EFFECTS OF LATENT TOXOPLASMOSIS ON AUTOIMMUNE THYROID DISEASES IN PREGNANT WOMEN - DUHOK CITY-KURDISTAN REGION- IRAQ

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ABSTRACT

Background: Toxoplasmosis is a common zoonotic disease has a global distribution and can infect many hosts causes several clinical symptoms in humans and attack many body organs leading to hormonal and behavioral alterations in infected hosts. Latent or dormant form toxoplasmosis is the common form that can affect pregnancy course. Autoimmune thyroid disease (AITD) belongs to the known risk factors for adverse pregnancy outcomes. The aim of this study was the detection of anti-Toxoplasma antibodies and its effects on autoimmune thyroid disease among pregnant women.

Methods: A total of 220 pregnant women were included in the current study from August 1st 2021 to February 1st, 2022. Toxoplasma status in pregnant women was detected for seropositivity of anti-Toxoplasma IgG antibodies using ELISA technique. Free triiodothyronine (FT3), free thyroxine (FT4), Thyroid stimulating hormone (TSH) and thyroperoxidase antibodies (TPO) were assessed by ELISA. The blood parameters of examined pregnant women were measured by a Coulter counter machine.

Results: Overall, 95(43.2%) of the examined pregnant women had seropositivity for anti-Toxoplasma IgG antibodies and 28(12.7%) were screened positive for AITD. Out of 95 seropositive IgG antibody cases, 18 (18.9%) had AITD. Out of 220 pregnant, 90 (40.9%) had normal thyroid, while thyroid disorders are classified to subclinical hypothyroidism, clinical hypothyroidism, subclinical hyperthyroidism, and clinical hyperthyroidism, 64(29.1%), 41 (18.6%), 22(10.0%), and 3 (1.4%) respectively. From 95 seropositive anti-Toxoplasma IgG antibodies, high rates were detected in subclinical hypothyroidism 35(36.8%), followed by 31(32.6%) with normal thyroid, and 19 (20.0%) had clinical hypothyroidism, while only,9 (9.5%), and1(1.1%) had subclinical hyperthyroidism, and clinical hyperthyroidism respectively. High infection rate was recorded among women in third trimester of pregnancy 60 (44.4%) compared to lower infection rate in first trimester women 20(40.0%). The IgG antibodies seropositive women had more often highly elevated TPO antibodies than negative ones, and the latent toxoplasmosis was associated disturbance of thyroid hormones. The antibodies seropositive women had high total leucocyte count, high lymphocytes, high count of granulocytes, low total red blood cells count and low hemoglobin level.

Conclusions: The current study indicated that latent toxoplasmosis is associated with alteration in thyroid functions and autoimmunity during pregnancy. Pregnant women should be tested for FT3, FT4, TSH hormones, and TPO antibodies with measurement of hematological parameters in order to reduce the risk in both mother and fetus and provides early therapies.

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Keywords: Autoimmune thyroid diseases, ELISA, Pregnancy, Thyroid hormones, *Toxoplasma gondii*.

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Toxoplasma gondii is a common apicomplexan intracellular protozoan parasite that causes toxoplasmosis[1]. Many studies have indicated that about one-third of the world population has been infected with toxoplasmosis[2]. The members of the Felidae family, which represents domestic cats and their relatives, are the only definitive hosts, while many mammals and birds act as intermediate hosts, the disease occurs by raw or uncooked meat consumption infected with tissue cysts, or by swallowing of sporulated oocysts excreted with at feces in the water, soil, and contaminated food[3]. The disease is asymptomatic, while it's considered as a life-threatening condition with many serious complications especially in immune-compromised patients[4]. Congenital toxoplasmosis occurs during pregnancy through parasite transmission via the placenta of the infected mother to her fetus which leads to miscarriage, brain damage, retinitis, and stillbirth[5]. T. gondii has the ability to attack many human body organs, thyroid gland as an example, which produces the most important hormones T4 and T3[6]. Thyroid hormones are important for healthy fetus growth thus, thyroid diseases are considered as common endocrine disorders among pregnant populations, they cause spontaneous abortion, fetal damage, and preterm delivery[7]. The pregnancy period is affected by many environmental and endogenous factors, thyroid hormones of pregnant women have fundamental roles in the neurological development of fetus exactly in the first trimester, and because of the fetus thyroid hormones are not produced until 16-20 weeks[8]. Thyroid diseases are the most risk factors for adverse pregnancy outcomes. Nowadays, researchers have found that T. gondii is associated with autoimmune thyroid diseases (AITD) and other autoimmune diseases. AITD is linked to various serious forms ranging from infertility, premature delivery, cesarean section, spontaneous abortion, and fetal death[9]. It has been described that people with genetic backgrounds may develop AITD after an infectious disease[10]. Molecular mimicry is recognized by resemblance and similarities in pathogen molecular components and the human thyroid gland auto antigens which lead to autoimmune disease[11].

PATIENTS AND METHODS

The current study was included the collection of 220 blood samples from pregnant women who attended to gynecology and obstetrics hospital in Duhok city. A special questionnaire for each woman with complete demographic characteristics (age, residency, education, occupation, pregnancy period, drinking unsterilized water, eating habits, and cat contact) was completed by the individual before the blood samples were drawn.

This study was approved by the ethical committee of the University of Duhok Scientific and Ethical approvals for the study were granted by the Scientific Committee of the College of Medicine/Duhok University. The ethical approval was obtained from the Research Ethical Committee of the Directorate General of Health, Duhok, Iraq. no. 13072021-7.

Five ml of venous blood was drawn from each woman by using a disposable sterile syringe and placed into two tubes, 1 ml of the blood was placed in a first tube with anticoagulants for measurements of blood parameters such as (total white blood cells (WBCs), lymphocytes (LYM), granulocytes (GRA), total red blood cells(RBCs), hemoglobin(Hb) and platelets(PLT). While 4 ml of the blood was placed in a second tube without anticoagulant, which was left for 20 minutes at room temperature for coagulation and then centrifuged for 10 minutes at 3000 rpm to obtain sera, the serum was placed in clean, sterile Eppendorf tubes, then kept in freezing at -200C till use12.

EXCLUSION CRITERIA

Women with other infectious diseases, immunosuppressed and chronic diseases were excluded.

INCLUSION CRITERIA

All pregnant women with different pregnancy periods.

STUDY DESIGN

Anti T. gondii IgG antibodies was measured using Toxoplasma ELISA kit (Bioactiva diagnostica, Germany), the determination of thyroid hormone levels was done by ELISA to measures FT3, FT4, and TSH hormones, all hormones kits (AccuBind-Monobind, USA) and TPO antibodies detection by ELISA kit (Aeskulisa, Germany) and the blood parameters were detected by coulter counter machine.

Detection of anti-Toxoplasma IgG antibodies by ELISA

Firstly, the serum samples were diluted (1:101) by distributing 10 µl of serum into 1 ml of sample diluents, then 100 µl of diluted sera, and the calibrators were pipetted to plate wells, then incubated for 30 minutes at 370C, and the wells were washed four times with washing solution, blotted and dried by inverting the plate on absorbent material. About, 100µl of enzyme-labeled secondary antibody was added to the wells and incubated for 30 minutes at 370C, the wells were washed four times, and then 100µl of TMB chromogen solution was added and incubated for 15 minutes at room temperature. Finally, 100µl of stop solution was added to the wells, the optical density (O.D) of the samples was measured at 450 nm using a plate reader.

Detection of FT3 by ELISA

Fifty µl of the calibrators, controls and sera pipetted to the wells and 100 µl of FT3 enzyme reagent was added to the wells, incubated for one hour at room temperature, the wells were washed three times by washing solution, then 100 µl of the working substrate was added and incubated at room temperature for 15 minutes, then 50 µl stop solution was added to the wells and the absorbance read at 450nm.

Detection of FT4 by ELISA

A total 50µl of the calibrators, controls and serum samples were pipetted into the microplate wells, then 100µl of FT4 enzyme reagent was added and incubated for one hour at room temperature. The wells were washed three times with washing solution, and 100µl of the working substrate was added and incubated at room temperature for 15 minutes. About 50µl of stop solution was pipetted to the wells, and the results were read at 450nm.

Detection of TSH by ELISA

A total 50µl of the calibrators, controls and sera samples were pipetted into the wells, 100µl of TSH enzyme reagent was added to the wells, and incubated for one hour at room temperature, the wells were washed three times with washing solution, and 100µl of the working substrate was added to the wells, incubated at room temperature for 15 minutes, then add 50µl of stop solution to the wells and the absorbance read at 450nm.

Detection of TPO by ELISA

A total of 100µl of each of the calibrators, negative control, positive control and serum were added to the wells and incubated for 30 minutes at 20-320C, the wells were washed three times with washing buffer, and after that, 100µl conjugate was added to the wells and incubated for 30 minutes at 20-320C, then washed three times with washing buffer, and 100µl TMB substrate was added, incubated for 30 minutes at 20-320C, after that, 100µl stop solution pipetted to the wells, incubated for 5 minutes and the absorbance read at 450 nm.

STATISTICAL ANALYSES

All the data were statistically analyzed using the SPSS version 22, and P-value ≤ 0.05 was considered as significant.

RESULTS

In the current study, overall 220 pregnant women were enrolled with mean ages of 29 years (15-50). A total of 95(43.2%) were seropositive for anti-Toxplasma IgG antibodies, and 125 (56.8%) had IgG seronegativity. The autoimmune thyroid disease (AITD) had been indicated due to the presence of TPO antibodies. It had noticed that 28(12.7%) were screened positive for autoimmune thyroid disease, while 192(87.3%) were without AITD. Table 1, shows that high rates of IgG seropositivity were found among old aged women than young ones 69.2% and 35.7%, respectively statistical analysis was significant with P-value ≤0.05. Rural women were highly seropositive than urban residents 23(46.0%), and 72(42.3%) respectively, P-value ≥0.05. Low rates of seropositivity were recorded in high educational levels 18(38.2%), P-value≥0.05. Unfiltered water drinker women with more seropositive 85(46.1%) than filtered water 27.7% with a statically correlation P-value ≤0.05. Cat contact women were more highly seropositive than non-cat contacts 15(62.5) and 80(40.8%), respectively.

Table1: Seropositivity of anti-Toxoplasma IgG antibodies on some demographic characteristics in pregnant women no=220

Variables		Total	Seropositive anti-*Toxoplasma* IgG antibodies (%)	Seronegative anti-*Toxoplasma* IgG antibodies (%)	*P*-value
Age	15-20	14	5 (35.7)	9(64.3)	≤0.05*
	21-26	65	25(38.5)	40(61.5)	
	27-32	80	39(48.7)	41(51.3)	
	33-38	40	12(30.0)	28(70.0)	
	39-44	13	9(69.2)	4(30.8)	
	45-50	8	5(62.5)	3(37.5)	
Residency	Rural	50	23(46.0)	27(54.0)	≥0.05

Variables		Total	Seropositive anti-*Toxoplasma* IgG antibodies (%)	Seronegative anti-*Toxoplasma* IgG antibodies (%)	*P*-value
	Urban	170	72(42.3)	98(57.6)	
Education	Illiterate	34	15(44.1)	19(55.9)	≥0.05
	Primary	46	20(43.5)	26(56.5)	
	Secondary	93	42(45.2%)	51(54.8)	
	Higher education	47	18(38.2%)	29(61.7)	
Occupation	Housewife	165	72(43.6%)	93(56.4)	≥0.05
	Employed	55	23(41.8%)	32(58.2)	
Pregnancy period	1st trimester	50	20(40.0%)	30(60)	≥0.05
	2nd trimester	35	15(42.9%)	20(57.1)	
	3rd trimester	135	60(44.4%)	75(55.6)	
Drinking water	Non filtered	184	85(46.1%)	99(53.8)	≤0.05*
	Filtered water	36	10(27.7%)	26(72.2)	
Eating habits	Restaurant foods	57	20(35.1%)	37(64.9)	≥0.05
	Home foods	163	75(46.0%)	88(54.0)	
Cat contact	Yes	24	15(62.5%)	9(37.5)	≤0.05*
	No	196	80(40.8%)	116(59.2)	

* Statically significance (p-value ≤0.05)

In figure 1, the high seropositive rates were detected in old aged women, rural, illiterates and housewives.

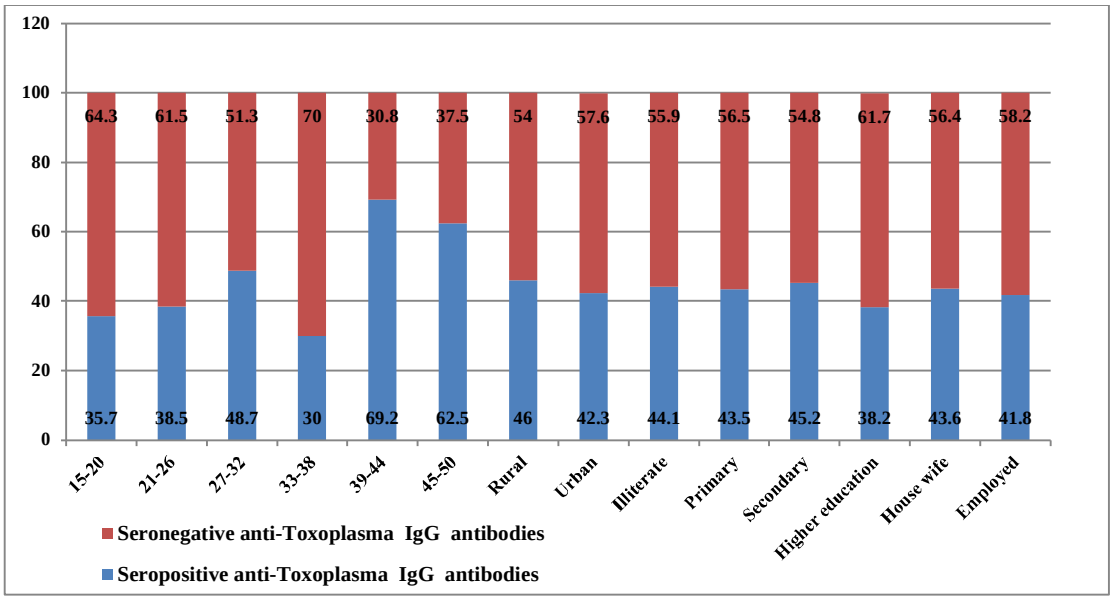

Figure 1: Demographic factors associated with seropositivity and seronegativity of anti -*Toxoplasma* IgG antibodies in pregnant women.

figure 2, shows high seropositive rates had been recorded in pregnant women in the third trimester 60(44.4%), in groups of drinking unfiltered water 85(46.1%), and cat contact ones 15(62.5%).

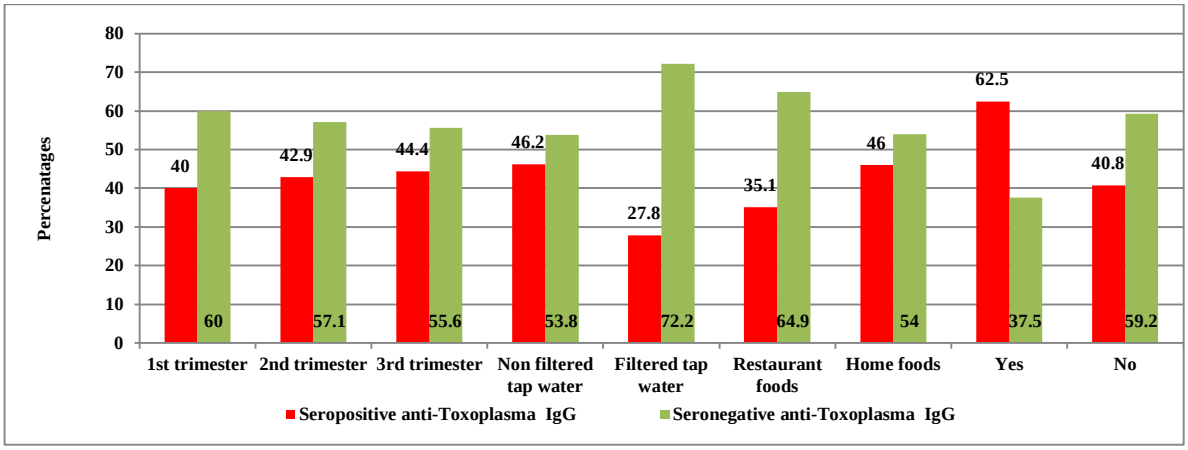

Figure 2: The period of pregnancy first trimester *Toxoplasma* IgG positive women 20 (40.0%), second trimester 15(42.9%) and third trimester 60 (44.4%), type of drinking water, non-filtered water 85(46.1%), filtered water 10(27.7%), food habits as restaurant foods 20(35.1%) and home foods75(46.0%), contact with cats 15 (62.5%) and non-cat contacts 80(40.8%).

Figure 3, shows the distribution of normal and abnormal cases of thyroiSd among women, 0.9% of cases had normal thyroid, while 29.1% and 18.6% had subclinical and clinical hyperthyroidism respectively. On the other hand, low rates of hyperthyroidism were recorded, 10.0% and 1.4% represented subclinical and clinical hyperthyroidism respectively.

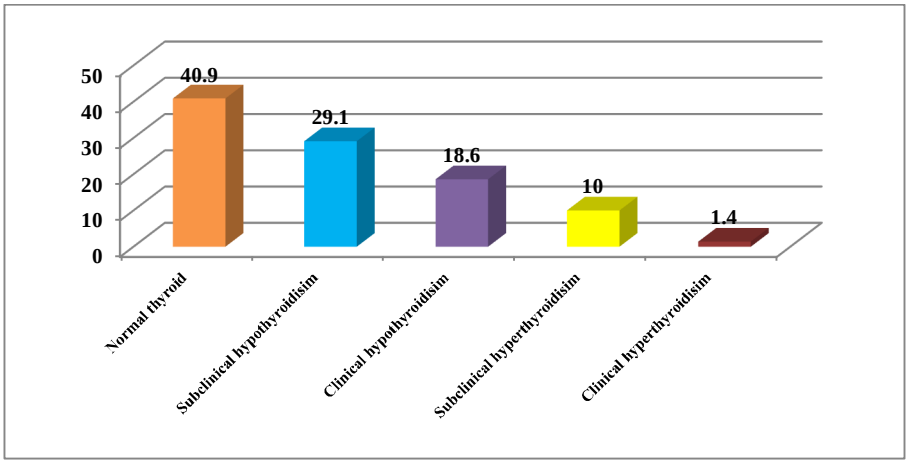

Figure 3: Thyroid status among pregnant women.

Table 2 shows the normal and abnormal thyroid cases among IgG seropositive and seronegative ones. Out of 95 IgG seropositive cases 31(32.6 %) had normal thyroid, while 64 (67.4%) were with thyroid diseases. Out of 125 IgG seronegative women about 59 (47.2%) with normal thyroid and 66 (52.8%) had thyroid disorders. Thyroid disorders which classified into subclinical hypothyroidism, and clinical hypothyroidism, subclinical and clinical hyperthyroidism as 64 (29.1%), 41 (18.6%), 22(10.0%) and 3 (1.4%) respectively. A total of 95 IgG seropositive high rates of subclinical hypothyroidism 35(36.8%) had detected, while low rates were recorded in clinical hyperthyroidism 1(1.1%).

Table 2: Analysis of normal thyroid and thyroid disorders among women.

Cases	Total (%)	IgG +(%)	IgG- (%)
Normal thyroid	90(40.9)	31(32.6)	59(47.2)
Subclinical hypothyroidism	64(29.1)	35(36.8)	29(23.2)
Clinical hypothyroidism	41(18.6)	19(20.0)	22(17.6)
Subclinical hyperthyroidism	22(10.0)	9(9.5)	13(10.4)
Clinical hyperthyroidism	3(1.4)	1(1.1)	2(1.6)

Regarding to FT3, FT4 and TSH levels, it had been shown that decreased levels of FT3 (<1.8 pg/ml) were found in 12 (12.6%) seropositive women compared to 16(12.8%) seronegative women, while elevated levels of FT3 (>4.2 pg/ml) were obtained in 5(5.3%) and 4(3.2%) in seropositive and seronegative ones respectively. The low levels of FT4 (<0.76 ng/dl) were detected in 18 (18.9%) and 18(14.4%) in IgG seropositive and IgG seronegative women respectively, while high FT4 levels (>2.24 µIU/ml) indicated in 2(2.1%) in seropositive and 2 (1.6%) in seronegative women. On the other hand, decreased levels of TSH (<0.39 µIU/ml) were detected in 11(11.6%) IgG seropositive and 20(16.0%) in IgG seronegative ones. Elevated TSH levels (> 6.1 µI U /ml) were found in 51(53.7%) in seropositive and 46 (36.8%) in seronegative cases. The analysis showed that an association of IgG seropositivity and TSH levels and thyroid hormones P-value (≤ 0.05) .It's obvious from figure 4 that high rate of IgG seropositive women had subclinical hypothyroidism 36.8%and lowest rate 1.1% noticed in clinical hypothyroidism, while most of IgG seronegative women with normal thyroid 47.9%, and 1.6% related to clinical hyperthyroidism cases.

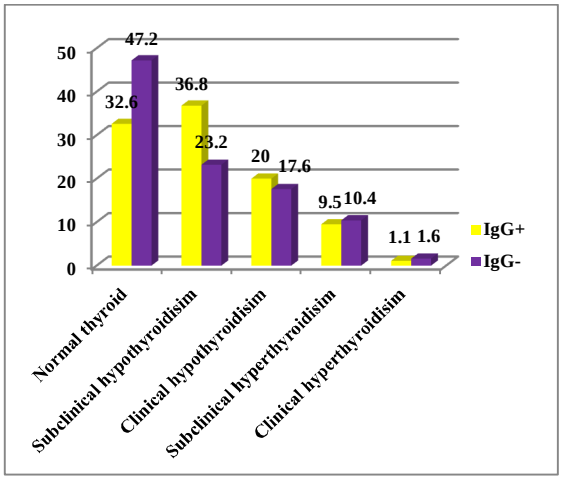

Figure 4: Distribution of normal thyroid and thyroid disorders among IgG seropositive and seronegative pregnant women.

Figure 5 analyses that from overall 220 women, 28 (12.7%) had autoimmune thyroid diseases while 192 (87.3%) without autoimmune thyroid diseases. The highest rates 115 (52.3%) belonged to IgG seronegative women and without autoimmune thyroid disease and the lowest rates 10(4.5%) related to IgG-seronegative cases with autoimmune thyroid disease. Among 95 IgG seropositive cases, 18 (18.9%) had seropositivity for TPO antibodies, while from 125 IgG seronegative women, 10 (8.0%) screened positive for TPO antibodies. The analysis showed that those women with seropositivity to Toxoplasma were more frequently highly positive for TPO antibodies than seronegative ones (P-value ≤ 0.05) with a statistically significance.

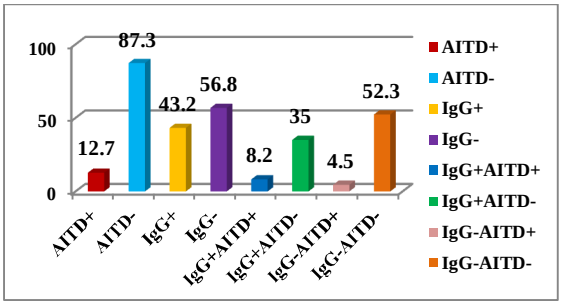

Figure 5: Seropositivity of Toxoplasma IgG and AITD status among women.

According to table 3, IgG seropositive women had increased counts of white blood cells, lymphocytes, granulocytes, and a decrease in red blood cells and hemoglobin compared to IgG seronegative ones.

Table 3: Mean values of WBCs, LYM, GRA, RBCs, HGB, and PLT in seropositive IgG and seronegative ones.

Parameters	Seropositive IgG (mean± SD)	Seronegative IgG (mean± SD)
WBCs (10^9/l)	10.80±3.04	7.92±1.75
LYM (10^9/l)	2.67±1.43	1.99±0.80
GRA (10^9/l)	6.81±2.74	3.77±1.86
RBCs(10^12/l)	3.61±0.46	4.25±0.34
HGB(g/dl)	11.19±1.18	12.36±0.89
PLT (10^9/l)	213.62±68.52	228.30±66.01

WBCs: white blood cells, LYM: lymphocytes, GRA: granulocytes, RBCs: red blood cells, HGB: hemoglobin, PLT: platelets.

DISCUSSION

In the current study 220 pregnant women were included, 95 (43.2%) had seropositivity to anti–Toxoplasma IgG antibodies. This result showed agreement with the results of other studies Mizani et al.,13and Mohamed etal.,[14] in the seroprevalence of toxoplasmosis which reported 43.0 % and 44.1% respectively, while disagreeing with a study done by Al-Saeed and his group[15] which reported 10.0% and other studies by Imam[16], Murad et al.,[17], and Eissa et al.,[18] which showed 21.3%, 21.1% and61.1% respectively. It has been indicated that high infection rates were found in old aged women than younger ones 69.0% with a statistically significance p-value ≤ 0.05, which proves the association of infection with age, this may be due to that old aged women with prolonged exposure to the risk factors of T. gondii transmission during their lives than younger ones, lack of public awareness of infection and prevention methods. This is concordant with studies by Imam[16] and Mizani[13] and disagrees with Al-Qurashi et al[19]. Rural women were highly infected than urban ones which showed similar agreements with studies Tammam et al.,[20] and Senthamaria et al.,[21] this is an indication that rural women keep cats, dogs, birds and domestic animals that feed and hunt freely with low care and awareness about the disease. Also, women with cat contact showed increased infection with similar reports were observed in other studies Kolbekova[22], Ngui[23]. High infection rates were found in illiterates, housewives, women who drinking nonfiltered water with agreements with another studies Tammam et al.,[20] and Senthamaria et al.,[21]. It is indicated that toxoplasmosis causes abnormalities in thyroid hormones and TSH levels which

come in accordance with several studies Al-Khamesi[24] and Hashim with his group[25], while disagrees with studies of Adday[26] and Eissa et al.,[18]. The prevalence of normal thyroid and thyroid disorders were 40.9% and 59.1% respectively. The abnormalities in the levels of FT3, FT4 and TSH hormones may increase the risks of pregnancy complications such as miscarriage, preterm delivery, placental abruption and low birth weights. The results of the current study found that seropositive IgG cases had highly elevated TPO antibodies that agrees with other studies Kankova et al[7] and Valizadeh et al.,[27]. According to the effects of thyroid disorder on both mother and fetus, TPO antibodies screening should be included during pregnancy with performing the thyroid function tests and checkup by a gynecologist must be considered. Regard to the white blood cells , lymphocytes and granulocytes were increased in IgG positive women compared to negative ones, which agrees with studies Flegr with Stiiz[28] and Leka[29], this is due to the activation of immune system and immune cells during infection and disagree with a study Hassen et al.,[30]. A decrease in red blood cells and hemoglobin had observed in seropositive women which come in accordance with other studies Flegr[28], Mohamed[31], and Salih et al.,[32] this reduction in hemoglobin in seropositive for anti-Toxoplasma IgG antibodies women may be due to the multiplication of the parasite inside the host body cells and degradation of red blood cells which may cause anemia, that affects directly on the fetus and lead to preterm birth (when delivery occurs before 37 complete weeks of pregnancy) or have a low birth weight baby and postpartum depression.

CONCLUSION

The seropositivity of anti-Toxoplasma IgG antibodies, thyroid hormones and TPO antibodies among pregnant women by using ELISA technique are useful. Increasing the public awareness programs, and prevention and control strategies are needed. It's very important to test for Toxoplasma antibodies, thyroids hormones and TPO antibodies to reduce the risks on both mother and fetus in order to provide early therapies and safe the health of the fetus. It's necessary to measure blood parameters during pregnancy period. It seems that Toxoplasma gondii may cause thyroiditis because of antigenic similarity of the parasite with thyroid peroxidase and lead to cross reactivity in immune system resulting in AITD. This could provide new clues to the complex pathogen of autoimmune thyroid disease. Thus, many studies should be done with focusing on discovering molecular similarities between thyroid peroxidase and Toxoplasma antigens.

CONFLICT OF INTEREST

The author declared that there is no conflict of interest.

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پوختە

کارتێکرنا نە خووشیا پشیکا یا دوومدرێژ ل سە ر نە خووشێن بە رگریا خوویی یا پە ریزادێ ل دە ف ئافرە تێن دووگیان ل باژێرێ دهوك هە رێما کوردستان –عیراق

پشنشین و ئارمانج: نەخووشیا پشیکا نەخووشیەکا بەربەلاڤە ل سەرانسەری جیهانێ و مشەخوورەکێ ئێك خانە توکسوپلازمە گوندی یێ بەرپرسیارە بو ڤێ نەخووشیێ.ئەف مشەخووردە دشێت تووشی گەلەك زیندەوەران بیت و دبیتە ئەگەرێ نیشانێن نە خووشیێ ل دەف مروڤی و هێرشێ دکەتە گەلەك ئە ندامێن لەشی و دە ستکاری ل تێکچوونا هورموونی و رەوشتی دکەت ل ناف زیندەوەرێن تووشبووی. نەخووشیا پشیکا یا دووم درێژ بەربەلاڤترین شێوەیە و دشێت کارتیکرنێ ل سەر ماوێ دووگیان بوونێ بکەت. ئارمانج ژڤێ ڤەکوولینێ، دە ستنیشانکرنا بەلاڤبوونا نەخووشیا پشیکا و پەیوەندیا وێ ل گەل نەخووشیا بەرگریا خووی یا پەریزادێ ل دەمێ دووگیان بوونێ دا.

رێکێن کاری: ل ڤێ ڤەکوولینێ دا، 220 ئافرەتێن دووگیان ب دەستخووڤەگرتینە ژ 1 تەباخا 2021 هەتا 1 شواتا 2022. توکسوپلازمە هاتبوو دەستنیشانکرن بریکا دژە تەنێ اج ج بریکا ب کارئینانا الایزا. دەرباریّ پەریزادێ هورمونێن ف ت 3، ف ت 4، ت س چ هاتیە پیڤان ب الایزا و دژە تەنێن ت پ و دیسان ب رێکا الایزا هاتە پیڤان. پێکهاتنێن خووینێ هاتنە پیڤان ب رێکا ئامیرێ س ب س.

ئە نجام: ژ220 ئافرەتێن دووگیان 95(43.2٪) ژئافرەتێن دووگیان سیروپوزە تیف بوون بو دژە تە ن اج ج یێ توکسوپلازما.28(12.7٪) نەخووشیا بەرگریا خووی یا پەریزادێ هەبوون ژ95 ئافرەتێن سیروپوزەتیف 18(18.9٪) نە خووشیا بەرگریا خووی یا پەریزادێ هەبوو. ژ 220 ئافرەتێن دووگیان 90(40.9٪) خودان نورمال پەریزاد بوون، تێکچوونێن پەریزادێ دهێنە پولینکرن بوو کیمێ رژینا پەریزادی یا نەکلینیکی، کیمێ رژینا پەریزادی یا کلینیکی، زێدە رژینا پەریزادی یا نەکلینیکی و زێدە رژینا پەریزادی یا کلینیکی (29.1٪)64، (18.6٪)41، (10.0٪)22 (1.4٪)3 ل دیف ئێك. ژ95 ئافرەتێن سیروپوزتیف بو توکسوپلازمای IgG رێژا زێدە هاتیە دیارکرن ل کیمێ رژینا پە ریزادی یا نە کلینیکی 35 (36.8٪),31(32.6٪) نورمال پە ریزادی ,19(20.0٪) کیمێ رژینا پە ریزادی یا کلینیکی و بتنێ 9(9.5٪) زێدە رژینا پەریزادی یا نەکلینیکی و 1(1.1٪) زێدە رژینا پەریزادی یا کلینیکی هەبوون. ئافرەتێن تەمەن مەزن رێژێن زێدەێن تووشبوونێ هەبوون ژیێن عەمر بچیك 5(62.5٪)، 5(35.7٪) ل دیف ئێك. ئافرەتێن گوندان زێدەترین رێژێن تووشبوونێ هەبوون 23(46.0٪) و 72(42.3٪) ئافرەتێن باژێران. ئافرەتێن نەخاندەڤان 15(44.1٪) زێدەترین رێژێن تووشبوونێ و ئافرەتێن خووداں بلێن خاندنا بلند رێژێن کێم 18(38.2٪). کابانییێن بەر مالاً زێدەترین رێژێن تووشبوونێ هەبوون ژئافرەتێن شولکەر 72(43.6٪) و23(41.8٪) ل دیف ئێك. ئافرەتێن ل دوماهیك سێ هەیڤێت دووگیانبوونێ زێدەترین رێژێن تووشبوونێ هەبوو 60(44.4٪) و کێم رێژێن تووشبونێ ل ماوێ دووگیانبوونا ئێکێ 20(40.0٪). ئافرەتێن ئافا نەفلتەرکری ڤەدخوون زێدەترین رێژێن تووشبوونێ هەبوو ژئافرەتێن ئافا فلتەرکری ڤەدخوون 85(46.1٪) و 10(27.7٪) ل دیف ئێك دا. ئافرەتێن تێکەل ل گەل پشیکا زێدەترین رێژێن تووشبوونێ ژئافرەتێن بێ تێکەل پشیك هەبوون 15(62.5٪) و 80(40.8٪) ل دیف ئێك. دووگیان سیروپوزەتیف بوون بو دژە تەن اج ج یێ توکسوپلازمە بلندترین ئاستێن ت پ هەبوو ژ ئافرەتێن دووگیان سیرونێگە تیف و خووشیا پشیکا یا دووم درێژ هاتبوو گرێدان ب تێکچوونا هورمونێن پەریزادێ. ئافرە تێن تووشبووی گەلەك خرووکێن خینێ یێن سپی و زێدەبوونا لیمفوسایت و کێم خرووکێن سوورێن خووینێ و کێم هیموگلوبین هە بوو.

دە ست کەفتێن ڤەکولینێ: نەخووشیا پشیکا ئارێشەکە ل دەف ئافرەتێن دووگیان. گەلەك یا فەرە زێدەکرنا رێکارێن ئاگەهداریا و ئامووژکاریا لدەف خەلکی ل دوور ڤەگووهاستن و فاکتەرێن مەترسیدارێن تووشبوونێ ب رێکا ئاگەهداریا بو خووپاراستن و کونترولکرنا و کێمکرنا ڤێ نەخووشیێ. هاتە دیارکرن کونە خووشیا پشیکا یا هاتیە گرێدان ل گەل تێکچوونێن فەرمانێن پەریزادێ و نە خووشیا بەرگریا خووی یا پەریزادێ ل دەمێ دووگیانبوونێ دا، یا پێویستە ل سەر ئافرەتێن دووگیان پشکنینا بکەن بوو هورمونێن ف ت 3, فت4، ت س چ وو دژە تەنێن پەریزادێ ت پ و ل گەل پیڤانا پێکهاتێن خووینێ ژبو کێمکرنا مەترسیێ ل دە ف دایك و زاروکی و دانا بلەز بوو دە رمانان.

الخلاصة

تاثير داء القطط الكامن على امراض الغدة الدرقية المناعية الذاتية في النساء الحوامل في مدينة دهوك – إقليم كوردستان – العراق

الخلفية والاهداف: داءالقطط مرض شائع ذو انتشار عالمي ويسببه طفيلي احادي الخلية توكسوبلازما غوندي يمكن أن يصيب العديد من المضيفين يسبب العديد من الأعراض السريرية لدى البشر ويهاجم العديد من أعضاء الجسم مما يؤدي إلى تغيرات هرمونية وسلوكية في العوائل المصابة. داء المقوسات الكامن هو الشكل الشائع الذي يمكن أن يؤثر على مسار الحمل. يرتبط مرض الغدة الدرقية المناعي الذاتي (AITD) إلى عوامل الخطر المحددة جيدًا لنتائج الحمل السلبية. الهدف من هذه الدراسة هو الكشف عن داء القطط وآثاره على أمراض الغدة الدرقية المناعية الذاتية بين النساء الحوامل.

طرق العمل: تضمنت الدراسة الحالية حوالي 220 امرأة حامل في فترة 1-اب 2021 الى 1-شباط 2022. وتم الكشف عن حالة توكسوبلازما من خلال الكشف عن الأجسام المضادة IgG للتوكسوبلازما عن طريق مقايسة الممتز المناعي المرتبط بالإنزيم (ELISA) وهورمونات FT3,FT4,TSH, الأجسام المضادة (TPO) بتقنية الايلايزا. تم قياس مكونات الدم بواسطة جهاز CBC.

النتائج: بشكل عام، 95(43.2٪) من النساء الحوامل لديهن إيجابية مصلية للأجسام المضادة IgG المضادة للتوكسوبلازما و28(12.7٪) تم فحصهن إيجابيا لـ AITD. من 95 امرأة IgG ذات إيجابية المصل ، 18(18.9٪) كان لديهن AITD. من 220 امراة حامل ,90(40.9%) لديهن غدة درقية طبيعية ,و اضطرابات الغدة الدرقية تنقسم الى قصور الغدة الدرقية تحت الإكلينيكي وقصور الغدة الدرقية فوق الإكلينيكي وفرط نشاط الغدة الدرقية تحت الإكلينيكي وفرط نشاط الغدة الدرقية فوق الإكلينيكي (29.1%)64، ,(18.6%) 41,,(10.0%)22 , (1.4%)3 تعاقبيا. من 95 امرأة IgG ذات إيجابية ,نسب عالية كانت قصور الغدة الدرقية تحت الإكلينيكي 35(36.8%),تاليا غدة درقية طبيعية 31(32.6%) و19(20.0%) لديهن قصور الغدة الدرقية فوق الإكلينيكي, وفقط 9(9.5%) و1(1.1%) لديهن وفرط نشاط الغدة الدرقية تحت الإكلينيكي وفرط نشاط الغدة الدرقية فوق الإكلينيكي تدريجيا.النساء كبار العمر لديهن نسب اصابة عالية اكثر من النساء الشابات 5(62.5%) و5(35.7%) تدريجياً . النساء القرويات لديهن نسب اصابة عالية 23(46.0%) مقارنة بنساء المدن 72(42.3%). النساء الاميات لديهن نسبة اصابة 15(44.1%) والنساء ذات التحصيل الدراسي العالي لديهن نسبة اصابة 18(38.2%). ربات البيوت كانو اكثر اصابة من النساء المتعينات 72(43.6%) و23(41.8%). سجلت نسب اصابة عالية في الاشهر الثلاثة الاخيرة من فترة الحمل60(44.4%) مقارنة بنسبة اصابة واطئة في ثلاثة الاشهر الاولى للحمل 20(40.0%). النساء الشاربات المياة الغير المفلترة ذات نسب اصابة عالية اكثر من النساء الشاربات المياة المفلترة 85(46.1%) و10(27.7%) تدريجيا.النساء ذات الالتماس مع القطط ذات نسب اصابة عالية اكثر من اللواتى لا يلتمسون مع القطط 15(62.5%) و80 (40.8%) تدريجيا.غالبً ا كان لدى النساء المصابات أجسام مضادة لـTPO مرتفعة للغاية مقارنة بالأجسام غير المصابة، وداء المقوسات الكامن مرتبطًا باضطراب هرمونات الغدة الدرقية وكان لدى النساء المصابات زيادة في اعداد الخلايا دم بيضاء، زيادة في اعداد الليمفوسايت وزيادة في اعداد الخلايا الحبيبية البيضاء وقلة في اعداد خلايا الدم الحمراء وانخفاض في هيموغلوبين الدم.

الاستنتاجات: لايزال داء القطط يمثل مشكلة بين النساء الحوامل، ومن الضروري للغاية رفع مستوى الوعي بين الناس حول عوامل خطر للعدوى والانتقال من خلال العديد من الاستراتيجيات والطرق للوقاية من المرض ومكافحته. يشار إلى أن داء المقوسات يرتبط بالتغيير في وظائف الغدة الدرقية والمناعة الذاتية أثناء الحمل. يجب اختبار النساء لحوامل بحثًا عن هرمونات FT3 وFT4 وTSH والأجسام المضادة لTPO مع قياس معايير الدم من أجل تقليل المخاطر في كل من الأم والجنين وتزويد الادوية.