

Seroepidemiological study of *Toxoplasma gondii* antibody among women in Tikrit city

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Abstract

One hundred women were included in this study which referred by the physicians clinics for the detection of antitoxoplasma antibodies. Venous blood was collected from them, and serum obtained for the performed of rapid latex agglutination test and qualitative detective of *Toxoplasma* IgM by using Mercaptoethanol test. A questionnaire form was filled for each women by direct interview. The data requested included age, occupation, residency, level of education, owing animals, marital status, history of abortion and numbers of abortion. Forty six (46%) women were displayed the presence of antitoxoplasma antibodies. Fifteen (32%) of the positive cases were positive for IgM antibodies. Significant association between the rate of total *Toxoplasma* antibodies and some epidemiological factors were included.

دراسة مصلية وبائية للأجسام المضادة لطفيلي *Toxoplasma gondii* بين النساء في مدينة تكريت

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المستخلص

اشتمل البحث على دراسة (100) حالة من النساء المراجعات إلى العيادات الطبية وذلك لغرض الفحص بوجود طفيلي *Toxoplasma*. وتم أخذ عينات من الدم الوريدي منهن ثم الحصول على المصل ومن ثم التحري عن المستضدات من نوع IgG باستخدام طريقة تلازن اللاتكس السريع (Rapid latex agglutination) وكذلك استخدام طريقة التعامل مع الميركايتوايثانول Mercaptoethanol للكشف عن المستضد من نوع IgM. استخدمت ورقة استبيان لغرض جمع معلومات تتعلق بالمرضى من المراجعات مثل العمر، السكن، مستوى الدراسة، المهنة، تربية الحيوانات، الحالة الزوجية، الإجهاض وعدد حالات الإجهاض. أظهرت (46%) من الحالات تفاعلاً إيجابياً للمستضد IgG عن طريق استخدام Rapid latex agglutination بينما أظهرت (32%) من الحالات الموجبة تفاعلاً إيجابياً للمستضد IgM الخاص بالطفيلي. كما أظهرت الدراسة أيضاً العلاقة بين وجود الطفيلي وبعض العوامل الديموغرافية الأخرى.

Introduction

Toxoplasmosis is an important zoonotic disease cause by infection with an obligate intracellular parasite *Toxoplasma gondii*.⁽¹⁾ Personal habits and exposure to cat feces are important in transmission.⁽²⁾ Prevalence varies from place to place for reasons that remain largely obscure.⁽³⁾ The difference is associated with diet, climate and cat contact, so that toxoplasmosis is most in warm, wet country where meat is eaten lightly cooked or raw.⁽⁴⁾ A number of studies on the prevalence of *T. gondii* have been conducted not only in Iraq⁽⁵⁻⁷⁾ but in some Arab countries and in various parts of the world.⁽⁸⁻¹²⁾ The aim of this study is to estimate the prevalence of toxoplasmosis among mature women in Tikrit city including non-married, married, non-pregnant and pregnant women by using rapid latex agglutination test and Mercaptoethanol test.

Materials and Methods

Blood samples were collected from (100) female patient attended private clinical lab in Tikrit city from 1st December to end of April 2007. A questionnaire form was filled for each women by direct interview. The data requested included age, occupation, residency (urban or rural area), educational level, contact with domestic animals, marital state, history

of abortion and number of abortions. Blood was collected by vein puncture allowed to clot at room temperature and the sera were separated by centrifuge at (3000) rpm for minute. Rapid latex agglutination test (LAT) on slide is used for qualitative and semi quantitative determination of toxoplasmosis. Qualitative detection of *Toxoplasma* IgM by using Mercaptoethanol method was detected.⁽¹³⁾ Chi-square test was used to test the significance of results.

Results

The age of women ranged from 15-45 years. The samples was unequally distributed into six groups (25% for less than 20 years, 20% for 20-24 years, 19% for 25-29 years, 23% for 30-34 years, 10% for 35-39, and 3% for 40 years and more). The selected epidemiological variables of the study are shown in **Table 1**, they include: age, occupation, residency, educational level, contact with domestic animals, marital status and history of abortion. The establishment of the seropositively in study sample was based on the positive latex agglutination test with a titer equal and more than (20 Iu/ml) for IgG and IgM antibodies and positive equal and more than (10 Iu/ml) *Toxoplasma* IgM used Mercaptoethanol method.

Table(1): Distribution of the study samples by selected variables

Variables	Numbers of positive case	%	
Age in years	< 20	25	25
	20-24	20	20
	25-29	19	19
	30-34	23	23
	35-39	10	10
	≥ 40	3	3
Occupation	Housewife	55	55
	Farmer	30	30
	Teacher	15	15
Residency	Urban	74	74
	Rural	26	26
Educational level	Illiterate	44	44
	Primary school	39	39
	Secondary school	12	12
	Higher school	5	5
Contact with domestic animals	Negative	67	67
	Positive	33	33
Marital status	Unmarried	45	45
	Married	55	55
History of abortion	Negative	63	63
	Positive	37	37
Total	100	100	

Table(2): shows that the women with positive total antibodies by LAT were (46) gives on overall percentage rate of (46%). The (46) positive sera samples by LAT antibodies were tested by Mercaptoethanol test for detection of IgM antibodies which shows that 15/45 (32%) of them were seropositive.

Table(2): also shows that there was a significant association between the rate of total *Toxoplasma* antibodies with age ($p<0.01$), occupation ($p<0.000$), contact with domestic animals ($p<0.000$), history of abortion of women ($p<0.000$), residency ($p<0.000$) and educational level ($p<0.007$).

Table(2): The rate of positive *Toxoplasma gondii* (IgG & IgM) latex test

Variables		Numbers of positive case	Positive with IgM	%	P value
Age in years	< 20	25	5	20	P<0.001
	20-24	20	7	35	
	25-29	19	10	52.63	
	30-34	23	13	56.52	
	35-39	10	10	100	
	≥ 40	3	1	33.33	
Occupation	Housewife	55	25	45.45	P<0.000
	Farmer	30	20	66.66	
	Teacher	15	1	6.66	
Residency	Urban	74	22	29.72	P<0.000
	Rural	26	24	92.30	
Educational level	Illiterate	44	20	45.45	P<0.007
	Primary school	39	24	61.53	
	Secondary school	12	2	16.66	
	Higher school	5	-	-	
Contact with domestic animals	Negative	67	20	29.85	P<0.000
	Positive	33	26	78.78	
Marital status	Unmarried	45	17	37.77	P<0.136
	Married	55	29	52.72	
History of abortion	Negative	63	38	60.31	P<0.000
	Positive	37	8	21.62	
Total		100	46		

Discussion

Serological tests for detection of specific antibodies in the patient's sera is the method of choice in the diagnosis.⁽¹²⁾ For this reason several studies were carried out all over the world for detecting seroprevalence of *Toxoplasma* antibodies among women. The present study showed that percentage rate of total *Toxoplasma* antibodies (IgG) by LAT was (46%) in Tikrit city. This is nearly similar to that reported previously in Iraq.^(14,15) The results are also comparable to those reported in the parts of the world includes Arabic countries.⁽¹⁶⁻¹⁸⁾ The discrepancy in the results of various studies may be attributed to socio economies status of the population chosen. The variability of the

techniques used for the measurement of antibodies may be contributed to the discrepancy of the results. The study showed the rate of IgM *Toxoplasma* antibodies was 15/46 (32%). This indicate that (32%) of the positive samples had recent infection. The present study revealed that the some selected socio demographic factors were significantly associated with seropositively of *Toxoplasma* antibodies, similar results were reported in Baghdad.^(3,6,7)

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