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Study The Relation Between *Toxoplasma gondii* and Biochemical Parameters in Pregnant Women

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ABSTRACT

Objectives: *Toxoplasma gondii* is one of the internal parasites which live in some kinds of tissues, such as muscles and intestinal epithelium, and infection may be congenital. the congenital form is more severe when maternal infection occurs early in pregnancy.

Methods: Samples of pregnant women suffers from *Toxoplasma gondii* from alkafeel hospital that was about 22 specimens is collected to check if pregnant women with *Toxoplasma gondii* infection has alteration in some of their biochemical parameters (creatinine, ALT , AST, cholesterol).

Results: The current study aims to show the effectiveness acute of toxoplasmosis on some liver and kidney parameters. The result came close to normal, and there was no significant change in those biochemical criteria. Some were high and others were low.

Conclusion: *Toxoplasma gondii* does not have strong relation with the biochemical parameters in pregnant women in different group of ages.

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INTRODUCTION

Toxoplasma gondii is a common protozoan parasite disease known as toxoplasmosis infect most species of warm blooded animals ,including human. Infection of human may be occur in several ways:

- Swallow of infected meat in insufficient quantities.
- Swallowing eggs from fecal contaminated hands or food.
- The Organ transplantation or blood transfusion.

During blood transfusion, the parasite has several stages:

- Tachyzoite is a rapid reproductive form responsible for the primary spread of infection.

- Pradesuit. It resembles tizocite, but is less active [metabolism] in a tissue bag that converts to tacitose soon after ingestion. Tachyzoites localized the nerve and muscle tissue and developed into a bradyzoites tissue cyst, if pregnant women become pregnant tachyzoites can infect the fetus via the placenta¹.

Toxoplasma parasite is usually responsible for both birth defects and deadly toxic encephalitis in people with immunodeficiency, congenital miscarriage in fetal toxoplasmosis, dead fetus, or severe mental retardation; Infection in late pregnancy may be asymptomatic, but it may present network or neurological damage later in life,

From the initiation of pregnancy the placenta itself grows and matures until the end of pregnancy as gestation progresses, the villi and lining trophoblast show evidence of maturation and differentiation and the placental growth is known to decline gradually after 34 or 36 weeks of gestation, considering that programmed cell death or apoptosis is one of the critical processes during fetal development². During 1995 the number of publications investigating apoptosis in villous trophoblast have increased exponentially this scientific interest is due to observation that is specialized, form of cell death is increased in pregnancy complication for example pre-eclampsia and intra-uterine growth restriction and the infection with various pathogens, The infection of cells by *Toxoplasma gondii* has been studied³, the results indicate that *Toxoplasma gondii* either inhibits the apoptosis of cells infected by the parasite or on the other hand it induces apoptosis, The diagnosis of the parasite is by fluorescent antibody, latex agglutination, serum ELISA, other serological tests, direct culture of bloody fluids or tissue sample, histopathology⁴.

MATERIALS AND METHODS

This study was conducted in the medical laboratories in the college of applied medical science University of Kerbala during a period of about four months between collection of specimens and analysis. The specimen was collected from Al-Kafel hospital and other laboratories. Serum of pregnant women suffering from

Toxoplasma gondii was taken. Serum creatinine, ALT, AST and serum cholesterol was measured on a reflectron device by using disposable strips then putting a drop of serum on the strip and measuring the average of this biochemical parameter⁵.

RESULTS

Our study was carried out to show the efficacy of toxoplasmosis on liver and kidney parameters. The result was near to normal and there is little change; some of them raised and others decreased. The test was on about 22 specimens to check if pregnant women with *Toxoplasma gondii* infection has alterations in some of their biochemical parameters (creatinine, ALT, AST, cholesterol) (Table 1). The researcher worked on similar searches but on mice and rabbits, they find out and we were evaluated the liver functions by the estimation of total protein, serum albumin, aspartate aminotransferase (AST/GOT) and alanine aminotransferase (ALT/GPT). In this study the result was normal in most specimens and there was little change (Table 1). This may be due to the parasite or may be due to physiological changes in some pregnant women may be because of pregnancy or may be due to other pathological causes. This search gives an indication that *Toxoplasma gondii* affects the immune side in the first line and may or may not affect the biochemical parameter.

Patient Number	Parameters			
	Creatinine	ALT(gpt)	AST (got)	Cholesterol
1	0.540	13.1	17.4	130
2	<0.5	15	19.7	144
3	0.612	12.3	20.6	146
4	0.533	14.8	21.8	210
5	0.588	13.7	20.2	106
6	0.606	12.8	19.8	143
7	0.638	13.5	15.5	124
8	0.594	5.26	14.9	130
9	1.18	22.2	36.5	120
10	0.687	13.1	20.7	113
11	0.607	9.78	19.4	155
12	<0.5	8.40	13.9	182
13	<0.5	12.5	15.4	112
14	<500	19.2	24.3	223
15	0.587	<5.0	29.3	140
16	<500	12.3	19.4	210
17	<500	12.6	5.52	184
18	1.31	11.9	17.3	164
19	0.736	12.1	19.5	164
20	0.594	15.6	28.4	218
21	0.733	12.8	19.4	166
22	0.5	<5.0	29.8	125
Normal value	0.5-1.1 mg/dl	6-40 u/l	6-40 u/l	<200 mg/dl

DISCUSSION

Toxoplasmosis is the most common human infections in the world exactly in pregnant women ⁴. Egg of toxoplasma gondii resist environmental conditions, and remain infectious in moist soil for more than 18 months, however, they do not live for a long time under cold or dry conditions ³. Two main types of toxoplasma organisms is found: the "egg", which is excreted in the feces of cats, and the stages of toxoplasmic tissue, which are found in cows and sheep ⁵. A person who deals directly or indirectly with any of these forms of Toxoplasma will be infected, if the person is a woman pregnant, Toxoplasma will be going to directly to the placenta ⁶. The harmfulness of Toxoplasma gondii in the mother and child depends on the stage of pregnancy at the time of injury, and infection in early pregnancy may lead to poor pregnancy or stillbirth or in a child with varying degrees of blindness and/or various severe neurological conditions including hydrocephalus, microcephaly, and delay ⁷. Eating infected uncooked pork is believed to be a major source of human toxoplasmosis infection, and congenital toxoplasmosis is a special form of disease which the fetus becomes infected by the placenta. Examination of positive antibodies to previous exposure and immunization indicates the safety of the fetus. Simple blood withdrawal at the first visit to a doctor before birth can determine whether or not a woman has been exposed before, and therefore can be at risk or not. If a woman is exposed to toxoplasmosis during pregnancy, the child in particular is at risk. Therefore, a woman who does not have a previous exposure must be avoid eating raw meat and exposure to fecal feces, that most cats do not get rid of eggs actively and therefore they are not dangerous, but the risk may be that the eggs require a period longer than one day to become contagious. However, the risks can be minimized, but not eliminated, and pregnant women with which have negative antibodies lead to indicating a previous lack of exposure to *Toxoplasma gondii*, so serological tests are recommended every month as a treatment through pregnancy for women exposed to toxoplasmosis for the first time. Once which significantly reduces the risk of the parasite being transferred to the fetus ^{8,9}. The test was carried out on about 22 samples to check whether pregnant women with Alteriaton toxoplasmosis have some biochemical parameters (creatinine, ALT, AST, cholesterol) (Table 1). Research was carried out on mice and wheat, where they discovered that liver function was evaluated by estimating total protein in the serum, serum albumin, aspartate (ast/got) and alot/minotarnsferase (ALT/GPT). Kidney function was also evaluated by estimating creatinine and urea, as they as they noticed an increase in total protein, AIT and AST activities while the albumin level decreased in the untreated infected mice compared to the untreated untreated control group, as was the decrease in the protein level, as well as the levels of ALT AST in infected and treated mice with azithromycin compared to untreated and infected untreated mice with untreated treated mice with

azithromycin, and the albumin level showed an increase in infected and treated mice with azithromycin compared to untreated infected mice while the level of affinity with uninfected and azithromycin treated, revealed. Also, there was an increase in the level of urea in the affected untreated mice compared to the control group, and they also observed that all groups studied had concluded that toxoplasm affects liver and kidney functions by increasing levels of protein, protein, ALT, AST, and urea, and then most of the criteria returned from the mice. Infected treatment to normal levels, due to improved immune system in infected treated mice ¹⁰. In this study, the result was normal in most samples, but there is a slight change (Table 1). This may be due to the parasite, or it may be due to physiological changes in some pregnant women, it may be due to pregnancy, or it may be for other pathological reasons. This research gives an indication that *Toxoplasma gondii* mainly affects the immune side and may or may not affect biochemical parameters in the body.

RECOMMENDATIONS

Investigate in depth studies at the molecular level of the disease. Studies the reasons for the spread of disease and methods of prevention and treatment if possible.

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