

Toxoplasmosis: Serious disease during pregnancy

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Abstract:

Toxoplasmosis is an infection caused by *Toxoplasma gondii* that leads to abortion or hydrocephalus during pregnancy. One hundred and twenty two aborted women were selected for this study.

Serum samples were collected from Al-Kadhmia and Kamal Al-Samari Hospitals, and laboratories around Baghdad, and tested for specific IgG and IgM anti-*Toxoplasma* antibodies to confirm toxoplasmosis in those women by using ELISA test. The result recorded that

51(41.8%) women had antibodies against *Toxoplasma gondii*, 25(59.5%) women were positive for IgG, and 17(40.5%) women were positive for IgM, while 9(17.6%) women were positive for both.

Key words: abortion, Toxoplasmosis, IgG antibody, IgM antibody

Introduction:

Toxoplasmosis is an infection caused by the protozoa *Toxoplasma gondii*, a world wide parasite of human and animals (cats and birds), and infect 30-60% of human population world wide [1]. In the United States, 5-10% of young adults are serum positive for *Toxoplasma* and this percentage rises to 50% at 50 years of age [2]. *Toxoplasma* in human infection occurs via ingestion of contaminated food (especially meat) [3], inhalation, blood transfusion [4], and transplacentally during acute infection in pregnancy. The infection during pregnancy leads to congenital toxoplasmosis [5], hydrocephalus and serious complication in pregnant woman leading to miscarriage, stillbirth and birth defect [6]. Effective presentation of congenital toxoplasmosis depends on avoidance of infection during pregnancy [7]. Different serological techniques have been suggested for the diagnosis of toxoplasmosis; one of these is

ELISA, an enzyme linked immunosorbent assay used to detect IgG and IgM antibodies. The presence of IgM antibodies is sufficient to define serum samples as acutely infected individuals, while the absence of IgG antibodies was sufficient to define serum samples as chronically infected individuals [8]. The present study was planned to detect IgG and IgM antibodies for diagnosis of toxoplasmosis.

Material and Methods:

This study was conducted on 172 women (age range 15-45 years), 122 women had abortion. They were referred to Al-Kadhmia and Kamal Al-Samari hospitals and laboratories around Baghdad, indicating the possibility of having toxoplasmosis by physician. Fifty healthy women were selected as control, 12 of them were infected with *Toxoplasma* and have IgG antibodies, so they were excluded from this study.

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Sample of venous blood was collected from these women for serum collection.

This study was carried out to assess the presence of Anti-Toxoplasma gondii IgG and IgM. ELISA was used for detection of the antibodies in serum samples using commercial kits, (Bio Kit, Spain).

ELISA was performed by the use of two kits (Omega Diagnostica company, Scotland)

Results:

The results showed that 51 (41.8%) of the 122 aborted women have antibodies against *T. gondii*, and although the other 71 (58.2%) women had abortion, they were negative for toxoplasmosis (Table 1).

Samples from 50 healthy-looking women were collected as controls and tested for IgG and IgM specific antibodies for *Toxoplasma gondii*, and the results indicated that 12 women (24%) were positive to the presence of IgG while 38 (76%) women were negative to the presence of IgG and IgM of *Toxoplasma gondii* in their serum (Table 1).

Twenty five (59.5%) women were positive for presence of IgG antibodies (Table 2), while 17 women (40.5%) had IgM antibodies (Table 3), and 9 (17.6%) women had both IgG and IgM antibodies (Table 4).

Table1:-Frequency distribution of *T.gondii* antibodies in women of history abortion and healthy-looking controls.

Cases	ELISA		total
	Negative	Positive	
Single or repeated abortion	51(41.8%)	71(68.2%)	122
Healthy-looking controls	12(24%)	38 (76%)	50
total	63(36.6%)	109(63.4%)	172

Table2:-Frequency distribution of *T.gondii* IgG antibodies using ELISA test in history abortion compare with healthy-looking controls.

cases	IgG		total
	Positive	Negative	
Single or repeated abortion	25(59.5%)	17(40.5%)	42
Healthy-looking controls	12(24%)	38 (76%)	50
total	37(40.2%)	55(59.8%)	92

Table3:-Frequency distribution of *T.gondii* IgM antibodies using ELISA test in history abortion compare with healthy-looking controls.

cases	IgM		total
	Positive	Negative	
Single or repeated abortion	17(40.5%)	25(59.5%)	42
Healthy-looking controls	0(0%)	38 (76%)	38
total	17 (36.6%)	63 (78.7%)	80

Table4:-Frequency distribution of *T.gondii* IgG & IgM antibodies using ELISA test in history abortion compare with healthy-looking controls.

cases	IgG and IgM		total
	Positive	Negative	
Single or repeated abortion	9(17.6%)	42(83.4%)	51
Healthy-looking controls	0 (0%)	50 (100%)	50
total	9(8.9%)	92(63.4%)	102

Discussion:

Toxoplasmosis is a world wide prevalent disease [9], and in Iraq, studies indicated this fact [3]. In the present study, the fact of this disease was found by detecting antitoxoplasma antibodies. Antibodies were found in 41.8% in women with single or repeated abortion. The percentage of women with past or chronic Toxoplasmosis was (59.5%) and those with acute toxoplasmosis was 40.5% while those with both IgG and IgM was 17.6%.

Similar results were obtained in Iraq, other studies were done in other countries like Egypt, Saudi Arabia and in USA. Specific antibodies were reported in infected women in

USA[10].the high prevalence in Iraq of this disease could be due to high number of risk factors and many sources of infection.

The infection acquired during pregnancy may cause congenital toxoplasmosis [10,4],which is a very serious condition with lethal prognosis in about 10% of cases and high proportion of disabling sequelae[11]. Antibodies screening programmes aimed at the diagnosis of

T.gondii infection among pregnant women have there for been introduced in several countries[12].The finding of Toxoplasma antibody in pregnant women does not mean that she required treatment in the great majority of cases,8% to 40% or more of women will have this finding as a result of previous infection. In few women the presence of antibodies reflects acute infection[13].The actual management of acute toxoplasmosis in pregnancy is based on early antibiotic treatment ,to halve transmission rate [14]. The seroprevalence in pregnant women,on world wide scale,varies from 7-51.3% in women with abnormal pregnancies and abortions the seroprevalence varies from 17.5-53.3%[15].

High avidity IgG antibodies indicate a recent toxoplasma infection [16], that usually has been acquired more than four months before[17].The presence of IgG and IgM antibodies define serum samples as being from acutely infected individuals,while the absence of IgM antibodies define serum samples as being from chronically infected individuals.

Routine testing for Toxoplasma infection is should be done for all women

Especially during pregnancy, to treat infection women.

And all pregnant should be provided with information about the presentation of Toxoplasmosis infection.[18].

The role of health education is an important factor in decrease the incidence of this infection[19].

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داء القطط: مرض خطير عند النساء الحوامل

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معهد الهندسة الوراثية/جامعة بغدادالخلاصة:**

المقدمة: - أن داء القطط اصابه بسببها الطفيلي *Toxoplasma gondii* والذي يؤدي للاجهاض أو موه الرأس (hydrocephalus) خلال فترة الحمل.

الغرض من هذا البحث: - هو لدراسة وجود الطفيلي *Toxoplasma gondii* بين النساء ولمعرفة علاقته بالاجهاض عند النساء الحوامل. كذلك لدراسة علاقة الاصابة القديمة بالاجهاض.

الطريقه والمواد: - لقد تم دراسة وجود الاجسام المضادة IgG و IgM عند 172 امرأة، بينهم 50 امرأة سليمة و 122 امرأة تعرضت للاجهاض، حيث تم فحص عينات المصل من خلال اجراء فحص ELISA.

النتائج: - لقد وجد ان 12 امرأة سليمة تحتوي على IgG ومن مجموع 122 امرأة تعرضت للاجهاض كانت 51 امرأة تمتلك الاجسام المضادة للطفيلي *Toxoplasma gondii* حيث كانت 25 امرأة مصابه تمتلك الاجسام المضادة IgG و 17 مصابه تمتلك الاجسام المضادة IgM و 9 مصابات تمتلك الاجسام المضادة IgG و IgM.

الاستنتاج: - من المعروف ان داء القطط هو مرض خطير خلال فترة الحمل، فقد اشارت لهذا نتائج البحث من خلال وجود الطفيلي المسبب لهذا المرض بين النساء الحوامل والذي يؤدي الى الاجهاض ، كذلك أن وجود الاجسام المضادة IgG والتي تعني اصابه قديمه وتؤدي هذه الاصابه الى الاجهاض ايضا.