

## **EPIDEMIOLOGICAL STUDY OF TOXOPLASMOSIS AMONG PREGNANT WOMEN IN BAGHDAD CITY**

**دراسة وبائية لداء المقوسات عند النساء الحوامل  
في مدينة بغداد**

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### **Abstract**

100 serum samples were randomly collection from women with ages ranging from (>20-<40) years, from laboratory of public health center in Baghdad governorate, for the period from 1<sup>st</sup> March to 1<sup>st</sup> October 2010, they were all visit to the center, questionnaire sheet was filled out for each sample studies.

This study was clearly shown that the highest percent (62.1%) of women with no previous abortion among age group from (20-29) years, while highest percent (47.6%) of women with previous abortion among age group from (30-40) years. According to Residency, the results showed that (68%) of women were urban residency, while only (32%) of women were rural residency. The results seen that the rate of infected women with toxoplasmosis (67%; while (33%) for women were no infected. The results recorded most commonly percent (53%) of women those who had one previous abortion and lesser percent (3%) for those who had a previous three or more abortion. (94%) of women including in this study were previous diagnosis for toxoplasmosis. The final table (6) which reveals that (63%) of women who had contact with cats, and (37%) who had no contact with cats.

### **الخلاصة :**

جمعت 100 عينة مصلية وبصورة عشوائياً من النساء المتزوجات وبعمر (أقل من 20-أكثر من 40) سنة من مختبر الصحة المركزي ببغداد للفترة من 1 آذار – 1 تشرين الأول 2010، لكل النساء الزائرات للمركز، بمليء ورقة استبيان لكل عينة مدروسة.

أظهرت الدراسة بشكل واضح أعلى نسبة (62.1%) من النساء اللواتي ليس لديهن إسقاط سابق وبعمر (20-29) سنة بينما كانت أعلى نسبة (47.6%) للنساء اللواتي لديهن إسقاط سابق وبعمر (30-40) سنة وتبعاً لنمط المعيشة، أظهرت النتائج ان حوالي (68%) من النساء هن من النمط الحضري، بينما (32%) فقط من النساء ذوات نمط معيشي ريفي.

وأظهرت النتائج ان معدل إصابة النساء بداء المقوسات كان (67%) بينما (33%) من النساء غير مصابات بالمرض.

كانت الاغلبية العظمى في هذه النتائج هي (53%) للنساء اللواتي لديهن إسقاط سابق واحدا والنسبة الاقل هي (3%) للنساء اللواتي لديهن ثلاث اسقاطات سابقة أو أكثر.

(94%) من النساء المشمولات بهذه الدراسة كان لديهن تشخيص مسبق لداء المقوسات.

وبينت النتائج ان (63%) من النساء لديهن تلامس مباشر مع القطط، و(37%) ليس لديهن تلامس مع القطط.

### **Introduction**

*Toxoplasma gondii* is a species of parasitic protozoa in the genus toxoplasma. (1)

The name toxoplasma is derived from the Greek word (Toxon) meaning arc or bow referring to the curved shape of the trophozoite and plasma meaning body. (2)

(3) Refers to *Toxoplasma gondii* can be transmitted to the fetus through the placenta, which causes congenital toxoplasmosis from infected mother, or at vaginal delivery.

Furthermore *toxoplasma* has been implicated in abortion, premature, stillbirth and early postnatal mortality, it can also cause serious damage to different tissue organs of its infected host depending on the site where it forms its cyst. (4)

If acquired during pregnancy, it may cause habitual abortion and various congenital anomalies in the fetus. (5)

The most common manifestation of congenital toxoplasmosis is retinal choroiditis, psychomotor retardation hydrocephalus, intra-cerebral calcification and secondary eye lesion leading to severe impairments. Acquisition of toxoplasmosis before pregnancy is of least risk to the fetus, but the greatest risk of congenital toxoplasmosis occurs during the trimester pregnancy. (6)

However, it is during the third trimester that the highest level of transmission occurs, this is thought to be related to the much larger size of the uterus. (7)

The detection of *toxoplasma* specific antibodies is the primary diagnostic method. Determine infection with antibodies are detected by numerous serologic tests and most of the test kits are commercially available to detect *Toxoplasma gondii* specific IgG, IgM, IgA or IgE antibodies. The Sabin-Feldman dye test (DT), in direct fluorescent antibodies test (IFAT), in direct haem agglutination test (IHAT), latex agglutination test (LAT), indirect agglutination test (DAT), and enzyme linked Immunosorbent Assay (ELISA) are some of the tests used to detect *Toxoplasma gondii* antibodies. (8)

(9) Revealed that IgM antibodies appear sooner after infection than the IgG antibodies and disappear faster than IgG antibodies after recovery.

The prevalence rate of *Toxoplasma gondii* infection is highly variable according to the group of people if they are adult, children, infants, women, men and pregnant non-pregnant.

Even within each of these groups, the variation in the prevalence rate of *Toxoplasma gondii* infection is also high which is largely affected by many factors such as the geographical distribution, climatic condition, eating habits, contact with animals, hygienic condition, sensitivity of the various employed serological methods and/or researchers' differences in interpretation of a serological technique. (10)

The aims of the present study to describe the demographic features of toxoplasmosis cases and to find the risk factors affecting the occurrence of toxoplasmosis.

## **Materials and Methods**

A cross-sectional descriptive type of study was done in a laboratory of public health center in Baghdad governorate, for the period from 1<sup>st</sup> March to 1<sup>st</sup> October 2010 to study the cases of toxoplasmosis, who were attended at that center.

One hundred cases of test of *Toxoplasma gondii* were collected from the laboratory of public health center in Baghdad city by reviewing the case reports and direct interview of some patients.

By using a special questionnaire which includes detailed information regarding identification data of each case (i.e.: name, age, occupation, education levels, address, number of previous abortion, diagnosis of toxoplasmosis, history of contact with cat and history of any previous congenital anomalies in the siblings).

## **Statistical Analysis**

The suitable statistical methods used to assess and analyze the results:

- Descriptive statistics [observed frequencies and their percentage].
- Inferential statistics [testing independency between the nominal responding of the disease [Toxoplasmosis] with any other related variable by using chi-square test.
- Contingency table (causes correlation ships) these table structure depending on the distribution of the observed frequencies among different levels of two factors that used or included such that (*Toxoplasmosis*) and one of the specific related variable that had been studied (age group, residency, number of previous abortion, previous diagnosis for Toxoplasma, contact with cats....)

## Results and Discussion

Table (1) showed distribution of number of previous abortion related to age groups was ranged (.20-,40) years.

Classification in four classes (less than 20) years, (20-29) years, (30-40) years and (more than 40) years. The result were showed highly significant difference,  $P < 0.001$  between these four strata.

The result showed that the highest percentage (62.1%) of women with no previous abortion through age group from (20-29) years, because this age of production and hormones changes. While highest percent age (47.6%) with a previous abortion women through age group from (30-40) years, this is agreement with Niazi and his workers in Baghdad. (12)

**Table (1): Distribution of cases according to age group with abortion.**

Age group	No. of abortion				Total	
	No previous abortion		previous abortion			
>20	12	20.6	14	33.4	26	26%
20-29	36	62.1	6	14.3	42	42%
30-40	7	12.1	20	47.6	27	27%
<40	3	5.2	2	4.7	5	5%
Total	58	100	42	100	100	100.0

Related to residency, the residence distribution was statistically different at  $P\{0.001$  between urban and rural with increase twice a time with urban (68%), while with rural was (32%) of women were rural residency this is due to the different of life style (culture, habits, education, social-economic status). This agreement with (13,16 and 17).

**Table (2): Distribution of cases according to abortion with residency.**

No. of previous abortion	Residency				Total	
	Urban		<i>Rural</i>			
	No.	%	No.	%		
0	16	23.5	5	15.6	21	21%
1	38	55.8	9	28.1	47	47%
2	9	13.2	11	34.3	20	20%
3	5	7.5	7	22	12	12%
Total	68	100	32	100	100	

Table (3) showed the rate of infected women were (67%); while (33%) of women were no infected, that mean the rate of Toxoplasmosis (67%).Statistical analysis of this table was depending on frequencies and their percentages. This is agreement with (14 and 15).

**Table (3): Distribution of cases according to the rate of infection.**

Infection	Frequency	Percent
Infected	67	67%
No in fected	33	33%
Total	100	100%

According to the number of previous abortion in pregnant women the high percent age (55.3%) of patients who had no previous abortion, In addition (94%) of women including in this study was previous diagnosis for Toxoplasmosis, this comparison was showed in table (4) with significant difference  $P < 0.05$ . Same result was detected by (12).

**Table (4): Distribution of cases according to number of previous abortion and previous diagnosis for toxoplasmosis.**

No. of previous abortion	Previous diagnosis for toxoplasmosis				Total	
	NO		Yes			
	No.	%	No.	%		
0	3	50	52	55.3	56	56%
1	3	50	30	31.9	33	33%
2	0	0	9	9.5	9	9%
3	0	0	3	3.3	3	3%
Total	6	100	94	100	100	100.0

In this study, the result was showed the highest percent (63%) was of those patient who had contact with cats and (37%) who had no contact with cats, as demonstrated in table (5). this due to cats is the definitive host of Toxoplasmosis and this lead to direct infected for contact with infected cat, this agreement with (18,19 and 20).The comparison significant between these two percentage were seen a highly significant difference at  $p < 0.001$ .

**Table (5): Distribution of cases according to previous diagnosis for toxoplasmosis and their contact with animals.**

Contact with cats	Previous diagnosis for toxoplasma				Total	
	No		Yes			
	No.	%	No.	%		
Yes	3	37.5	58	63	61	61%
No	5	62.5	34	37	39	39%
Total	8	100	92	100	100	100.0

## **Conclusions**

On the basis of the results arrived at, the following conclusions can be drawn:

- 1- The rate of toxoplasmosis in Baghdad city was (67%).
- 2- (94%) of women were previous diagnosis for toxoplasmosis.
- 3- The highest percent (63%) of women who had contact with cats.
- 4- The most commonly percent (53%) of women those who had one previous abortion.

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