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Toxoplasmosis and risk factors within pregnant woman of Basrah city

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Abstract

Toxoplasma gondii is of great concern in public health because it affects a lot of people in the globe. However, in the clinical setting, it rarely causes serious disease. The currents study was performed in Basra province to estimate the prevalence of toxoplasmosis and its risk factors. Blood sample were collected from 50 women of Basra in 2020. The participants were aged between seventeen to forty years. The samples were analyzed if they had anti-*T. gondii* IgM and IgG antibodies that would show evidence of *T.gondii* infection. The result showed the majority of participants were aged between 25 and 30 years. Among the 50 participants 15 who are about 30% tested positive for *T. gondii* IgM which is consider as recent infection while, 35 of them with positive IgG antibodies was detect as a past infection. This study also showed that abortive women and had percentage (30%) of toxoplasmosis among those of larger than 30 years old and the lowest was among those who have the average of age (20 to 25) years old.

Toxoplasmosis is among the most famous parasitic zoonosis in the globe. In method the blood samples were collected in clean container without anticoagulant, Centerfugate at 2500 RBM for five minutes and then tested for anti-*Toxoplasma* IgG & IgM antibodies, using (ELISA) kit. The result showed the majority of participants were aged between 25 and 30 years. In conclusion this study were showed that rural area acquired high percentage while urban area acquired the lowest.

Keywords

Antibodies, IgM, IgG Antibodies, Toxoplasmosis, abortive, pregnant woman.

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1. Introduction

Toxoplasmosis is among the most famous parasitic zoonosis in the globe; it is due to apicomplexan protozoan *Toxoplasma gondii* [1]. The definitive hosts for the parasite are cats; the warm-blooded creature is it intermediate host. It happens in three kinds, which are bradyzoites sporozoites and tachyzoites [2]. The parasite is found in the lungs, brain, at most of the times in the lymph nodes and the heart [3,4]. The sickness influences about 33% of the worldwide populace[5]. it is an opportunistic parasitic disease that effect people whose immune system is deficiency[6]. It found that childbearing age ladies and women who is pregnant have a high rate of infection with the disease[7]. The disease is wide, and variety relies upon social and cultural mores, geographic components, and mode of transmission. The pervasiveness of the disease is more in warm and humid areas,[8] which is caused by an obligate intracellular protozoan parasite. Individuals can be infected after ingestion of raw or undercooked meat, by ingestion of oocysts shed from cat in the taint soil, water or food; or by trans-placental transmission of tachyzoites[9,10]. Women infected with *T. gondii* at the pregnancy can result in neonatal death or different inborn imperfections, like nervous, sensory system anomalies, hydrocephalus, and chorioretinitis [11]. Toxoplasmosis can be asymptomatic (no clinical symptoms) or can have more severe consequences such as congenital birth defects, eye disease, or potentially fatal toxoplasmic encephalitis in immune compromised individuals [12]. Around one third of human population is estimated to carry toxoplasma

Classification of the parasite

Kingdom: Alveolata
Phylum: Apicomplexa
Class: Coccidia
Order: Eucoccidiorida
Family: Sarcocystidae
Genes and species :*Toxoplasma gondii* [13]

2. Methods

The survey includes-different-in-Basrah during the period from 1/12/2020. To 1/3/2021.

samples collection

Blood samples collected in clean container without anticoagulant and alow it to clot by leaving it at room temperature two hours. Centerfuge at 2500 RBM for five minutes . Two layers formed remove the serum by pasteure pipette and in stored clean tubes at−20°C. This frozen serum was then tested for anti-*Toxoplasma* IgG & IgM antibodies, using linked Immunosorbent Assays (ELISA) kit (Rapid Labs, United Kingdom).

3. Results

A total of 50 female understudies going to college amidst of 17 and 40 years old. A majority of the participants were aged between 25 and 30 years; they were 17 accounting for 34%. That appear in table (1), about 56% of the study populations lived in rural areas and 44% who is lived in urban area.

Table 1- Characteristics features of study participants.

Variable	Category	Number	(%)
Age years	> 20	5/50	10%
	20–25	12/50	24%
	25–30	17/50	34%
	<30	16/50	32%
Place of residence	Rural	28/50	56%
	Urban	22/50	44%

Table 2- Seropositivity of anti-Toxoplasma IgM and IgG in relation to participant ages in Basra

Number of women tested						
	Positive		Negative		Total	
	No.	%	No.	%	No.	%
IgM	15	30%	35	70%	50	100%
IgG	35	70%	15	30%	50	100%
IgM & IgG	15	30%	35	70%	50	100%

This table shows that 15 of the participants had positive T. gondii– IgM antibodies which show acute infection and 35 (%) of them had a positive T. gondii-specific IgG antibodies which indicate previous infection. While 15 of samples had both acute and chronic infection which is indicated by the presence positive of both IgM and IgG antibodies.

Table 3: Age group distribution in examined samples.

	Abortive women	pregnant women	Non- pregnant women

Age	No.	%	No.	%	No.	%
> 20	3	6%	0		0	
20–25	1	2%	10	20%	1	2%
25–30	5	10%	15	30%	1	2%
<30	6	12%	10	20%	2	4%
total	15	30%	35	70%	4	8%

The most frequent age group for abortive women and Non- pregnant women was among those of <30 years old and it represents 12% and 4% of the total number of each group, respectively.

4. Discussion

Toxoplasmosis is a curable but potentially deadly sickness [14]. The parasite have the ability to crosses the blood–brain barrier and establishes persistent infection in a drug-resistant bradyzoite stage [15]. From the past, has been consider to be one of the most common parasitic disease of human and other blood warm animals [16]. In this research, we want to detect recent or past infection, by using antibodies against *Toxoplasma gondii* in the serum of females of Basra city. In view of previous study done in Iraq which indicated that type II strains often associated with human toxoplasmosis and dominant among Iraqi female[17]. and this results was going well with the results of studies in other countries [18,19].

Most investigations led on the seroprevalence of toxoplasmosis are centered around childbearing age, pregnant ladies and immunodeficient patients [20,21]. Moreover, the seroprevalence rate of *T. gondii* IgG in the Basra pregnant women has been reported to be 43.07% [22] . In the present investigation, among 50 female, 30% were seropositive for *Toxoplasma* IgM, and 70% seropositive for *Toxoplasma* IgG which are equal to the seroprevalence already found in different nations in or close to the Middle East, including Yemen (45.4%), Jordan (47.1%), Iran (75.7%), and Ethiopia (85.4%) [23,25,26]. A new systematic review of studies detection seroepidemiolog and *T. gondii* increased with age [27,28]. as shown in this study we found that age larger than 30 years acquired the highest percentage of abortion 12%, which was similar to the results reported in [29]. [30] also reported that seroprevalence increases with age, as reported in studies conducted in various countries. Women who may get infection during pregnancy may show a variety of clinical signs and symptoms depend on many factors, such as the number of parasites, virulence of strain, and the time period the mother acquires infection [31]. If the mother is infected in the first trimester, the result is abortion, stillbirth or severe disease of fetus [32]. In pregnant women, the primary infection of T. gondii may cause abortion, neonatal malformation, neonatal death, or severe congenital

deficiency, such as mental retardation, retinochoroiditis, and blindness [33]. In addition, toxoplasmosis is one of the main causes of fetal abortion, stillbirth, and neonatal mortality in domestic animals, resulting in significant economic loss in the farming industry [34]. In this study we also showed that rural area acquired high percentage while urban area acquired the lowest, this may due to the larger population. in conclusion Toxoplasmosis is among the most famous parasitic zoonosis in the globe. In method the blood samples were collected in clean container without anticoagulant, Centerfugate at 2500 RBM for five minutes and then tested for anti-*Toxoplasma* IgG & IgM antibodies, using (ELISA) kit. The result showed the majority of participants were aged between 25 and 30 years, This study also showed that abortive women had percentage (30%) of toxoplasmosis among those of larger than 30 years old and the lowest was among those who have the average of age (20 to 25) years old. In conclusion this study were showed that rural area acquired high percentage while urban area acquired the lowest.

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