

Toxoplasmosis Among a Sample of Aborted Women in Baghdad City

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Abstract

The study was conducted in Baghdad from November /2008 to April/2009 to determine the current toxoplasmosis among 400 previously aborted pregnant women (history of abortion) who were referred to the Central Health Laboratory in Baghdad for determining the level of Immunoglobulin–Antibody of toxoplasmosis using ELISA technique and latex agglutination test. The age of these women were ranging between 15-45 years. Seropositivity rate of the result showed that the IgM 61(15.25%).

The seropositivity was higher in age group (25-29) years, illiteracy women, housewives, the women with repeated one abortion, drinking unpasteurized milk, women with contact with cats and women with contact with domestic animals. It is recommended that there is a need for health education especially to pregnant women by mass media concentrating on prevents contact with cats.

داء المقوسات لعينة من النساء اللواتي يعانين من الإسقاط في مدينة بغداد

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الخلاصة

أجريت الدراسة الحالية في الفترة ما بين تشرين الأول / 2008 ونيسان / 2009 لتحديد مرض داء المقوسات (Toxoplasmosis) باستعمال مجموعة من الفحوصات المناعية . تضمنت الدراسة (٤٠٠) امرأة مريضة عانين من إجهاض سابق وكانت النتائج لفحوصاتهن اشتملت على وجود أضداد مناعية للمقوسات القندية (Toxoplasma gondii) من نوع الكلوبوليين المناعي ام (IgM) الحاد والكلوبوليين المناعي من نوع ج (IgG) المزمن وتمت إحالتهم إلى مختبر الصحة المركزي في بغداد لغرض تحديد مستوى الكلوبوليين المناعي لداء المقوسات وقد تراوحت أعمارهن من (15-45) سنة. اشتملت الدراسة الحالية على عدد من الفحوصات المناعية باستعمال تقنية (ELISA) وتضمن فحص الأليزا لنوعين من الأضداد المناعية (IgM و IgG) حيث ظهرت نتائج فحص (IgM) ٦١ (٢٥,١٥ %) وكانت اكبر نسبة إصابة بالمرض هي بالعمر (25-29) سنة ونسبة الغير المتعلمات وربات البيوت وكذلك النساء اللواتي عندهن إسقاط واحد ومتناولات الحليب الغير مبستر وبالتماس مع القطط والحيوانات الأليفة. ومن التوصيات التي تحتاجها النساء في التنقيف الصحي الاهتمام بالنظافة الشخصية خصوصا للحوامل ومراعاة الطبخ الجيد لطعام الحوامل وعدم تربية القطط أو أبعادها عن البيت بالإضافة إلى الاهتمام بالتنقيف الصحي ومعرفة طرق انتقال المرض وتأثيراته الصحية على الأم والجنين.

Introduction

Toxoplasmosis is a protozoan infection found worldwide caused by *Toxoplasma gondii* [1]. *Toxoplasma gondii* exist in three forms Trophozoite, cyst and oocyst, Toxoplasmosis infects humans as well as a broad spectrum of vertebrate hosts. Cats and wild felidae play crucial role in the epidemiology of Toxoplasmosis [2]. Cats are the definitive host which infected by consuming contaminated meat or infected prey. Humans can act as intermediate hosts and in healthy individuals the infection is mild and self-limiting. Toxoplasmosis in pregnant women can cause spontaneous abortion and fetal abnormalities, and is capable of inducing serious illness in immunocompromised patient [3]. It is the most widely spread important human disease particularly in children where it could cause visual, neurological impairment and mental retardation [4] and up to 500 million people worldwide to be infected with *Toxoplasma gondii* [5]. Human Toxoplasmosis is zoonosis and its ubiquitous infection increasing with age, education, crowding, sanitary habits, socioeconomic and animal conduct including cats the final host [6]. Elisa and Mini vidides technique used to diagnosis of Toxoplasmosis. The first drug of choice is spiramycine, and then second drug is sulphadiazine, pyrimethamine with vitamine. Pregnant women need to wear gloves and avoid touching their skin and also practice good hand washing especially when handling and working in contact with soil or working in kitchen [7]. This study had aimed to determine the rate of prevalence of Toxoplasmosis among women with previous history of abortion .Certain demographical features (as age, level of education and occupations) as well as certain factors (as contact with cats and domestic animals) were also investigated.

Subjects and Samples

Blood samples were collected from 400 pregnant women with a history of sudden abortion with age of 15-45 years. An informed consent for participants had filled in a questionnaire sheet concerning their ages, level of education, occupation, owning a cat or being in a direct contact with cats or other domestic animals. Sera were separated from each blood sample and tested for Toxo-IgM and Toxo-IgG by Elisa (Human, Biotech, USA).

Statistical analysis: The suitable statistical methods are used in order to analyze and assess the results, include the followings:

- 1-Descriptive statistics (statistical table, summary statistic and graphical presentation)
- 2-Inferential statistic (Pearson chi-squared test and T.test for two independent Means)
- 3-Computer and programs.

Results

Eliza Toxo-IgM seropositive result it was 61/400(15.25%) with variable frequencies according to different age groups (Table 1).

Table 1: The seropositivity rates by Elisa Toxo-IgM according to age groups (Years).

Age groups (years)	Anti-Toxoplasmosis Ab(IgM)by ELISA					p-value
	Positive (N=61)		Negative (N=339)		Total	
	No	%	No	%	%	
Less than 20	8	13	43	13	13	N.S (0.085*)
20-24	19	31	79	23	25	
25-29	22	36	102	30	31	
30-34	10	17	59	17	17	
35 and more	2	3	56	17	14	

*significant at 0.05 level of significance using Pearson chi-squared test.

Table (2) shows the seropositivity rates among women according to their level of education. The highest rates were recorded among illiteracy which was 233(58%) while in literacy the rate was 167(42 %), with a high significancy (P-value <0.01).

Table (2) the association between the seropositivity rates by ELISA-IgM and the level of education.

Level of education	Anti-Toxoplasmosis Ab(IgM)by ELISA					P-value
	Positive(n=61)		Negative (n=339)		Total	
	No		No			
Illiteracy	48	79	185	55	58	H.S (0.0001*)
Literacy	13	21	154	45	42	

*significant at 0.05 level of significance using Pearson chi-squared test.

Table (3) shows the seropositivity rates among pregnant women according to their occupational. The highest of rate was recorded among housewives which was 249(62%) while in employed women the rate was 147(37%), with a high significancy (P-value <0.01).

Table (3) the association between of seropositivity rates by ELISA-IgM and the occupation.

occupation	Anti-Toxoplasmosis Ab(IgM)by ELISA					P-value
	Positive(n=61)		Negative(n=33 9)		Total %	
	No	%	No	%		
Housewife	50	82	199	59	62	H.S (0.002*)
Employed	11	18	136	40	37	
Student	-	-	4	1	1	

*significant at 0.05 level of significance using Pearson chi-squared test.

Table (4) shows the seropositivity rates among previously aborted women according to their number of abortion. The highest of rate was recorded in women with only one previously abortion which was 209(52%) with no significant value (p-value >0.05) .

Table (4) the association between the seropositivity rates by ELISA-IgM and the number of previous abortion.

No. of previous abortion	Anti-Toxoplasmosis Ab(IgM)by ELISA					P-value
	Positive(n=61)		Negative(n=339)		Total %	
	No	%	No	%		
One	33	54	176	52	52	N.S (0.533*)
Two	16	26	109	32	31	
Three	7	12	23	7	8	
Four&more	5	8	31	9	9	

*significant at 0.05 level of significance using Pearson chi-squared test.

Table (5) shows the seropositivity rates among pregnant women according to their drinking milk without boiling, the highest rates were recorded among drinking milk without pasteurization were 50(13%) ,while of the drinking milk with pasteurization were 68(17%), with high significant (p<0.01).

Table (5) the association between the seropositivity rates by ELISA-IgM and drinking milk.

Drinking milk	Anti-Toxoplasmosis Ab (IgM)by ELISA
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	Positive (n=61)		Negative (n=339)		Total %	P-value
	No.	%	No.	%		
Pasteurization	8	13	60	18	17	H.S (0.0001*)
no Pasteurization	25	41	25	7	13	
No drinking milk	28	46	254	75	70	

*significant at 0.05 level of significance using Pearson chi-squared test.

Table (6) shows the seropositivity rates among women according to their contact with cats. The highest rate was recorded among those contact with cats 249(62%), while in no contact with cats the rate was 151(38%), with a significant value (P-value $p < 0.05$).

Table (6) the association between the seropositivity rates by ELISA-IgM of pregnant women with contact with cats.

Contact with cats	Anti-Toxoplasmosis Ab(IgM)by ELISA					P-value
	Positive(n=61)		Negative(n=339)		Total %	
	No.	%	No.	%		
Yes	45	74	204	60	62	S (0.044*)
No	16	26	135	40	38	

*significant at 0.05 level of significance using Pearson chi-squared test.

Table (7) shows the seropositivity rate among pregnant women according to their contact with domestic animals. The highest rate was recorded among those with contact with domestic animals 234(59%), while in no contact with domestic animal the rate was 166(41%), with no significant value (P-value > 0.05).

Contact with domestic animals	Anti-Toxoplasmosis Ab(IgM)by ELISA
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Table (7)

the	Positive(n=61)		Negative(n=339)		Total %	P-value
	No.	%	No.	%		
Yes	34	56	200	59	59	N.S (0.634*)
No	27	44	139	41	41	

association between the seropositivity rates by ELISA-IgM of pregnant women and contact with domestic animals.

Discussions

Study of prevalence of toxoplasmosis among a sample of pregnant women in Baghdad was conducted, the result revealed that 61(15.25%) out of 400 women were seropositive for Toxoplasmosis, however, in comparison with some previous studies, it was observed that the seropositive in this study was similar to that recorded by Niazi.; 1992, who recorded a seropositive rate was 15.62% in the north of Iraq [8].

However, in comparison with some previous studies, it was observed that the seropositive rate in this study was higher than those recorded by Othman [9], who recorded the seropositive rate was (16.9%) in Baghdad. Asa'aed, who found it about 18.42% seropositive rate in Thi-Qar governorate [10], AL-Hamadani and Mahidi [11], who recorded the seropositive rate was 48.5%,

in governorate of Basrah. Abdullah, who found the seropositive rate, was 56.6% in the governorate of Nenehah [12]. While the seropositive rate was lower in this studies than those recorded by Abdul AL-Aziz, who demonstrated that seropositive rate was 2.5% in Baghdad [13]. In the Arabian Countries, the results were higher than that recorded in Saudi Arabia [14] and Jordan [15] who recorded the seropositive rates were (25%-60%) respectively. while seropositive rate was lower in this study than those recorded by Iqbal, who demonstrated that seropositive rate was 13.8% in Kuwait [16]. In other world countries, its were higher recorded in U.S.A [17] and Australia [18] who recorded the seropositive rates were (24.51%-45.98%) respectively .while seropositive rates were lower recorded in India [4] and Turkey [19] who demonstrated that seropositive rates were (0.4%-10.7%) respectively.

The higher percentage of age group ranging from 25-29 years were than other age groups as shows in table(1) ,also the number of this group consider the child bearing age of Iraqi women, which was the possible age for obstetrical complication (habitual abortion, microcephaly, chorioretinitis , deafness , lymphadenopathy)) which make most pregnant women to become in contact with Physician. This result was similar to that recorded by Ahmed, [20]. While it was different to that recorded by AL-Qurashi, [14].

Table (2) reveals that there was a relationship between the seropositive rate of IgM among previous aborted women with level of education ,this result agree with that recorded by AL-Harthi, [21]. While it is different from that Morris and Croxson, [22]. This study suggests that increasing the level of education of women will minimize their risky behaviour that make the probability of infection is greater due to their awareness of prophylactic measures in avoiding exposure to the infective stage of the parasite . illiteracy are associated with lower socioeconomic status and may be related to profession or jobs with greater exposure to risk factors , as those who are working in house, making them in a high exposure rate to contaminated soil with cats feces .

It shows in table (3) among of occupational , this result was similar to that recorded by AL-Qurashi, [14]. The explanation was that the housewives were more exposed to cat litter and handling raw meat and that housewife was likely to have low education and have less information about the ways of prevention and control of toxoplasmosis.

As shows in table (4) with number of abortion. These results agree with that of Asa aed, [10]. Many causes of abortion such as bacterial, or fungal or virus diseases and ca ice missed abortion, physiologic in female or be the result of other diseases such as autoimmune disease [23].

It shows in table(5) with no history of drinking pasteurized milk ,this result was similar to that recorded by Morris and Croxson [22]. while it was disagree to that recorded by Ahmed [20]

It shows in table (6) with contact with cats, these results agree with AL-Deen Abbas [24] while it was different to that recorded by [25]. In other previous studies, cat ownership has been associated with either increased risk for Toxoplasmosis seropositivity or no change in such risk, so the correlation between seropositivity and the direct contact with cat may refer to that cats were not kept at home all the time to be safe from being infected with the parasite from outdoors environmental risk factors [26]. Cat may bring soil inside home and thus play role in the connection chain between the outdoors environmental risk factors and the indoors living people. Cats should be fed only dry, canned or well cooked food and kept indoors when possible to prevent cats from being infected with *Toxoplasma gondii* [3].

It shows in table (7) with contact with domestic animals, this result was similar to that recorded by Abu-Zeid [27]. This study suggests that working with domestic animals contaminated with oocyst [6].

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