

## THE PERCENTAGE OF TOXOPLASMOSIS AMONG WOMEN

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### ABSTRACT

This study was carried out on 200 women attended the outpatient gynaecology clinic of AL-Sader hospital between October 2003 and May 2004 the study group included 81 women with habitual abortion and 119 normal pregnancy women who had no history of abortion the role of maternal toxoplasmosis as a risk factor for habitual abortion was investigated. The indirect haemagglutination test was positive in a titer of 1:32 to 1:2048 much more frequently in women with habitual abortion (18.5%) than in the normal pregnancy group (5.9%) The overall prevalence of antibodies gradually increased with age, reaching 23.7% in the age group 35-45 years. The differences were found among women in different socioeconomic groups The study suggests that toxoplasma antibodies are more prevalent in women with cats at home than in women who do not possess cats.

### INTRODUCTION

Toxoplasmosis is usually an asymptomatic disease, but often takes a severe course in fetuses and immunocompromised hosts. Toxoplasmosis is transmitted through oocysts shed in infected cats faeces and is also transmitted by consumption of contaminated unwashed/unpeeled vegetables, fruits, unpasteurised milk and raw or undercooked infected meat(1).

Acute Toxoplasma infection in pregnancy is usually sub clinical and the diagnosis is by serology(1). Vertical transmission to the foetus occurs by transplacental transfer of organisms from the mother usually following acute maternal infection (2).

The prevalence of toxoplasmosis in women with bad obstetric history is known to be significantly higher than those without it (2).

A recent study A recent studies have reported seropositive rise to Toxoplasma in women with bad obstetric history (3,4,5,6,7,8,9).

Habitual abortion is one of the most distressing problems in obstetrics, particularly in those who have no successful pregnancies (1) It is generally defined as three or more consecutive spontaneous abortions, which has been associated with maternal transmission of Toxoplasma gondii to the fetus

(2). Controversial reports have appeared regarding its role in habitual and sporadic abortion(3,4,5). Habitual abortion affected about 10% of pregnant women attending antenatal health care centers in Measan in 2002.

Therefore, The aim of this study was to determine the prevalence of toxoplasma antibodies in a group of women with habitual abortion and we report the association with socioeconomic status and seropositivity to Toxoplasma in women with bad obstetric history belonging to different socioeconomic groups.

### MATERIAL AND METHODS

This case control study was carried out on 200 women attending the outpatient gynaecology clinic of AL-Sader Hospital between October 2003 and May 2004. The study group included 81 women with habitual abortion and 119 normal pregnancy women who had no history of abortion. Their ages ranged from 15 to 45 years. Clinical examination and laboratory investigations were carried out for those with

habitual abortion in order to exclude other causes of fetal wastage such as malformation of the genital tract, diabetes mellitus, renal disease or Phesus incompatibility . All the women examined were interviewed to ascertain sociodemographic, medical and obstetric information. Serum samples. Sera was separated by blood centrifugation at 3000 rpm for 5 minutes. Serological tests Toxo-H A test (SAS), which is an indirect haemagglutination test (IHAT) for the detection of toxoplasma antibodies (IgG and/or IgM), was based on the work of Jacobs and Lunde (6) and Karim and Ludlam (7) The titre which was considered significant was 1: 32 Statistical analysis The chi-square ( $\chi^2$ ) test or, where appropriate, Student t-test were used as a test of significance Differences were recorded as significant whenever the probability (p) was less than 0.05.

## RESULTS

The major characteristics of the habitual abortion group and the normal pregnancy group are compared in Table —1-.66 Out of 81 patients with habitual abortion, (81.5%) had a positive antibody titre. Among the normal pregnancy group, 7 out of 119 women (5.9%) had a - positive antibody titre Table-2-. The difference is statistically highly significant ( $p < 0.01$ ). The risk of developing habitual abortion among women who were seropositive was 3.6 times the risk of developing habitual abortion among women who were seronegative. The distribution of toxoplasma antibody titres is illustrated in Table-3-. Analysis of toxoplasma antibody prevalence in relation to abortion history at presentation revealed that the prevalence rate increased with a greater number of previous abortions. Women with five or more abortions had the highest prevalence rate of toxoplasma antibodies. However, the difference was statistically not significant Table (-4- ).

The seropositivity to *T. gondii* significantly increased with age and socioeconomic status A statistically significant difference in the prevalence of toxoplasma antibodies was found between women living in homes with cats (15. 3%) and those without (5. 6%) (Table-5-) The risk of developing antibodies among women exposed to cats was three times higher than that among those who were not exposed.

Table -1- characteristics of women included in the study

<i>characteristics</i>	<i>habitual abortion group</i>		<i>normal pregnancy</i>	
	<i>mean ± s No.</i>	<i>%</i>	<i>mean ± s No.</i>	<i>%</i>
	29 ± 7.9		27 ± 6.9	
<i>1- Age (years)</i>				
15-24	29	36	51	43
25-34	30	37	52	44
35-45	22	27	16	14

<b>2- Socioeconomic status</b>				
<i>low</i>	55	68	93	78
<i>moderate</i>	16	20	17	14
<i>high</i>	10	12	9	8
<i>total</i>	81	100	119	100
<i>t</i> = 1.85 ; <i>p</i> > 0.05		<i>S</i> = standard deviation		

**Table -2-** results of toxo - HA test for toxoplasmosis in different groups of subjects

<i>Toxo - Ha test</i>	<i>habitual abortion group</i>		<i>normal pregnancy</i>		<i>group</i>
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	
<i>serpositive</i>	66	81.5	7	5.9	
<i>sernegative</i>	15	18.5	112	94.1	
<i>total</i>	81	100.0	119	100.0	
<i>a</i> titers 1:32 $\chi^2 = 7.6 ; p < 0.01$ ( <i>odds ratio</i> = 3.6 ; 95% <i>confidence interval</i> 0.33-2.23)					

**Table -3-** Distribution of toxoplasma antibody titers among serpositive women

<i>Titers of Toxo -Ha test</i>	<i>Habitual abortion</i>		<i>Normal pregnancy</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
1:32	3	20.0	4	57.1
1:128	4	26.7	2	28.6
1: 512	4	26.7	1	14.3
1: 2048	4	26.7	0	0
<b>Total</b>	15	100.0	7	100.0

**Table -4-** frequency of toxoplasma antibodies in relation to history of previous abortion

No. of previous abortion	No. tested	positive <sup>a</sup>		negative	
		No.	%	No.	%
<i>none</i>	119	7	5.9	112	94.1
3	52	9	17.3	43	82.7
4	16	3	18.8	13	81.3
>5	13	3	23.1	10	76.9
a titers of toxo -HA 1:32		$\chi^2 = 7.05$ ; $p > 0.05$			

**Table -5-** prevalence of toxoplasma antibodies in relation to the presence of cats at home

Toxoplasma antibodies	cat present		cat absent		total	
	No.	%	No.	%	No.	%
<i>present</i>	17	15.3	5	5.6	22	11.0
<i>absent</i>	94	84.7	84	94.4	178	89.0
Total	111	100	89	100	200	100
$\chi^2 = 4.82$ $p < 0.05$ ( odds ratio = 3.04 ; 95 % confidence interval 0.07 - 2.15						

## DISCUSSION

Toxoplasmosis commonly occurs in adults, usually in a mild or asymptomatic form. Therefore, the method of choice in the diagnosis is by the detection of specific antibodies in the patient's serum (8,9). The serological data of this study indicated that there was association between toxoplasma infection and habitual abortion. Similar observations have also been made by Langer (10) and Hingorani et al. (11). These findings are not in agreement with other studies which failed to confirm this association (3,12,13).

In the present study, patients with habitual abortion had higher antibody titres than did the group of normal pregnancy. This finding is supported by Jones et al. (14) who reported that a significantly greater incidence of abortion occurred in patients with high antibody titres. Although there is a positive serological test for this organism in women with no history of habitual abortion, the connection of serological evidence and isolation of *T. gondii* from the endometrium, placenta or the products of conception is essential. Nevertheless, serological tests before and during pregnancy or for specific IgM

would also confirm the diagnosis.

Regarding the previous history of abortion, there has been a suggestion that

T.gondii is an etiological factor of abortion, particularly where fetal losses were greater than three (11). The present study showed that the rate of seropositivity to T.gondii among women who had cats in the house was significantly higher (15.3%) than those without such contact (5.6%).

This finding is in accordance with those reported by other workers (15,16,17). The risk of developing toxoplasmosis among those who had cats was three times greater than those not living with cats.

This study shows a high prevalence of Toxoplasma infection in women, and an association with socio-economic status. While women of higher economic status were serosusceptible and therefore at risk of primary infection, women of low income group could be at risk of repeated infections attributable to the unhygienic environment in which they reside. This observation assumes significance in view of some studies reporting congenital infection due to reinfection although rare (18). (19) report spontaneous abortion in a woman with previous immunity to Toxoplasma.

with the aborted tissue revealing one typical cyst of T.gondii. The authors suggest the possibility of parasitaemia occurring during T.gondii reinfection, leading to transmission to the fetus and miscarriage. To the best of our knowledge, this work is the first attempt in MEASAN to provide information on the frequency of antibody titres among pregnant women, and to investigate the possible role of T.gondii infection in habitual abortion. The connection between serological evidence and the isolation of

T.gondii from infected tissue is essential for confirmation. Regular serological screening before pregnancy or very early in pregnancy will help to reduce the Toxoplasmosis infection. However, there is a need for further in-depth studies to understand infection.

### نسبة الإصابة بداء المقوسات لدى النساء علي خلف السوداني، طلال حسين صالح

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#### الخلاصة

أجريت هذه الدراسة على ٢٠٠ امرأة حضرت إلى عيادة الأمراض التناسلية في مستشفى الصدر في ميسان في الفترة ما بين تشرين الأول لعام ٢٠٠٣ لغاية أيار ٢٠٠٤. تضمنت مجاميع الدراسة ٨١ امرأة تعاني من الإجهاض المتكرر و ١١٩ امرأة ذات حمل طبيعي لم يسبق لها الإجهاض وقد تم النقصي عن دور إصابة الأم بالمقوسات كعامل لحدوث الإجهاض المتكرر. لقد كان اختبار التلازن غير المباشر موجبا في معيار ١:٣٢ إلى ١:٤٨. وكان أكثر تكرارا في النساء ذات الإجهاض المتكرر (١٨,٥%) من مجموعة النساء ذات الحمل الطبيعي (٥,٩%). وعموما فقد ازداد انتشار الأجسام المضادة تدريجيا مع زيادة العمر حتى وصلت ٢٣,٧% في عمر ٣٥-٤٥ سنة وقد وجد الاختلاف في مجاميع النساء حسب التفاوت الاجتماعي - الاقتصادي. وتقترح هذه الدراسة بان الأجسام المضادة للمقوسات أكثر انتشارا في النساء اللاتي يمتلكن قسط في بيوتهن من النساء اللاتي لا يمتلكن القسط.

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