

ANTIGEN REACTION IN DETECTION OF *TOXOPLASMA GONDII* ANTIBODIES IN THE SERUM OF PREGNANT WOMEN HOUSEHOLD PETS IN BAQUBA SECTOR

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ABSTRACT : This study was aimed to detect the presence of antibodies of *Toxoplasma gondii* parasite in pregnant women in Baquba sector in order to determine the rate of infection and the risk, when they are dealing with the cats around or in their houses. This study was conducted in a period between March 2019 to September 2019 on a sixty pregnant women. The rate of infection with *T. gondii* in pregnant women was 4.2% (7 from 60) and 31.8% (53 from 60) were free from infection.

Key words : Pregnant women, *Toxoplasma gondii*, pets diseases.

INTRODUCTION

Toxoplasma gondii is one-celled eukaryote microorganism, obligate intracellular that causes toxoplasmosis and consider as infectious disease (Dardé *et al*, 2011). All warm-blooded animals considered as at the high risk of infection with *T. gondii* virtually, but the domestic cats known as definitive hosts in which the parasite may undergo sexual reproduction (Knoll *et al*, 2019; Aguirre *et al*, 2019). It is postulated that *T. gondii* originated in South American felids with relatively recent expansion through migratory birds and in particular the transatlantic slave trade that promoted migration of domestic cats, rats and mice (Lehmann *et al*, 2006). In humans, *T. gondii* is one of the most common parasites in developed countries (Flegr *et al*, 2014). For example, previous estimates have shown the highest prevalence of persons infected to be in France, at 84% (Berdoy *et al*, 2000). This asymptomatic state of infection is referred to as a latent infection and has recently been associated with numerous subtle adverse or pathological behavioral alterations in humans. Though, it has been shown recently that the association between behavioral changes and infection with *T. gondii* is weak. In infants, HIV/AIDS patients and others with weakened immunity, infection may cause a serious and occasionally fatal illness, toxoplasmosis (Karen *et al*, 2016).

The risk factors for human and animal infection

include consuming infected raw or undercooked meat, ingestion of contaminated with oocysts shed infection; blood transfusion or organ transplants; intrauterine or transplacental transmission and drinking infected unpasteurized milk (Monoz-Zanzi *et al*, 2010). Frenkel *et al* (2003) were refer to the dogs fur considered as source of oocytes result in *T. gondii* infection.

MATERIALS AND METHODS

Samples collection

Sixty samples of blood (5mls) had been taken from the sixty pregnant women whom treated in the consultant center for obstetrics and gynecology in Al-Batool hospital in Baquba. The ages of all members of this study between 15-45 years. The collected blood samples were kept in gel tubes then, serum was separated and conserved at (-20°C) in the freezer till used.

Test principle

Direct Agglutination Test (DAT) for diagnosis of infected from uninfected. Toxoplasmosis Latex (KIT) which carry *Toxoplasma gondii* antigen treated with formalin, which can agglutinate the *Toxoplasma* antibodies which are present in the serum of infected women. The kit is produced by AVMA USA company, which is contain suspension of latex granules covered by *T. gondii* antigen with 0.1% sodiumazide as a preservative material. Positive control from human serum with 0.1%

sodiumazide as a preservative material. Negative control from human serum with 0.1% sodiumazide as a preservative material. Test cards. One drop of the serum and antigen were mixed on the test card for minutes then, examined grossly and by using the microscopic power X 40 to see the antigen – antibody reaction (Gray *et al*, 1990).

RESULTS

Sixty blood samples had been taken from sixty pregnant women in the mid stage and late stage of gestation to determine the infected women and whom carrier to *T. gondii*.

The results in Table 1 are revealed the number of infected women with *T. gondii* reach to 7 at a rate 4.2% and 53 were free from infection at a rate 31.8% and their ages between 25 to 35 years.

The results in Table 2 revealed the occupation of the infected women with *T. gondii* so, the 5 infected women are home misses from a rural region at a rate of 3% and, another one is a teacher from urban region at a rate of 1.2%.

Table 1 : The number of pregnant women included in this study and the number of positive and negative results of the Direct Agglutination test.

Total number of pregnant women	Positive to DAT	Negative to DAT	Stage of the age mostly affected
60	7	53	25-35

Table 2 : The occupation of the infected women.

Total number of infected women	Occupation
7	5 home misses 2 teacher

DISCUSSION

Toxoplasmosis, if it is either acute or chronic and can cause active infection at each ages (Boyer *et al*, 2011; Delair *et al*, 2011). In the USA, an estimated 1.1 million people are infected with *T. gondii* each year, and approximately (10.4%) of the population (Jones and Holland, 2010; Jones *et al*, 2018). Serological studies estimate that 30–50% of the global population has been exposed to and may be chronically infected with *T. gondii*, although infection rates differ significantly from country to country (Flegr *et al*, 2014). Our study approximately come with agree with previous studies were done in Vietnam and European seroprevalence, within approximate range of 10-50% in pregnant women.

Previous study was done by Almasian *et al* (2014) reported high seroprevalence rate ranged from 29.8-83.1%. Other study was done by Xiao *et al* (2010) refer to the seroprevalence rate in China reach to 12.3%.

Previous study was done in Yemen refer to (20.43%) rate of seroprevalence of *T. gondii* antibodies (AL-Shaibani *et al*, 2018).

In Yemen Al-Nahari and Al-Tamimi (2010) and Saif *et al* (2014) reported lower rate than other researchers and in different part of the world (Mahdi *et al*, 2008; in Qatar; Xiao *et al*, 2010 in China; Hassanain *et al*, 2013). in Egypt reported the seroprevalence rates of antibodies between 11.88-60%, 1.5-19.6% and 3.5-22.6%, respectively.

The lower rate of our study may be due to that cats live in the home but did not in a direct contact with pregnant women as in other countries as America, China, Qatar and Yamen.

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