| | 3(2) | 2(1.3) | Technicians And associate Professionals |
| | 1(0.7) | 1(0.7) | Clerks |
| | 3(2) | 1(0.7) | Service Workers, Shop, Market Workers |
| | 1(0.7) | 1(0.7) | Skilled agriculture and fishery workers |
| | | | Geographical area |
| 0.700b | 115(76.7) | 106(70.7) | Urban |
| | 35(23.3) | 44(29.3) | Rural |

a-t-test significant value at $p < 0.05$

bMann-whitney test at $p < 0.05$

* Iraqi dinar (thousand) (1000 IQD = 0.844 USD (2018))

**Occupation- according to the I.L.O

Table (1) shows that the age range of respondents was (15-<50) years. Mean ± SD (26.2±6.9) for cases and (29.4±7.9) for control and there is significant difference between them (0.001). Most of respondents were in the age group (21-25) years for both groups. As for family income, there is significant difference between groups (0.001). According to the education level, most of respondents had primary level of education. As for occupation, most of respondents for both groups were housewives. Also, found that most of respondents were from urban areas.

Table (2) Obstetrical and medical history of respondents (Case-Control)

| Obstetrical Items | No. and percentages | | P-value Sig. * |
|----------------------------|---------------------|------------|-------------------|
| | Cases | Control | |
| Miscarriages | 129(86%) | 17 (11.3%) | 0.001 |
| Stillbirth | 28(18.7)% | 8 (5.3%) | 0.001 |
| Deformities | 16(10.7)% | 4 (2.7%) | 0.006 |
| Premature Deliveries | 12(8%) | 6 (4%) | 0.145 |
| Unexpected neonatal death | 4 (2.7%) | 1 (0.7%) | 0.177 |
| Antiphospholipids Syndrome | 2 (1.3%) | 3 (2%) | 0.001 |
| Blood transfusion | 21 (14%) | 34 (22.7%) | 0.053 |
| Diabetes | 11(7.3%) | 3(2%) | 0.029 |
| Hypertension | 6(4%) | 3(2%) | 0.311 |

*mann-whitney test

The results of this table shows that 7 obstetrical and medical items of 9 have significant difference between groups.

Table (3) Crude odds ratios (95% confidence intervals) and logistic regression model of obstetrical and medical history for both groups (case and control)

| Obstetrical Items | Odds ratio (95% CI) | |
|----------------------------|------------------------|------------------------|
| | Cases | Control |
| Miscarriages | 6.479 (4.335 to 9.684) | 0.135 (0.086 to 0.212) |
| Stillbirth | 1.683 (1.354 to 2.093) | 0.413(0.222 to 0.769) |
| Deformities | 1.672 (1.301 to 2.148) | 0.384 (0.159 to 0.928) |
| Premature Deliveries | 1.362 (0.962 to 1.929) | 0.653 (0.336 to 1.267) |
| Unexpected neonatal death | 1.616 (1.027 to 2.543) | 0.396 (0.068 to 2.294) |
| Antiphospholipids Syndrome | 0.797 (0.271 to 2.347) | 1.204 (0.583 to 2.486) |
| Blood transfusion | 0.725 (0.508 to 1.036) | 1.306 (1.021 to 1.670) |
| Diabetes | 1.617 (1.200 to 2.179) | 0.417 (0.152 to 1.144) |
| Hypertension | 1.347 (0.837 to 2.169) | 0.660 (0.260 to 1.674) |

Table (3) reveals that the respondents in the cases group (toxoplasmosis) have odds ratio toward risk factors. On other hand, the respondents in control group have odds ratio toward normal level.

Table (4) Correlation between obstetrical history and socio-demographical characteristics of respondents for both groups

| Obstetrical history | | | | | | | | |
|----------------------|-------|-----------|------------|--------|-------|---------|-------|-------|
| | Age | Education | Occupation | Geo | | | | |
| | Case | Con. | Case | Con. | Case | Con. | Case | Con. |
| Miscarriages | 0.074 | 0.229 | 0.043* | 0.019* | 0.115 | 0.638 | 0.971 | 0.998 |
| Stillbirth | 0.529 | 0.131 | 0.223 | 0.787 | 0.073 | 0.000** | 0.911 | 0.827 |
| Deformities | 0.424 | 0.464 | 0.656 | 0.422 | 0.997 | 0.500 | 0.232 | 0.782 |
| Premature Deliveries | 0.926 | 0.884 | 0.116 | 0.984 | 0.937 | 0.406 | 0.657 | 0.944 |
| Unexpected Death | 0.926 | 0.354 | 0.021* | 0.152 | 0.486 | 0.739 | 0.163 | 0.527 |
| Antiphospholipids | 0.103 | 0.001** | 0.213 | 0.703 | 0.815 | 0.559 | 0.521 | 0.669 |

*Correlation is significant at level 0.05

** At level 0.01

This table shows that there are significant correlation at level 0.01 between age and antiphospholipids for control group. As for education, there is correlation at level 0.05 between miscarriages and education for both groups, and between unexpected neonatal death and education for case group.

Table (5) Correlation between Obstetrical history and medical history for both groups

| Obstetrical history | Blood Trans | Hypertension | Diabetes | | | |
|----------------------|-------------|--------------|----------|---------|---------|---------|
| | Case | Con. | Case | Con. | Case | Con. |
| Miscarriages | 0.527 | 0.353 | 0.166 | 0.227 | 0.680 | 0.227 |
| Stillbirth | 0.212 | 0.729 | 0.350 | 0.680 | 0.966 | 0.680 |
| Deformities | 0.182 | 0.000** | 0.000** | 0.000** | 0.000** | 0.000** |
| Premature Deliveries | 0.558 | 0.309 | 0.428 | 0.723 | 0.891 | 0.723 |
| Unexpected Death | 0.524 | 0.683 | 0.681 | 0.887 | 0.572 | 0.887 |
| Antiphospholipids | 0.019* | 0.797 | 0.021* | 0.187 | 0.001** | 0.187 |

*Correlation is significant at level 0.05

** At level 0.01

The results of table (5) shows that there are significant correlation at level 0.01 between blood transfer, hypertension and diabetes with deformities for both groups and with antiphospholipids for cases group at level 0.05.

Table (6) Correlation between Obstetrical history items for both groups

| Obstetrical history | Obstetrical history | | | | | | | | | | | |
|----------------------|---------------------|------------|-------------|----------------------|------------------|-------------------|---------|-------|--------|-------|------|------|
| | Miscarriages | Stillbirth | Deformities | Premature Deliveries | Unexpected Death | Antiphospholipids | | | | | | |
| | Case | Con. | Case | Con. | Case | Con. | Case | Con. | Case | Con. | Case | Con. |
| Miscarriages | 1 | 1 | | | | | | | | | | |
| Stillbirth | 0.517 | 0.302 | 1 | 1 | | | | | | | | |
| Deformities | 0.565 | 0.013* | 0.993 | 0.633 | 1 | 1 | | | | | | |
| Premature Deliveries | 0.783 | 0.084 | 0.854 | 0.556 | 0.787 | 0.681 | 1 | 1 | | | | |
| Unexpected Death | 0.524 | 0.722 | 0.335 | 0.813 | 0.487 | 0.869 | 0.000** | 0.839 | 1 | 1 | | |
| Antiphospholipids | 0.729 | 0.051 | 0.883 | 0.146 | 0.163 | 0.312 | 0.633 | 0.542 | 0.048* | 0.791 | 1 | 1 |

*.Correlation is significant at level 0.05

**At level 0.01 level

The results of table (6) shows that there are significant correlation at level 0.05 between miscarriages and deformities for control group. In addition, there is significant correlation at level 0.01 between premature deliveries and unexpected neonatal death for case group. Also, there is significant correlation at level 0.05 between unexpected neonatal death and antiphospholipids for case group.

Discussion

This study was found that most of the participants were in the age group (21-25) (34% and 23.3%) for case and control respectively with statistical significant difference between groups (p = 0.001) (Table 1). This results almost were near to the result found in Kirkuk in the north of Iraq in 2013, they found that most of the participants were in age less than 30 years (12). It also reveals that the age range was (15->50) years with mean ± SD were 26.2 ± 6.9 for cases and 29.4 ± 7.9 for control group, it’s also shows that there is statistical

significant difference between groups (p = 0.001). Lt and Maj Found that there was notstatistical significant difference between groups (p = 0.181) between groups who had bad obstetrical history (13). That means there is difference between communities however, there was not difference between communities within the country.

According to the family income, the result of this table shows that the most participants in both groups have family income within range 401.000-800.000 IQD and there is statistical significant difference between groups (p = 0.001)(Table 1). At the same place in one study was conducted in 2016, the researchers were found that the mean average of monthly family income was IRD 529,000 (USD241) for the Experiment group and IRD 719,000 (USD694) for the Controlgroup (8). This is indicator to poor the situation of living style for those people.

For the educational level, it shows that most of the cases have secondary level of education (22.7%). While, the control group most of them have primary

level of education (36.7%) and there was not statistical difference between groups ($p = 0.078$)(Table 1). This results were agree with the result found in Kirkuk in the north of Iraq in 2013, they found that most of participants in both groups had low level of education (12). It also agree with result of another study was carried out at the same place in 2016, the found that both groups had low level of education (45.3% for Experiment and 37.1% for the Control group)(8).

Regarding to the occupations, most of the participants in both groups were housewives (94.7% for cases and 85.3% for control). It also shows that there was statistical significant difference between groups ($p = 0.009$)(Table 1). Aljumaili and Alsamarai at Kirkuk in 2013 found that same result, they found most of the participants were housewives in addition to results of Atheer and Titi in 2016 (12,8). This result found that same finding that been founded by Aljumaili and Alsamarai, 2013; Ibadi and Hamedon, 2016 regarding to the geographical distribution of participants, most of the participants in both groups were living in urban area without any statistical difference between groups.

According to the obstetrical and past medical history, the results of this study show that significant difference between two groups towards the cases group. It's also found that the obstetrical history of cases group was more than control group. However, the past medical history for case group was more than control (Table 2).

One study was conducted in Khammam, Andhra Pradesh, India in 2012 was agree with our study, the researcher were found that the abortion cases was the commonest form of pregnancy wastage (51.92%), followed by stillbirths (36.53%) and premature deliveries (7.69%). This result was significantly higher in the study group than that in the control group, and the seropositivity with toxoplasmosis played an important role in determining the foetal outcome (14). Another study was conducted in Egypton 2015 on pregnant women with toxoplasmosis. This study was found that the seroprevalence of pregnant women with toxoplasmosis was significantly different from that of normal pregnancy group ($P < 0.05$). It also found that the infected women in relation to bad obstetric history showed that abortion was the commonest pattern of the pregnancy wastage (56.5%), this result is also agree with our results (15).

The results of this study show that the participants who have toxoplasmosis with obstetrical and medical history have risk factor to get miscarriages Odds 6.479 (4.335 to 9.684) however, this situation was different for control Odds 0.135 (0.086 to 0.212). For stillbirth, deformities, premature delivers and unexpected neonatal death were also have risk factor for these items 1.683 (1.354 to 2.093), 1.672 (1.301 to 2.148), 1.362 (0.962 to 1.929) and 1.616 (1.027 to 2.543) respectively. However, for the control group were significant protective factors 0.413(0.222 to 0.769), 0.384 (0.159 to 0.928), 0.653 (0.336 to 1.267) and 0.396 (0.068 to 2.294) respectively (Table 2,3).The odds ratio for cases was risk factor for almost 7 items of 9 of obstetrical and medical history. However, for control group was protective factors. The study was conducted in Egypt on 2015 on pregnant women with toxoplasmosis was found that there was significantly different between odds ratio values between groups ($P < 0.05$) this result is also agree with our results (15).

Conclusion

Most of the participants were in the age group (21-25) years, have primary level of education and were housewives.

Both groups have family income within range 401.000-800.000 IQD.

Most of the cases have miscarriages following by stillbirth, deformities and premature delivers. While, control group have miscarriages following by stillbirth and premature delivers.

The odds ratio for cases was risk factor for almost 7 items of 9 of obstetrical and medical history. However, for control group was protective factors.

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Ethical Clearance: Written consent was taken from all respondents in this study, official consent was also taken from Al-Najaf Health Directorate\ Center of Training and Development of Staffs (ref: No.136830), this work was done according to the ethical committee considerations of Al-Furat Al-Awsat Technical

University and Al-Najaf Health Directorate.

2018.

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