Epidemiology Study of Toxoplasmosis to Patient Women of Middle Euphrates Hospitals of Iraq

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Abstract:-

During the period between 1st of may 2005 to 24th of march 2006 we collected and examined 102 blood samples from different group and ages of women in middle Euphrates area order to investigates the presence of Toxoplasmosis by using immunological assays such as IFAT and Latex Fixation test in the laboratories of clinical pathology department/Kufa technical institute and center of infectious diseases control (C.D.C).

A total of (102) women were examined in this study found 36 cases (35.29%) carried this disease, The results of the research follows(47.54%)in abortion women, (19.04%) in non abortion women while (15%) in ladies who are not married), This results proved that *T. gondii* is widely spread in the middle Euphrates area .We studied total serum protein , Serum Albumin , Serum globulin and Alb/Glb ratio in women who had infected with *Toxoplasma* and calculated the ratio of Alb/Glb before and after four months treatment. Its {S.Alb. (o.039), S.Glb.(0.086)and Alb/Glb(0.033} LSD value before treatment and {(S.Alb (0.041), S.Glb (0.059)and Alb/Glb(0.044)} LSD value after treatment . We have seen decreased in S.Alb and increase S.Glb and Alb/Glb ratio after treatment its significantly increasing under ($p<0.05$) in Total S. Protein in high values than control group and increased level of T.S.P and S. Albumin and Alb/Glb in all patients who have appositive Toxoplasma.

الخلاصة :

خلال الفترة من 2005/5/1 حتى 2006/3/24 تم التشخيص المصلي لداء المقوسات في 102 عينة دم لنساء منطقة الفرات الاوسط اجريت الفحوصات المناعية IFAT, Latex في مختبرات مركز السيطرة على الامراض الانتقالية ومختبر الجراثيم في قسم التحليلات المرضية / المعهد التقني / الكوفة . من مجموع 201 نساء مفحوصات 36 اصابة اذ بلغت نسبتها الاجمالية 35.29% حاملة هذا المرض حيث منها (47,54 %)نسبة النساء المجهضات , (19,04%)نساء غير مجهضات بينما (15%)في نساء غير متزوجات اذ اثبتت النتائج بان *T. gondii* واسع الانتشارلدى نساء المنطقة الفرات الاوسط . كما تم دراسة محتوى البروتين الكلي في مصل الدم والالبومين والكلوبيولين للنساء المصابة بالتوكسوبلازما وبعد ذلك تم حساب نسبة الالبومين والكلوبيولين وكانت قيمة LSD لهم (0,039) سيرم البومين و(0,086) سيرم كلوبيولين وقيمة LSDللالبومين الى الكلوبيولين (0,033) لدى المصابات قبل البدء بالعلاج بينما كانت قيمة LSD (0,041)سيرم البومين و(0,059) سيرم كلوبيولين وقيمة LSD للالبومين الى الكلوبيولين (0,044) بعد العلاج اذ اكدت نتائج الفحوصات وجود انخفاض في قيمة سيرم بروتين الكلي وقيمة الالبومين والكلوبيولين الى الالبومين قبل العلاج اذ وجدت فرق معنوي تحت مستوى دلالة 0,05 بزيادة سيرم بروتين الكلي وسيرم كلوبيولين في مستوى عن مجموعة السيطرة بعد مرور أربعة أشهر من تناول العلاج كما ازدادت نسبة Alb/Glb بعد اكمال العلاج .

Introduction:-

Toxoplasm Spp is the protozoa paraites, There are three main important species that belongs to genus toxoplasma these are: *T. gondii, T. hammondi, T. bahaiensis* [1].

It infects many animals such as dogs, cats, cattle, rodents and birds. It is the only type that causes Toxoplasmosis in human. *Toxoplasm gondii* spread all over the world specially in tropical areas where the percentage of the infection by this parasite is about 30% from the people of the world. The percentage of infection for children rises in the places where there are many cats and their feces. It is high for adults where they have meats are not well cooked [2].

All mammals, including humans, are capable of transmitting toxoplasmosis. Fleas and cockroaches have also been implicated as carriers of infective stage from cat feces to food [3].According to Levine taxonomy, *T. gondii* transmitted to women by different ways:1- Transplacental infection [4]. 2-Transplantation of an infected organ[5,6]. 3-Ingestion of oocyst in material contaminated by cat feces [7, 8]. 4- Transfusion of infected blood [9].

Women infected with *Toxoplasma* before conception with rare exception do not transmit the infection to their fetuses, while women infected with *Toxoplasma* after conception (during pregnancy) may transmit the infection across the placenta to their fetuses [10].

Persons who become infected with *T. gondii* only small percentage show clinical signs or symptoms of infection, it is estimated that perhaps (1%) of these infected become ill [11] The prevalence of antibodies in human population dose not represent the level of disease merely that this proportion of the population has responded to the organism[12].

[13] prove that domestic cat (*Felis catus*) or cougar (*Felis concolor*) faeces contaminated a surface water reservoir with Toxoplasma gondii oocysts. A significantly higher seroprevalence of Toxoplasmosis was associated with rural location of the childhood home, childhood home in Europe excluding the United Kingdom [14]. [15] says that the burden of Toxoplasmosis due to symptomatic congenital *Toxoplasma* infection was low. Most children presented with ocular manifestations and less than half had serious neurological manifestations or died in utero. Half of the ocular toxoplasmosis seen in children was estimated to be due to infection acquired after birth. In Doha prevalence of *Toxoplasma* IgG responses was 29.8% and this did not differ between the sexes nor between the three years of their study although there was a marked age effect [16] .

A significant higher prevalence of *T. gondii* infection was observed in female in the clinically healthy population. No correlation was found between *T. gondii* infection and psychiatric disorders , that women are more exposed to T. gondii infection than men in China[17]. [18]conclude that the age of patient and number of abortions showed a Positive correlation with toxoplasmosis while residence, occupation and congenital anomalies did not have this correlation .

The problem of *Toxoplasma gondii* prevalence still one the important healthy problems in many countries of the world, Iraq is one of them which suffers from this problem according to the spread of stray cats, fleas and cockroaches and the difficult circumstances which the Iraq lives from many years ago. **The aims** of this study were the following:

a- To know the prevalence's average of *Toxoplasma gondii* infection among women group attending clinics for abortion deliveries by using IFT, latex test. **b**- To study and appoint the level of total S. portein, S. globulin,S. albumin and Alb/Glb ratio before and after treatment.

c- To appoint the total portion, Albumin , (Alpha 1, Alpha 2, Beta and Gamma globulin) in patints with *Toxoplasma* IgG before and after treatment.

Materials & methods:-

Throw period between 1/5/ 2005 -24 / 3 /2006 this study had been examined 102 blood samples in laboratories of clinical pathology department Kufa Technical Institute . They are taken from different groups and ages of women who live in popular and other areas from the following cities: Babylon, Kerbela, Aldywania and AL- Najaf. 61 samples of them are aborted women we took their addresses to check them after four months of treatment. In our work, we use two types of examination:

1- Biochemical test which included the following:Total S. protein and S. albumin by using Bio Kit (Aspain). 2- Serological test which included the following:

a- Latex agglutination kit (Bio kit " Aspain").

b- IFAT test for detection of *Toxoplasma* infection to diagnosis IgG, IgM by fluorscin labelled antihuman globulin. Statistical analysis of the results was done according (19).

Results and Discussion:-

During the mentioned period, a total of 102 specimen of blood were collected and examined from women of different groups (married and non married, abortion women and non abortion) who attended the teaching hospitals in the cities of Hilla, Al-Dywania, Kerbela and Al-Najaf and local laboratories who suffering from problems in reproductive and urinary system after the classification of samples according to the groups of women mentioned above as it explained in Table (1).
The results of this study proved that *T. gondii* is widely spread in the middle Euphrates area. The generally percentage of the infestation for all the women from (102) samples ,found 36 Suffered patients(35.29%) and it was distributed as follows 47.54% in abortion women, 19.04% in non abortion women while 15% in ladies who are not married as it explained according to the results in table (1).

Table (1): The major characteristics of studied women

Groups of women	No. of the checked women	Number and percentage positive (reactive)							
		Tpxoplasma		Tpxoplasma IgM		Tpxoplasma IgG		Tpxoplasma IgM+ IgG+	
		Suffered patients	%	Suffered patients	%	Suffered patients	%	Suffered patients	%
1-Married women	82								
a- abortion women	61	29	47.54 %	6	20.68 %	19	65.51 %	4	13.79 %
b- non abortion women	21	4	19.04 %	1	25%	3	75%	0	0%
2- Non Married women (ladies)	20	3	15%	1	33.33 %	2	66.66 %	0	0%
Total	102	36	33.02	8	22.22	24	66.66	4	11.11

This result indicate high distribution of toxoplasmosis among women in the study area , and agree with similar local studies such as [20] ,21]in Thi-Qar [22] in Najaf. This results means that there is continuous exposure of women to the risk factors of *T. gondii* infection through their routine house works like minced contaminated meat products, gardening and contact with soil especially in rural women ,eating of raw or unwashed vegetables and fruits and drinking of municipal water from contaminated reservoirs ,in addition to the widespread of stray cats which play an essential role in the distribution of infection [23, 24].
This study has proved that the percentage of infection for women who live close to animals (cats, dogs and cattle) is high in comparing with the other women and the percentage of infection in popular areas is higher than in other areas according to their addresses and the information we have taken from them.

A total of (102) and (15) control Iraqi's women were examined in this study for *Toxoplasma* 36 cases (35.29%) were found positive. These groups contain married women and non married.

Table (1) shows the major characteristics of the studied women. The highest risk of infection was found in the group (married women), in this group out of (47.54%) of the women who have

abortion and (19.04%) of women who have non abortion were positive to *Toxoplasma* infection, while in the group non married women, (15%) were positive to *Toxoplasma* infection.

The distribution of positive serological test regarding both IFAT and latex test, there was two groups: Group-1- a:- [Married women- abortion woman] there was (65.51%) positive to *Toxoplasma* IgG, while was (20.68%) positive to toxoplasma lgM and was (13.79%) positive *Toxoplasma* IgG + IgM.

b:- [Married women- non abortion woman] there was (75%) positive to *Toxoplasma* IgG, while was (25%) positive to *Toxoplasma* lgM and 0% positive to *Toxoplasma* lgM+ IgG. Group–2:- [Ladies or non married woman] there was (66.66%) positive to *Toxoplasma* IgG, while was (33.33%) positive to *Toxoplasma* IgM. 0% positive to *Toxoplasma* lgM+ IgG. In biochemical test we measured total S. Protein S. Albumin, S. globulin and AIb/GIb ratio **before** and **after** four months treatment as shown in table (2) and table (3).

Table (2): The biochemical parameters for total serum protein , S. Albumin , S. Globulin , and Alb/Glb ratio before treatment .

Group of women	No. of patients (positive Tpxoplasma)	T.S.P Mean±SD	S.Alb. Mean±SD	S.Glb. Mean±SD	Alb./ Glb. Mean±SD
1-Married women	33				
a- abortion women	29	8.30±0.71	4.25±0.5	4.05±0.51	1.13±0.25
b- non abortion women	4	8.29±0.72	4.29±0.48	4.00±0.35	1.07±0.23
2- Non Married women	3	8.10±0.65	4.20±0.39	3.98±0.38	1.06±0.30
3- Control	15	7.2±0.67	3.5±0.44	3.1±0.39	1.13±0.27
LSD (0.05)		0.051	0.039	0.086	0.033

Table (3): The biochemical parameters for total serum protein ,S. Albumin , S. Globulin , and Alb/Glb ratio after treatment .

Group of women	No. of patients (positive Tpxoplasma)	T.S.P Mean±SD	S.Alb. Mean±SD	S.Glb. Mean±SD	Alb./ Glb. Mean±SD
1-Married women	33				
a- abortion women	29	7.59±0.38	4.16±0.4	2.90±0.31	1.42±0.21
b- non abortion women	4	7.35±0.31	4.12±0.41	2.83±0.32	1.46±0.25
2- Non Married women	3	7.46±0.35	4.12±0.36	2.52±0.35	1.62±0.24
3- Control	15	7.2±0.67	3.5±0.44	3.1±0.39	1.13±0.27
LSD (0.05)		0.053	0.041	0.059	0.044

In table showed that there is significant increasing ($p<0.05$) in Total S. Protein in high normal values and increased level of T.S.P and S. Albumin in all patients who have appositive Toxoplasma. So we measured these factors after four months treatment, The result showed increased in (S.Alb/S.Glb) ratio and decreased in other factors in all of patients. In table (2) we showed increased level of Gamma globulin before treatment and decreased after three months

treatment significantly under ($p<0.05$) in Total.This increasing of total proteins then immunoglobulins due to heavy inflammation activity and reaction the body against infection humeral and cellular immunity [25, 26]. The immunoglobulins (Igs), which are antibodies with a heterogeneous group of plasma proteins produced by *B*- lymphocytes it responseper about memory of immunity against new infection to fasted response of immune system to protect the body .

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