

Research Article



## Demographical Study of Aborted Women Infected with Toxoplasmosis in Basra Province

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### KEY WORDS:

Abortion  
Smoking  
Family history

### Abstract:

Toxoplasmosis is one of the main causes of miscarriage in pregnant women. This research is a case-control study on 166 serum samples from seropositive and negative aborted women and healthy control (women who have a normal delivery with, no history of abortion). The total number of 166 serum samples (75 seropositive, 45 seronegative and 46 control), aged between 17-42 years who visited Basra Hospital for women and Children in Basra Province during the period between November 2022-May 2023. All patients information were involved in the study were recorded in questionnaire form included age, residency, smoking, family history, animals in house, abortion time and birthing time. The results show there is significant difference ( $P=0.03$ ) between positive aborted women and others group and high significant in family history.

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### INTRODUCTION

Toxoplasmosis, is a parasitic disease caused by *Toxoplasma gondii*, an apicomplexan. Infections with toxoplasmosis usually cause no obvious symptoms in adults. Occasionally, people may have a few weeks or months of mild, flu-like illness such as muscle aches and tender lymph nodes (Robert-Gangneux and Darde<sup>[1]</sup>). Toxoplasmosis is usually spread by eating poorly cooked food that contains cysts, exposure to infected cat feces, and from an infected mother to her baby during pregnancy. Rarely, the disease may be spread by blood

transfusion. It is not otherwise spread between people. The parasite is known to reproduce sexually only in the cat family. However, it can infect most types of warm-blooded animals, including humans.

Reviews of serological studies have estimated that 30-50% of the global population has been exposed to and may be chronically infected with latent toxoplasmosis, although infection rates differ significantly from country to country. This latent state of infection has recently been associated with numerous disease burdens. While rare, skin lesions may occur in the acquired form of the

disease, including roseola and erythema multiforme-like eruptions, urticaria and maculopapular lesions. Newborns may have punctate macules, ecchymoses, or blueberry muffin lesions. Diagnosis of cutaneous toxoplasmosis is based on the tachyzoite form of *T. gondii* being found in the epidermis. It is found in all levels of the epidermis, is about 6 by 2  $\mu\text{m}$  and bow-shaped, with the nucleus being one-third of its size. It can be identified by electron microscopy or by Giemsa staining tissue where the cytoplasm shows blue, the nucleus red (Rahimkhani<sup>[2]</sup>).

The present study aim to determine the demographic factors (smoking, family history, presence of animals, and residency).

## MATERIAL AND METHODS

The study was conducted on 166 women (120 aborted women and 46 healthy control women) aged between 17-42 years who visited Basra Hospital for Women and Children in Basra Province during the period between November 2022-May 2023. All patients information were involved in the study were recorded in questionnaire form included age, residency, smoking, family history and animals in house.

## RESULTS AND DISCUSSIONS

**The LAT Agglutination Test:** Blood samples that used to examined the toxoplasmosis in aborted women in the current study show positive results 75 (62.5%) out of 120 aborted women and related with age groups comparison between positive and negative results and control were shown in the table (1). The high positive rate (38.7%) was shown in age group (23-28) year than other groups.

**Comparison Between Aborted Women (Positive, Negative) and Control With Smoking Habit:** Table (2) show the positive toxoplasmosis of aborted women have high rate (8%) with significant difference ( $P = 0.03$ ) than other groups.

**Comparison Between Aborted Women (Positive, Negative) and Control With Family History:** The aborted women that have positive results with toxoplasmosis have high rate (33.3%) with significant difference ( $P = 0.0001$ ) than other groups due to family history that infected with toxoplasmosis as show in (Table 3).

**Comparison Between Aborted Women (Positive, Negative) and Control With Family History:** There were no any effect in current study appeared that the effect of

the occurrences of the animals in house and it relation it with cause miscarriage or infected with toxoplasmosis due to the information that collected from their women's as shown in (Table 4).

**The Distribution of Positive Cases According to the Region of Basra:** The high positive rates 29(38.6%) of aborted women with toxoplasmosis were shown in Al-Maql region while the lowest rate 1 (1.3%) were seen in Al- Zubeer and Al-Hartha region, on other hand the rate 17 (22.6%) is shown in the Border of Basra (Table 5).

*Toxoplasma gondii* is a ubiquitous zoonotic parasite with an obligatory intracellular lifestyle. It relies on a specialized set of cytoskeletal and secretory organelles for host cell invasion. The intracellular protozoan infection *T. gondii* causes a strong and enduring immune response. Even while the immune response is very strong, it is insufficient to get rid of the parasite. Instead, a balance is reached where the parasite and host maintain an equilibrium that can endure throughout the host's lifetime. The immune system is affected by *T. gondii* in both inductive and suppressive ways.

A case control study was carried on a total of positive aborted women (75), forty-five were negative and forty-six regarded as healthy control group were studied. Most of the positive aborted cases were in age group (23-28) years (38.7%) and the lowest in age group more than forty (3%) with significant differences, while there were high rate (62.5%) of positive aborted women infected with toxoplasmosis compare with 120 aborted cases. This result may be due to that pregnant women more susceptible to infectious with *T. gondii*. Similar results were recorded by (Al-Cloud<sup>[3]</sup>, Al-Kalaby<sup>[4]</sup> Al-Ddory<sup>[5]</sup> and Nasser<sup>[6]</sup>) in Al- Qadis, Al-Najaf, Kirkuk and Thi-Qar. The prevalence of this disease is differs between different countries (from ten to 80%), these different may be between divers communities in the similar region (Pappas<sup>[7]</sup>).

The high rate finding in seroprvalence in age group (23-28) in the current study these finding agreement with which find the rate in age group (25-30) in Iran and Al-Taei, (2015) reported the high rate in age group (28-37) these results may be depended on food and hygiene habit in addition to education and economic status.

The present study assessed the relation between *T. gondii* infection and smoking habit. From the 75 positive aborted women the rate of smoker women was 6 (8%) compared with another groups, the results showed significant difference ( $P = 0.03$ ) between these groups (smokers and nonsmoker). This results agreement with other studies and The tobacco regularly increases

**Table 1: Comparison aborted women between positive, negative and control with different ages.**

Age groups(years)	+ve aborted women		-ve aborted women		control		Total	*P- value	
	No.	%	No.	%	No.	%			
17-22	15	20	12	26.7	5	10.9	32	19.3	0.218
23-28	29	38.7	12	26.7	15	32.6	56	33.7	
29-34	25	33.3	13	28.9	15	32.6	53	31.9	
35-39	5	6.7	5	11.1	8	17.4	18	10.8	
40	1	1.3	3	6.7	3	6.5	7	4.2	
Total	75		45		46		166		

\* Fisher's Exact Test, control: apparently healthy

**Table 2: Comparison between aborted women (positive, negative) and control with smoking habit**

		Toxoplasmosis			Total	P-value*
		+ve	-ve	Control		
Smoking	Yes	6	0	0	6	0.031
	No	69	45	46	160	
Total		75	45	46	166	
		100.0%	100.0%	100.0%	100.0%	

\* Fisher's Exact Test, +ve toxoplasmosis with abortion, -ve abortion with out toxoplasmosis

**Table 3: Comparison between aborted women (positive, negative) and control with family history**

		Toxoplasmosis			Total	P-value*
		+ve	-ve	Control		
Family History	Yes	25	7	0	32	0.0001
	No	50	38	46	134	
Total		75	45	46	166	
		100.0%	100.0%	100.0%	100.0%	

\* Fisher's Exact Test

**Table 4: Comparison between aborted women (positive, negative) and control to the animals in house**

		Toxoplasmosis			Total	P-value*
		+ve	-ve	Control		
Animals in house	Yes	11	8	12	31	0.289
	No	64	37	34	135	
Total		75	45	46	166	
		100.0%	100.0%	100.0%	100.0%	

\* Fisher's Exact Test

**Table 5: The seropositive results of aborted women according to region of Basra**

region	No.	Percentage
Al-Andalus	16	21.3
Al- Maquel	29	38.6
Al-Hussein region	5	6.6
Basrah center	8	10.6
Abu-Alqaseeb	5	6.6
Al-Zubair	1	1.3
Al-Hartha	1	1.3
Shatt Al-Arab	10	13.3
Total	75	

addiction on them by changing the level of neurotransmitters, mainly by rising dopamine in the brain. especially, when *T. gondii* encysts in different parts of the brain, may be causes the dopamine released.

It is possible that smoking users may acquire *T. gondii* infestation by handling the parasite from the cigarette to the mouth during smoking, without washing hands before smoking and then touch the lips that increase possibility of infection and so that sharing the

cigarettes through people increasing the risk.

There is hypothesis that increase infectious agents, like *T. gondii*, herpes virus and influenza, may have important role as aetiological in some behavioural disorders. The greatest extensive work has done into investigating the relation between this agents and *T. gondii* (Fekadu<sup>[8]</sup>). The present study show that 25(33.3%) out of 75 positive aborted women have miscarriage in our family with significant differences (P<0.05) when compared with other groups. The definitive host of *T.*

gondii is any felines, so the oocytes may contaminate the environment among the excretion. The parasite, infected humans by direct contact to cat faeces, ingestion of uncooked, contaminated meat and foods, or congenital transmission. The present study revealed that the rate of animals in house was 14.7% in positive aborted women compared with the rate of negative aborted women or the control group (17.8% and 26.1%) respectively, these differ in the rate depended on the information which collected from their women included in the study. This results non agreement with Foroutan-Rad<sup>[9]</sup> which showed that there is significant differences between toxoplasmosis and contact with cat.

### CONCLUSION

Similar study that done by (Lopes<sup>[10]</sup>) show the direct contact with cats, seems to be a risk factor for infestation. A multicentre case-control study, showed in Europe similarly failed to recognize the cats as a risk reason for toxoplasmosis in women through pregnancy.

The fluctuated of positive aborted women infected with toxoplasmosis between the region of Basrah province, which shown high rate 29(38.6%) in Al-Maquel region and the lowest cases in Al-Zubair and Al-Hartha (1.3%) May be depended on the population density and food habit, this result was agree with (Ali<sup>[11]</sup>) studies which found the high rate of cases in center of Thi-Qar province. Another studies revealed there is no any correlation between the region and the prevalence of toxoplasmosis and Al-Addlan<sup>[12]</sup>).

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