



Interaction between Toxoplasmosis and Some Biochemical Parameters in Aborted Women in Al-Kut City

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ABSTRACT:

The interaction of toxoplasmosis infection and liver and kidney functions among aborted women in Al-Kut Cit - Iraq was studied. Seventy three aborted women that had positive test for toxoplasmosis by ELISA test participated in this study. In the period from January 2010 to January 2013. The venous blood was collected from each patient and control individuals to obtain serum needed. Liver function was evaluated by the estimation of serum aspartate aminotransferase (AST/GOT), serum alanine aminotransferase (ALT/ GPT) and serum alkaline Phosphatase (ALP) activities. Kidney function was evaluated by the estimation of serum creatinine and urea concentrations by the enzymatic methods.

The results show; the highest levels of GPT and GOT (30.45 ± 0.71) , (32.45 ± 0.72) in the infected women in the age groups up to 30 years comparing with the ones lower than 25 years and 25-30 years. Also the result was observed have shown a significant variation ($p < 0.05$) in TSP, TSP, B-Urea , creatinine in all age groups. When compared to control group, patients results show a significant variation ($p < 0.05$) in all biochemical parameters GPT (27.34 ± 0.53) , GOT (29.37 ± 0.51), T.S.B (1.42 ± 0.02), T.S.P (6.59 ± 0.03) B-urea (41.22 ± 0.91) and Creatinine (0.910 ± 0.02). The correlation coefficient for infected woman was observed for several parameters such as GPT with GOT , GPT with TSB , GPT with B-Urea , GPT with creatinine , GOT with TSB , GOT with B-urea , GOT with creatinine TSP with B-Urea TSP with creatinine , B-urea with creatinine. While a negative correlation coefficients ($p < 0.01$) was observed in other parameters such as GPT with TSP , GOT with TSP , TSP with TSB , TSB with B-Urea , TSP with creatinine .

Key words:- Toxoplasma Gondii; GOT ; GPT; Blood urea.

SUBJECT CLASSIFICATION:- Biomedical Science

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Introduction

Toxoplasma gondii is an obligate intracellular parasite infecting variety of mammals including cats and humans; most *Toxoplasma* infections are asymptomatic or benign, The transmission may occur by eating uncooked meat, contaminated vegetables, blood transfusion, organ transplantation and cross the placenta from the mother to the fetus (Yaneze and Kumara, 1994). And Laboratory accidents (Nadwa and Muthear 2011) Toxoplasmosis manifested with a wide range of clinical symptoms that are often related to immune status of the patient. The clinical toxoplasmosis take serious toll on human health in the form of abortion, congenital defects *Toxoplasmosis* but can have a serious or even fatal effect in fetus whose mother first contracts the disease during pregnancy in most adult it does not cause serious illness, but can cause blindness and mental retardation in congenitally infected children and it is a devastating disease in immune-compromised individuals (Marcinek, et al; 2008). (viranuatti V, 1987) reported that toxoplasmosis could be associated with abnormal liver formation tests, round cell infiltration in the portal areas, choleostasis, swollen endothelial cells of liver cells and the infection may cause elevated Alanine transaminase, creatine-kinase and alkaline phosphatase, hyperbilirubinemia and hyperproteinemia (Adul-ridha, 2000).

The prevalence of human infection by toxoplasma varies greatly between countries; one of the most factors that influence the infection rates including diet (Daffos et al., 1988).

In Arab world including Iraq, Toxoplasmosis has a high prevalence rate of infection one to the importance of this parasite and a relatively high infection rate in the Iraqi woman; The aims of present study conduct to determine the effects of this parasite in some blood biochemical parameters by comparison with the healthy controls and the correlation coefficients (r) between them in the infected women.

Patients and Methods

The patients was (73) aborted women diagnosed infected by *Toxoplasma Gondii* by ELISA the cut off in the kit was (1) and more than (1) was recorded positive depended upon the kit. Anti *Toxoplasma* IgM antibodies was detected in the sera of infected women. The biochemical tests, GPT, GOT, Total serum bilirubin, total serum protein, blood urea and serum creatinine was assayed by REFLATRON machine. Roche company Germany. Five milliliter of venous blood were collected and allowed to clot at room temperature, the sera were separated by centrifugation at 8000 rpm for 5 min. Each serum sample stored at 20°C for serological and biochemical tests. 32 microliter of sera by special micropipette of machine was put in specific area in the strep and read the result by REFLATRON machine. The patient was diagnosed in private laboratory and Alkarama teaching hospital in AL-Kut city. The biochemical test was assayed in private laboratory and lab center in Kut. The total (98) samples tested, 73 were infected and the remaining 25 were prepared as healthy control. The sero-prevalence of anti-*Toxoplasma* antibodies (IgM) was investigated by ELISA [cut off the kit was (1)].

Results

The result in table (1) was show that there is a significant increase ($p < 0.05$) biochemical parameters (GPT, GOT, TSB, T.S.P, urea and creatinine) in the infected women compared with healthy control.

Table1. The effects of Toxoplasmosis in some blood parameter

Parameters	Mean \pm SE		T-test value
	Control group	Patient group (toxoplasmosis)	
ALT	14.64 \pm 0.34	27.34 \pm 0.53	1.872 *
AST	15.96 \pm 0.35	29.37 \pm 0.51	10807 *
T.S.B	0.728 \pm 0.02	1.42 \pm 0.02	0.089*
T.S.P	7.01 \pm 0.03	6.59 \pm 0.03	0.136*
urea	28.52 \pm 0.94	41.22 \pm 0.91	3.278*
creatinin	0.664 \pm 0.03	0.910 \pm 0.02	0.073*
* ($P < 0.05$)			



Table (2) was show the effect of age on the biochemical parameter.

A significant increase ($p < 0.05$) was obsoured between the age group less than 30 years compared with the more than 30 years old, while no significant increase for T.S.B, T,S,P, Blood urea and creatinine was recorded in these

Table (2) the effect of infected women age by Toxoplasmosis in some blood parameters

Parameters	Mean \pm SE			LSD Value
	Least than 25 years	25-30 years	More than 30 years	
ALT	25.22 \pm 0.78	26.83 \pm 0.96	30.45 \pm 0.71	3.889 *
AST	27.22 \pm 0.68	28.94 \pm 1.00	32.45 \pm 0.72	3.762 *
T.S.B	1.32 \pm 0.03	1.42 \pm 0.04	1.55 \pm 0.03	0.562 NS
T.S.P	6.69 \pm 0.05	6.50 \pm 0.07	6.55 \pm 0.07	0.226 NS
urea	38.80 \pm 1.49	42.78 \pm 1.68	43.17 \pm 1.40	7.539 NS
creatinin	0.850 \pm 0.02	0.938 \pm 0.03	0.962 \pm 0.03	0.206 NS

* ($P < 0.05$), NS: Non-significant.
NS= no significant

The correlation study in table (3) was show that the correlation coefficient value (r) for some biochemical parameters .There was high significant positive. Correlation between GPT with GOT,TSB, Urea and while the values of correlation coefficient were negatively significant between GPT.TSO ($r = -0.61^{**}$)and the GOT had been correlated significantly positive with each of the TSB, urea and creatinine 0.95^{**},0.65^{**},0.62^{**}.While it was significantly negative correlation between GOT and TSP respective ($r = 0.59^{**}$) and for TSB the correlation coefficient was significantly negative with TSP ($r = 0.61$)significantly positive with urea ($r = 0.68^{**}$) and with creatinine ($r = 0.67^{**}$). The negative correlation of TSP was significant with each of urea and creatinine ($r = -0.61^{**}$, $r = 0.52^{**}$), while it was significant positive between urea and creatinine ($r = 0.84^{**}$) .

Table 3 The correlation coefficients (r) between some blood parameters in infected women by Toxoplasmosis

	GPT	GOT	TSB	TSP	Urea	Creatinine
ALT	1.00	0.98 ^{**}	0.94 ^{**}	-0.61 ^{**}	0.63 ^{**}	0.61 ^{**}
AST	0.98 ^{**}	1.00	0.95 ^{**}	-0.59 ^{**}	0.65 ^{**}	0.62 ^{**}
TSB	0.94 ^{**}	0.95 ^{**}	1.00	-0.61 ^{**}	0.68 ^{**}	0.67 ^{**}
TSP	-0.61 ^{**}	-0.59 ^{**}	-0.61 ^{**}	1.00	-0.61 ^{**}	-0.52 ^{**}
Urea	0.63 ^{**}	0.65 ^{**}	0.68 ^{**}	-0.61 ^{**}	1.00	0.84 ^{**}
Creatinin	0.61 ^{**}	0.62 ^{**}	0.67 ^{**}	-0.52 ^{**}	0.84 ^{**}	1.00

Discussion

Toxoplasmosis is usually diagnosed by using a serological tests with increases in the specific Ig G and IgM antibodies (Quan et al; 2009). The IgG showed a peak within 1-2 months following infection and remained elevated for a life; but IgM virtually, The level typically disappears in a few weeks or monthly (Gory et al;2009). Up to one – third of the world's population had evidence of exposure to an infection and the prevalence rate in human ranged from 7.5-95% worldwide (Ton kal,2008). The Toxoplasma circulating antigens during acute infection are closely related to the presence of the parasite in the blood and that was closely correlated with IgM titers which may improve the reliability of diagnosis of acute infection (Quan et al; 2009) and the persistence of anti-Genomic is probably related to active proliferation of the parasite (Susanto andMul jono,2001).

It is know -ledge that sero-prevalence increase with age in various countries (Dubey and Beattie.1988).

The prevalence rate of Toxoplasmosis is related to several factors such as malnutrition habits, age and the areas rural or when (Ajioka and soldati, 2007). The higher sero-prevalence was detected in the age group between40-49 years and the lowest infection rate was found in the age group less than 20 years, while the peak infection rate was recorded between 20-45 years (Al-Barmani,2012).

There is often little or no cellar response around the tissue cyst (Marquard etal 2000). Okermole and Akpan (2002) referred to the regeneration anemia and lymphopenia due to the parasite infection.



Nayyef et al ;(2003) found that the infection show a slight decrease in the PCR ,Hp concentration WBCs, lymphocytes and eosinophils but not to the degree to cause an anemia that may be due to the nature of disease which can recount the cells from the bone marrow .

Also the decrease in the lymphocytes and monotypes may be due to the cytokines of Th1 which are an important mediators of the protective immunity of the host against the parasite (Khan and Kasper.1996).

The perivascular inflammatory cells in the muscle were mainly CD⁴⁺. T-cell and the inflammatory cells and around muscles fibers are chiefly macrophages (Matsubarar et al;1997).

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Author' biography



Dr. Jaber H. Hussien doctoral degree in molecular parasitology, a lecturer in medical parasitology, immunology for colleges of medicine and pharmacy. My research's is interesting for protozoology since 1984, then followed in field of gene vaccine in 2012 after complete training in Tulene university (New Orleans) department of tropical disease .

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