



DIAGNOSIS OF *TOXOPLASMA GONDII* IN PREGNANT WOMEN AT BAGHDAD PROVINCE

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ABSTRACT

Toxoplasma gondii is an obligate intracellular coccidian protozoan parasite. A total of 96 aborted women attended to Eben AL Baldly Teaching Hospital and public health centers at Baghdad province, Iraq during the period from October 2016 to March 2017 were examined. Their ages were ranged from (15-47) years old. Blood and placenta samples were collected, blood separate into two part serum and tested by Enzyme Linked Immune Sorbent Assay (ELISA). The results showed that (81) samples were positive for *T.gondii* and 15 sample were negative. The highest rate of infection (85.71%) was recorded in age group (15-25) years and the higher rate of abortion in patients with single abortion sample (46.9%) than multiple abortion. The present study aimed to determine the prevalence of the parasite that causes toxoplasmosis and its relationship with some biological variables.

KEYWORDS: *T.gondii*, Pregnant women, ELISA.

INTRODUCTION

Toxoplasma gondii is an obligate intracellular coccidian protozoan parasite it is an opportunistic single celled parasite.^[1] It is one of the most common parasites that infect man and other warm-blooded animals it has been found world-wide Nearly one-third of human kind has been exposed to this parasite In most adults it does not cause serious sickness, but it can cause blindness and mental retardation in congenitally infected children and destructive disease in impaired immune system individuals.^[2] Acute infections are generally subclinical and asymptomatic in healthy individuals or cause flu-like symptoms, but may lead to chronic infection. As a result the reactivation of a latent infection can be fatal this parasite has a noted tendency to localize in the brain and eye, which leads to the formation of cysts in related target organs.^[3] Infect wide range of well involved creatures, including cats, livestock, and human beings. In its life cycle felines and other felids are the definitive hosts and the other warm- blooded vertebrates are intermediate hosts. Humans may get infection with *T. gondii* by eating food or drinking water contaminated with oocysts shed by cats or by ingesting undercooked or raw meat containing tissue cysts from sheep, goats, or other animals that have obtain infection from cats.^[4] *T.gondii* has three infectious stages: tachyzoites,bradyzoites In(tissue cysts) and the sporozoites (in oocyst).^[5] Prepatent period (time to shedding of oocysts after primary infection) varies with the stage of *T. gondii* ingested by the cat. The prepatent

period after ingesting bradyzoites is short (3–10 days) while it is long (18 days or longer) after ingesting oocysts or tachyzoites.^[6] The early infection of gestating does with *T. gondii* usually results in abortion; other manifestations include early embryonic death, stillbirth, neonatal death, and birth of viable congenitally infected kids, depending on the phase of incubation when the infection occurred Periodically, fatalities happen in adult does, due to encephalitis, nephritis, hepatitis, necrotizing gastritis, enteritis, and cystitis.^[7] Human infection may occur either by the congenital or acquired routs. (congenital toxoplasmosis) is An alternative source of infection it is placental transmission of *T. gondii* from an acutely infected mother to her unborn fetus, Congenital toxoplasmosis may cause abortion and serious damage to fetus, with severe neurological disorders and therefore an accurate diagnosis of toxoplasmosis during pregnancy and early treatment is essential. It is caused by infective stage tachyzoites when pass across placenta to the fetus,while acquired infection results from ingestion of food, soil, or water contaminated with Oocysts.^[8] The diagnosis of toxoplasmosis is routinely based on serological tests for the presence of immunoglobulin IgM and IgG-specific antibodies to *Toxoplasma*, histologic demonstration of the parasite and or its antigens and molecular method as polymerase chain reaction (PCR).^[8,9]

MATERIALS AND METHODS

Study Subject

This study was carried out on 96 aborted or pregnant Iraqi women with age group ranged between (15-47) years. Samples collected from women attended to Eben AL Balady Teaching Hospital and public health centers in a period between October 2016 to March 2017. Data sheet was filled according to a questionnaire format including, name, age, number of abortions, number of healthy and unhealthy children and home address.

Sample collection

A 96 blood samples were examined. Three ml of venous blood put into plain tube and it was let to stand for half to one hour at room temperature, after clotting the centrifugation was carried out at 3000 rpm for 5 minutes to obtain serum for ELISA –IgG, then kept in -20 °C till used.

RESULTS AND DISCUSSION

1- Distribution of positive and negative cases according to age groups by ELISA

Toxoplasmosis affects women in different countries of the Arab world. The results of present study recorded

that the prevalence of toxoplasmosis among abortive women were 84.4%. These results were disagreed with (Al-jowari and Hussein, 2014) which reported an infection rate with toxoplasmosis was 34.7% among pregnant women in Baghdad.^[11] Our results were agreed with results of (Al-Sodany and Salih, 2007) in Basrah which recorded the seroprevalence among abortive women was 81.5%.^[12]

The presence of elevated levels of *T. gondii* specific IgG antibodies indicates that infection has occurred but does not distinguish between recent infection and infection acquired in the distant past. A total of 96 serum samples from aborted women were examined by ELISA-IgG. The results showed that 81 out of 96 serum samples were positive and 15 were negative. In the present study, the patients aged from (15-25) showed highest rate of infection (table 1). The results found that the number of patients was higher in age group (15-25) years, reaching (85.71%), while the lowest number in age group (37-47) years reaching (80%). The present results were almost similar to those obtained by.^[13,14]

Table 1: Distribution of positive and negative cases according to age groups by ELISA.

Age group/Year	No. of sample	Positive sample	%	Negative sample	%
15-25	49	42	43.8%	7	7.3%
26-36	37	31	32.3%	6	6.2%
37-47	10	8	8.3%	2	2.1%
Total	96	81	84.4%	15	15.6%

2- Prevalence of *T. gondii* according to number of abortion

The results in table (2) showed that the highest ratio of abortion were in age group (26-36) years and the lowest

ratio recorded in age group (37-47) years. The result of our study seems similar to the results of other studies done in Iraq and the world.^[10,15]

Table 2: Distribution of Toxoplasmosis according to number of abortions.

Age group/Year	No. of samples	Single abortion	Twice abortion	Triple abortion	Multiple abortion	No abortion
15-25	49	23	5	4	0	17
26-36	37	9	3	5	10	10
37-47	10	2	4	2	1	1

All positive cases of *T. gondii* in the current study of the pregnant women that ended with abortion. The reason of this fact may be due to increase the levels of many sex hormones; estrogens and progesterone, and consequently their effects on the immune system can be profound. The normal physiological role of these changes would appear to be to protect the developing fetus from the mother's immune response. Although this hormonal manipulation of the immune system serves to prevent the fetus from being rejected, it also has consequences for parasitic infection. There are two factors play role in infection; First, pregnancy will favor the survival of many parasites that require a type 1 response to control them. Second, parasitic infections that induce a strong type 1 response

will adversely affect pregnancy. Both of these scenarios have been demonstrated with the protozoan parasites *T. gondii* and *Leishmania major*.^[16]

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