

Study of some biochemical marker in abortion women infected with Toxoplasmosis

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Abstract

The current study consisted of 60 medical cases infected with Toxoplasmosis as well as 30 cases of uninfected women, all who attended Al-Sadr Medical City and Al-Hakeem Hospital in the holy city of Najaf from December to August 2014. The study was designed for the purpose of determining the levels of "Bilirubin, Albumin, and Creatine" in women who have the "*Toxoplasma gondi*" parasite in Najaf by using the latex test. The current study shows that there is a significant difference ($p < 0.05$) in the concentration of bilirubin and albumin, the value of bilirubin was (0.53* mg/dl) for those who have parasite compared with the control group which reached (0.99mg/dl) while the value of albumin (0.98* mg/dl) compared with the control group that reached (6.88mg/dl). However, the study found there to be a significant increase ($p < 0.05$) in the concentration of creatine for those who have toxoplasmosis when its value reached (4.6mg/dl) compared with the control group which reached a value of (1.2* mg/dl).

Introduction

Toxoplasma gondii is the most frequent protozoan causing opportunistic infection in immunocompromised individuals (1). Several researches have been carried out on the immune response in patients with Chronic renal failure (CRF) and proved there was impairment of cell-mediated immunity (2), also these patients have significant lower immune response to vaccines such as tetanus vaccine than healthy subjects (3). CRF patients are under risk from a variety of infections (4).

Acute *T. gondii* infections are asymptomatic and self-limiting, especially among healthy immunocompetent hosts. However the infection may cause severe complications in pregnant women and immunocompromised patients (5,6), such as HIV/AIDS patients (7), cancer patients (8), end stage renal disease undergoing hemodialysis patients (9) and those having organ transplantation (10). In the latter setting, the disease can result from *T. gondii* transmission within the allograft from a seropositive donor into a seronegative recipient (11).

T. gondii has complex life cycle consisting of three stages. Tachyzoite, develops during the acute stage of infection, invades and replicates within the cell. Bradyzoite (pseudocysts) develops during latent infection and presents in tissue cysts (12). The first and second stages represent the asexual development of the life cycle which occurs in the intermediate hosts of parasite including man. The

third stage (oocysts) represents the sexual development of life cycle which occurs in intestinal tissue of cat only (13,14).

Strains of *T. gondii* exhibit virulence differences, studies with mice have shown that infections with the different clonal lineages of *T. gondii* result in very different outcomes Type I strains are highly virulent; whereas type II and type III are relatively nonvirulent (15,16). All three genotypes can cause human infections, however the genotype II predominates in human toxoplasmosis (17) Genotypes I and II occur more frequently in AIDS and congenitally infected patients than in animals, whereas the genotype III predominates in animals (17). However in the case of severe ocular disease in man, strains of the genotype I and recombinants of genotype I and III are more common than the genotype II (18). These findings suggest that type I strains may be more likely to cause severe disease in humans (19). Aim of the present study to determine the level of some biochemical parameter in women that infection with toxoplasmosis.

Material and methods

Latex agglutination test

The kit is provided from Linear Chemicals-Spain, where the principle of the test is based on antigen – antibody reaction directly. The sensitivity of the test is 10 IU/ml (20). The kit included:

1-Toxoplasmosis latex reagent: Suspension of polystyrene latex particles coated with *T. gondii*

soluble antigen in buffer containing bovine serum albumin < 0.1 % sodium azide.

2- Positive control: Diluted human serum contains rabbit IgG anti *Toxoplasma* containing < 0.1 % sodium - azide.

3- Negative control: No reactive diluted human serum contains < 0.1 sodium azide.

Test procedure

it was done according to a procedure described by (20) which is included:

Qualitative test: 50µl of serum was mixed gently with one drop of *Toxoplasma* latex reagent, for 5min. The macroscopic visible of agglutination indicated the positive reaction and smooth suspension with no visible agglutination indicated negative reaction.

Estimation of Serum Albumin

This test was performed by using albumin liquid reagent (Biomaghreb, Maghreb).

The principle

Albumin, in a buffered solution, reacts with of bromocresol green to form a red-color complex.

Reagents

- | | |
|-------------|--|
| 1-Reagent 1 | Bromocresol green 0.14g/l
Succinate buffer 75mm/l
Brij 7ml/l |
| 2-Reagent 2 | (standard) Bovine Albumin
50g/l |

The procedure:

1. All the reagent was left at 25C before used.

2. From standard reagent, 10µl was mixed with 2ml of reagent 1.

3. From each blood sample 10µl also mixed with 2ml of the same reagent.

4. After 5 minutes the optical density of each sample and the standard reagent were read against the blank at the wavelength of 628nm.

Estimation of Serum creatinine

This test was performed by using creatinine liquid reagent (Syrbio diagnostic reagents laboratories, Syria). According the following:

The procedure:

- Mixing 100µl of the standard reagent with 1ml of working reagent.
- Then 100µl of each sample was mixed with 1ml of working reagent.
- After 30 second, the optical density (O.D1) of each sample was read at 500nm by using spectrophotometer.
- Second reading was obtained (O.D2) at exactly, 1minute after the first reading,

Statistical analysis

The stastical analysis were conducted by using (Graph ped prism)

Results

The statistical analysis of the current study showed a highly significant decrease ($P < 0.05$) in serum **bilirubin** concentration (0.53* mg/dl) of patients with *T. gondii* infection compared to the control group (0.99mg/dl); as seen in Figure (1). The statistical analysis of the current study showed a highly significant decrease ($P < 0.05$) in serum **albumin** concentration (2.98*mg/ dl) of patients with *T. gondii* infection compared to the control group (6.88mg/dl); as seen in Figure (1). The statistical analysis of the current study showed a significant increase ($P < 0.05$) in serum **creatinine** concentration (4.8 mg/dl) of patients with *T. gondii* infection compared to the control group

Discussion

The current study has revealed that the serum albumin and bilirubin significantly decrease in *T. gondii* infection patients compared to control

group. While the level of creatinine was significantly increase in patients infected with *T. gondii* in compared with control group. The decrease of albumin level in the serum of patients

(1.2*mg/dl); as seen in Figure (1)

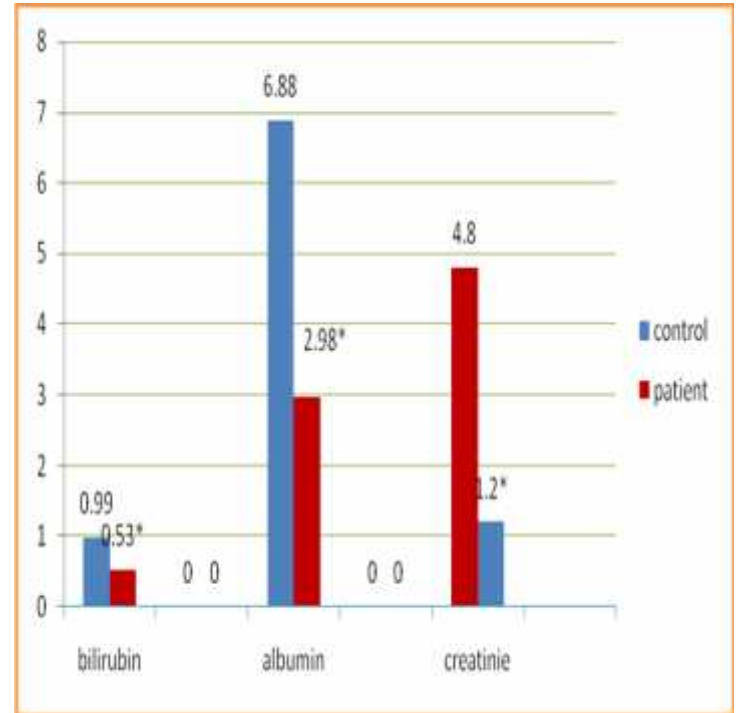


Figure (1) Showed bilirubin , Creatiinie and Albumin in patient compared with control group

may be due to increasing in it's the catabolism or due to decrease in the albumin synthesis. The increase in creatinine concentrations in infected group may be explained as *Toxoplasma* parasite causes glomerular lesions and urinary abnormalities which lead to decrease in glomerular filtration rate, is typically detected by an elevated serum creatinine level in the urine (21). Toxoplasmosis causes extensive and progressive damage to the liver remarkable proliferations of organisms such

damage in the liver metabolism (22) and toxoplasmosis infects liver cells and leads to inflated cells as provided and expansion in central necrosis of hepatic veins and damage in various parts of the Liver (22; 23). Changes of protein fractions AST, ALT varied according to the qualitative difference in the intensity of inflammation by strains of *Toxoplasma*.

Bilirubin showed decrease below the normal value in all studied samples especially ALT, AST, total protein and globulin indicated that the treatment improve the immune system and slow rate of hepatocytes metabolism either by an increase the anabolism and decrease catabolism.

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Toxoplasma gondii

(P<0.05)

Latex test

T. gondii

(0.53* mg/dl)

(2.98* mg/dl)

(0.99mg/dl)

(P<0.05)

. (6.88 mg/dl)

(4.6 mg/dl)

. (1.2* mg/dl)