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Prevalence of anticardiolipin antibody IgM and IgG in women with recurrent abortions in Kirkuk city

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A B S T R A C T

Toxoplasma gondii, a parasite that can produce a wide range of clinical symptoms in humans, is the source of the zoonotic infection known as Toxoplasmosis.
The goal of this study was to measure the serum levels of anticardiolipin (ACL) antibodies (ACL-IgM and ACL-IgG) in 200 women with T. gondii and recurrent abortions.
Two hundred (200) blood samples from aborted women were used in this study, which was carried out in Kirkuk between November 1, 2022, and March 21, 2023, at the Gynaecological & Paediatric Hospital and Kirkuk General Hospital to determine the level of Anticardiolipin IgG and IgM serum.
In this study of 200 aborted women, 28 (14%) had IgM positivity, 66 (33%) had IgG positivity, and 94 (47%) had Toxoplasmosis positivity overall. Of 200 aborted women, 39 (19.5%) had anticardiolipin IgM while 35 (17.5%) had Anticardiolipin IgG.
The anticardiolipin IgM higher than anticardiolioin IgG in the Toxoplasmosis infected women.

Introduction

Globally, Toxoplasmosis is one of the most prevalent parasite infections affecting both humans and animals(1).Toxoplasmosis is one of the most serious and widespread parasite infections in the world, with a human infection incidence of 25-30%. Toxoplasma gondii is the cause(2).The parasite's final hosts are cats. Only the primary host experiences sexual reproduction, which results in the release of infectious oocysts that humans may consume while gardening or by eating improperly washed fruits and vegetables. A different method of infection for people is through the intake of meat that has been infected but hasn't been properly cooked. Congenital Toxoplasmosis, or placental transmission of T.gondii from an acutely infected woman to her developing fetus, is another cause of infection. Congenital toxoplasmosis can result in severe neurological abnormalities, miscarriage, and other major fetal harm(3). When cats consume small animals or raw meat that contains tissue cysts, the stomach enzymes disintegrate the cyst wall and bradyzoites pass through the small intestine wall to multiply and create oocytes. These oocytes are then released after the small intestinal wall cells rupture. The oocytes can survive in a normal environment for a very long time and contaminate environmental media like drinking water after being excreted in cat faeces,They then sporulate between 1 to 5 days. Additionally, they can spread to a variety of animals that cats and people (intermediate hosts) ingest(4).When these tissue cysts are consumed by an intermediate host via raw or undercooked meat, the cysts rupture as they transit through the digestive tract,releasing bradyzoites. The bradyzoites will spread throughout the body by infecting the new host's intestinal epithelium and then differentiating back into the tachyzoite stage, which divides quickly(5).For the detection of antibodies against T.gondii in pregnant women, serological assays for the parasite include the LATEX agglutination test, indirect fluorescent antibody test (IFA), ELISA, and heamaglutination test(6). Cardiolipin-specific antibodies are a particular type of antiphospholipid antibodies that target negatively charged phospholipids(7). In patients with autoimmune disorders, anticardiolipin antibodies (ACA) showed a well-established correlation with repeated abortions.Recurrent abortion is a serious issue in which a number of important parameters, such as anticardiolipin, antiphosphatidyl serine antibodies, and antinuclear antibodies, play an essential role(8). So this experiment intended to determine whether women who had abortions had anticardiolipin antibodies and whether these antibodies were present.

Material and methods

Two hundred (200) blood samples from women aged (18-40) years old. who had abortions were used in this study, which was carried out in Kirkuk between November 1, 2022, and March 21, 2023, at the Kirkuk General Hospital and the Gynecological & Paediatric Hospital. Venous blood of 5 to7 ml of blood was obtained using sterile syringe from each aborted women and 3ml of blood sample were placed into sterile gel tubes. In order for the blood to coagulate, test tubes were left at room temperature for 20 to 30 minutes. The blood was separated by centrifuging it for 5–10 minutes at 3000 rpm. The blood was then divided into four Eppendorf tubes and placed in a deep freezer (-20 C) until it was needed. The serum was then used to measure the Anticardiolipin IgG, IgM. by ELISA technique.

Enzyme linked immunosorbant assay.

This test was used for detection of Anticardiolipin IgG and IgM using(Anticardiolipin ELISA kit, Orgentec , Germany) according to the protocols designed by the manufacture of the diagnostic kits

Ethical approval

After we acquired official approval ethical to conduct the study from Directory of Health/Kirkuk, the participants were given a description of the goal and procedure for gathering information from abortive women who visit hospitals at the beginning of the study.

Statistical analysis

The data were analyzed according to Minitab statistical program with ANOVA test and T test .Duncan's multiple range test was used to compare the differences between means under the probability level 0.05($P < 0.05$).

Results

Two hundred (200) aborted women, 28 (14%) was IgM positive, While IgG was positive in 66 (33%), the total was positive for Toxoplasmosis in 94 (47%).This investigation was carried out to detect Anticardiolipin antibodies with T.gondii in women who had abortions, and the presence of these antibodiesAnticardiolipin IgM in 39(19.5%), while Anticardiolipin IgG was detected in 35(17.5%), of 200 aborted women. The IgM ACA positive was higher than IgG ACA.

Table 1. Number and Percentage of Anticardiolipin IgG positive in Toxoplasma positive cases

Study groups	No.	Anticardiolipin IgG	Percentage%
Toxo IgM +ve	28	35	17.5%
Toxo IgG +ve	66		

Table 1 Anticardiolipin IgG positive 35(17.5%) in both Toxoplasma Positive IgG and IgM cases, the normal range of anticardiolipin IgG >10GPL-U/ml consider as positive.

Toxo IgM: Toxoplasma immunoglobulin M

Toxo IgG: Toxoplasma immunoglobulin G

Table 2. Number and Percentage of Anticardiolipin IgM positive in Toxoplasma positive cases

Study groups	No.	Anticardiolipin IgM	Percentage%
Toxo IgM +ve	28	39	19.5%
Toxo IgG +ve	66		

Toxo IgM: Toxoplasma immunoglobulin M

Toxo IgG: Toxoplasma immunoglobulin G

Table2: Show Anticardiolipin IgM positive 39(19.5%) in both Toxoplasma Positive IgG and IgM cases, the normal range of anticardiolipin IgM >7MPL-U/ml considered as positive.

Discussion:

The group of autoantibodies known as antiphospholipid antibodies (APL), which is various and focused on negatively charged, phospholipids, a component of cellular membranes, includes antibodies against cardrdiolipin.The anticardiolipin ACL assay helps with the diagnosis of APL, which is crucial for treatment and for predicting thrombosis and recurrent miscarriages (9).

There is a positive link between elevated immune system and pregnancy loss in many cases of high serum ACA (anticardiolipin antibody), These antibodies by themselves do not cause miscarriage, but they can specifically harm the inner walls of blood vessels and lead to blood clots in the placenta that block or slow the baby's blood supply, causing growth to slow or the baby to die. Miscarriage due to this issue can happen at any time in the first trimester and very rarely past the first trimester, with 10 to 15% of recurring miscarriages being brought on by these antibodies (10).

Anticardiolipin antibodies appear to affect the placenta and the decidual arteries beneath it, although the specific mechanisms by which they cause abortion have not yet been completely clarified. The most frequent causes of recurrent abortions may be inherited forms of specific antiphospholipid antibodies, such as ACA antibodies that prevent fetal implantation and may be linked to the pathogenic process causing recurrent miscarriage (11).

Because aCL are strongly associated with recurrent pregnancy loss, common abortions in patients with toxoplasmosis may be partially attributed to the presence of aCL. This correlation is explained first by the mechanism of molecular mimicry, which is immunological cross-reactivity between the parasite and components of host tissues (12).In our study the ACA IgM was higher than ACA IgG in Toxoplasma infected women, this agreed with (12). There is a significant difference in the prevalence of ACL-Abs across studies, which may be caused by a variety of factors, including the various techniques used to identify antibodies and the causes of repeated abortion in women(9).

Conclusion

Anticardiolipin antibodies may be associated with recurrent abortion in women. As a result, women who have recurrent abortions should be tested for anticardiolipin antibodies.in the present study ACA IgM was higher than ACA IgG in Toxoplasmosis infected women.

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