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Serological Determination of IgM Antibodies for Toxoplasma Gondii in pregnant women who live in zone No. 4 of Juigalpa

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ABSTRACT

As described Botero and Restrepo, *toxoplasmosis* is an infection caused by a protozoan Toxoplasma gondii intracellular coccidia subclass involving a portion of the population worldwide, it is associated with congenital infection and abortions. The aim of this study is serologically to determine the presence of IgM antibodies to Toxoplasma gondii in pregnant Parasite women living in Juigalpa Area No. 4. The research was conducted to determine the degree of positivity presenting blood samples of these people, the instrument used in this research was the survey and serological analysis of blood samples, the data obtained were inserted into a probabilistic program (SPSS).

This research is positioned in the positivist paradigm, in which 21 pregnant women participated. Examination of Toxoplasma gondii was performed via ELISA method IgM.

23.8% of 100% of the analyzed samples from the research participants, were positive for IgM antibodies, which is dangerous for a pregnant woman because if the mother becomes infected with toxoplasmosis during pregnancy, there are many chances of passing the infection to the fetus, and the percentage of risk of transmission is greater the more advanced is the gestation at the time of infection being 15% if this occurs during the first quarter, 30% in the second quarter, reaching 60% in the third quarter.

INTRODUCTION

This article is based on a parasitic study in pregnant women living in the area No. 4, of the city of Juigalpa, Chontales during the months of February / April 2019.

The importance of this research lies in serologically determine the presence of IgM antibodies Parasite *Toxoplasma gondii* in pregnant women because the overall incidence of Toxoplasma gondii infection is approximately 1-10 in 10,000 live births. It notes that if the presence of this parasite is detected early, it can greatly reduce the chances of transmission to the fetus with a suitable pharmacological treatment.

Scientific research papers on the subject argue the prevalence of T. gondii antibody since it is a common global issue since they were background with a description of the pathology that served as a foundation in learning research. Since then we have two national records one of them inquired Bertha Calderon Hospital Roque, during the years 2014 and 2015, with 17.1%; who were HIV positive in pregnant women who attended consultation during that period (Salgado, 2016). This shows us the relationship that both studies on the prevalence of antibody to Toxoplasma gondii in pregnant women. And as international background, one of them was in the city of Rio de Janeiro, Brazil, which included 2,673 pregnant women, asymptomatic for *toxoplasmosis* during 2007 proceeded to score a (0.41%) of pregnant had IgM antibodies against Toxoplasma gondii. (Guerra-Sanches & Norbert, 2014). A say studies are similar because the presence of IgM antibodies is detected, the minority of the samples were negative. In the research carried out in Ecuador, a descriptive, cross-sectional study was conducted to determine the prevalence of *toxoplasmosis* in pregnant woman worked with a population of 30 patients which concluded that the prevalence of toxoplasmosis was 27 % of pregnant women attending antenatal care at first, (Alejandra & Aguayo, 2013). It reflects that this study was done in a given time and space, at the time the events occurred.

THEORETICAL FOUNDATION

Toxoplasmosis

Toxoplasmosis is an infection caused by Toxoplasma gondii, the protozoan intracellular coccidia subclass widely distributed worldwide.

Parasite history

According to information obtained from the book Human Parasitic Botero and Restrepo, Toxoplasma gondii parasite is between 4µ to 6µ in length, and 2 uA 3µ wide is intracellular localization. The parasite was found in animals at the beginning of the twentieth century and its life cycle is an intestinal parasite, an oocyst is an infectious form that appears in the feces of cats. (Botero & Restrepo, 2012, p. 351).

Toxoplasmosis and effects in pregnant women

Toxoplasmosis may result in spontaneous abortion, poor growth, premature birth or stillbirth. (Diagnostics Group, 2018), the parasite persists in cysts; if they break it appears an intense inflammatory reaction around. Retinitis, necrosis, accumulation of pigment in the retina and choroid inflammation of histopathological changes in the fetus (Botero & Restrepo, 2012, p. 357).

Clinical manifestations

Most infections are asymptomatic, but they have antibodies that give positive serology. The acute form is characterized by a febrile syndrome, lymphadenopathy and can be complicated by the invasion of various organs. In the ocular form, there is chorioretinitis that can become chronic and recurrent. If the infection occurs in pregnancy, parasites can cross the placenta and cause congenital toxoplasmosis. In immunocompromised patients, the most important clinical manifestation is encephalitis (Botero & Restrepo, 2012).

Diagnosis

The ELISA-IgM test is positive in the case of a recent infection. The method of capturing IgM or double-antibody is more sensitive and specific. This procedure is a human anti-IgM antibody that lines the wells of the microplate to capture the patient's serum IgM. The amount of the Toxoplasmic antigen is measured immunochemically, which constitutes the double-layer IgM-ELISA or reverse IgM-ELISA method. The IgM capture is positive for longer than the other methods and detects this type of antibody for up to 2 or 5 years. These capture tests have fewer false positive or negative reactions. Using the ELISA test, the detection of specific IgA is made. DS-IgA-ELISA is more sensitive than IgM-ELISA, to detect congenital infection in the fetus, in the newborn and the woman in pregnancy. In patients with ocular toxoplasmosis, IgM, IgA, and IgE antibodies are simultaneously detected (Botero & Restrepo, 2012, p. 364).

Control and prevention

Prevention is very important in seronegative pregnant women and immunodeficient patients. Prevention is best achieved through the education of these patients by their area doctors. The objective is to avoid ingestion and contact with sporulated oocysts or parasite cysts (Torres & Cepero Rodriguez, s.f)

Treatment

The treatment of choice is the association of pyrimethamine with absorbable sulfates, mainly sulfadiazine or sulfadoxine. Another medication that is also associated with pyrimethamine is clindamycin, mainly for ocular toxoplasmosis, it can also be associated with azithromycin in special cases. In non-suppressed patients with Toxoplasmosis, it is useful. In pregnant women, spiramycin can be used to attack the parasites in the placenta, but it does not pass through it, therefore, it does not act on the fetus (Botero & Restrepo, 2012, p. 371). Treatment of an infected pregnant woman can prevent or lessen the disease in her baby at birth. The treatment of an infected baby will also decrease the severity of the disease as the child grows (Diagnostics Group, 2018).

Sanitary hygienic factors and eating habits as a cause of the presence of Toxoplasma Gondii

The average source of the infection is direct contact with cat feces or eating undercooked meats. (Diagnostics Group, 2018). Poor personal hygiene and lack of knowledge about the transmission and prevention of parasitic diseases are favorable factors for its presence. The absence of washing or the use of contaminated water to wash raw foods is a frequent cause of fecal infections by mouth (Botero & Restrepo, 2012, pp. 15-16). Eating habits or eating habits: Contamination of food and drink water favors intestinal parasitism. Ingestion of raw or undercooked meat allows Toxoplasma infection (Botero & Restrepo, 2012, pp. 15-16).

METHODOLOGY

Type of research

According to Sampieri, Fernández Collado, & Baptista Lucio, contains a quantitative approach, because it is the one we use for data collection and thus validate our hypothesis, which mentions that the majority of pregnant women living in Zone No. 4 show the absence of IgM antibodies to Toxoplasma Gondii. Quantitative based on the numerical measurement and statistical analysis, to establish behavior patterns and test theories.

Type of study

This research is descriptive because it seeks to specify properties, characteristics and important features of our study.

Study area

It was carried out in the city of Juigalpa-Chontales, in zone No. 4, in the neighborhoods of Santuario, Morenita, Madriz, Felipe acosta and Carlos Núñez.

Population

The population or universe is made up of the 21 pregnant women who live in these neighborhoods who voluntarily agreed to participate in the research.

Sample

The sample is constituted by the facilitators of the information that at the time of the investigation were pregnant and fulfilled the inclusion criteria for this study that were 21 participants that constitute 100% of the total of the universe so there is sample representativeness with a confidence interval of more than 95%.

Type of sampling

Not probabilistic for convenience. A non-probabilistic sampling for convenience is aimed at a subgroup of the population in which the choice of the elements does not depend on the probability but the characteristics of the investigation (Hernández Sampieri, Fernández Collado, & Baptista Lucio, 2014, p. 176).

Data collection technique and instrument

The technique of the survey, because we collect information or data. It consists of a set of questions regarding one or more variables to be measured, sanitary hygienic factors and eating habits, the level of knowledge that pregnant women have about the subject under study. For the diagnosis, the Immunoenzymatic method, IgM Toxoplasma (ELISA) that detects IgM antibodies in the study samples was performed. The entire technical procedure and interpretation were carried out in the Clinical Bioanalysis Teaching Laboratory of the UNAN-FAREM-CHONTALES.

Informed consent

In the application of the instrument in the study area, the following aspects were shown:

- Subject and objectives of the study.
- Selection of pregnant women in the sample.
- Sample collection procedure.
- Benefit when taking the exam and the results obtained when receiving the confidential analyses of the samples.
- The desire to collaborate and optional authorization from them.

Data processing

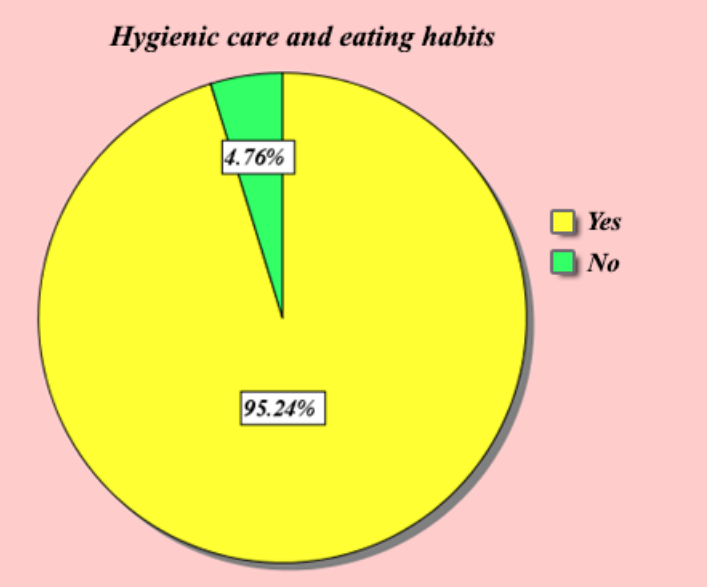
This research is quantitative, so it is necessary to show the graphs, averaged statistical analysis (%), where computerized programs such as SPSS, Microsoft Excel, were used to obtain the percentage values of the results obtained from the sample of the study. The sanitary hygienic

care and eating habits, the level of knowledge of the subject under study and the relationship between the presence or absence of said parasite were analyzed.

RESULTS AND DISCUSSION

Presentation of the Results of the applied survey and the analysis obtained from the serological samples of the pregnant women who live in zone No. 4 of the city of Juigalpa, Chontales.

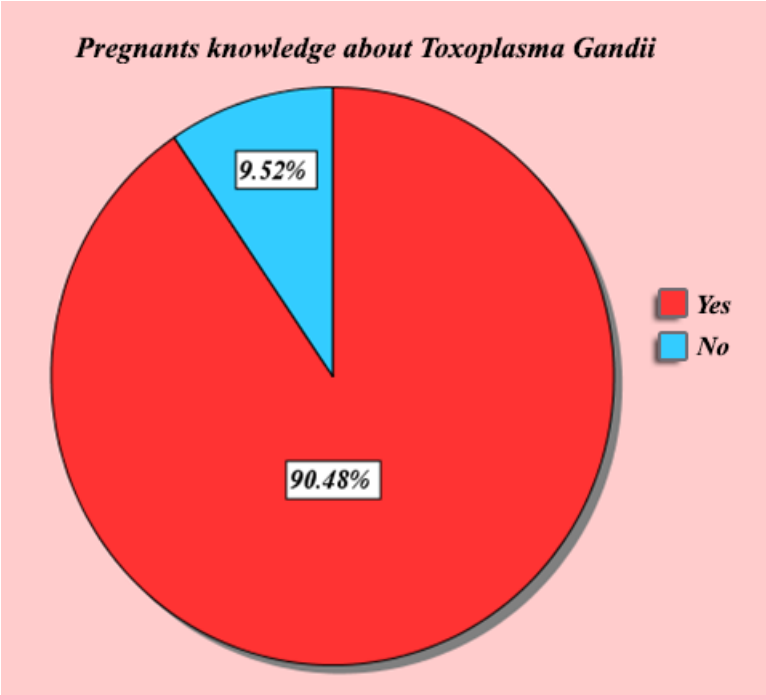
The sanitary hygienic care and eating habits greatly influence the acquisition of this parasitic agent, being a favorable factor as we see in the graph the proper management of pregnant women in this care.



Source: self-made.

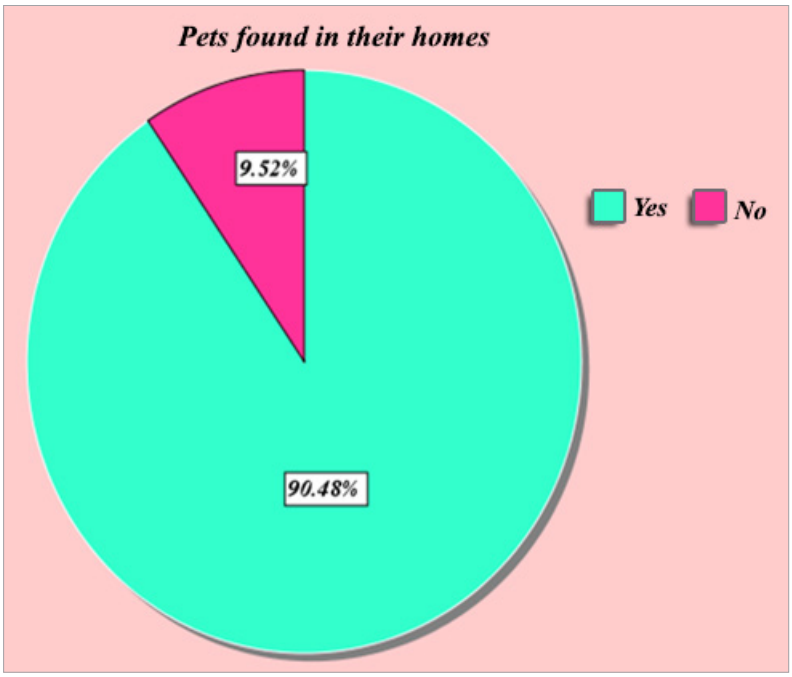
It was noted that women who indicated yes to hygienic care and favorable eating habits, accounted for 76.19% showed absence of the parasite and those in which there were poor hygiene and eating habits were few favorably presented presence of IgM antibodies to Toxoplasma.

The level of knowledge about Toxoplasma Gondii can play a very important role in the health of these pregnant women since 90.48% had a level of positive knowledge about toxoplasmosis but the ideal would be that 100% of the participants had it for what This ignorance of 9.52% about this disease and its consequences lead to 23.8% of positivity according to the research.



Source: self-made

The common thing of Nicaraguans is to keep a pet always at home, this reflects that 90.48% of the participants have pets in the rooming house. In other words, there is a high presence of them. It is not the only factor to acquire this parasitic infection but it contributes to it since it can be a source of infection to the human. Which reflects that there is a capture of IgM antibodies in 23.8% of the participants.



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CONCLUSIONS

The frequency of washing our hands should be a priority for every human being since we are constantly in contact with infectious microorganisms and if we do a hand wash correctly, it decreases the chances of acquiring some type of parasite. The participants of our study are aware of this so that 90.48% do their handwashing correctly.

We conclude that the sanitary hygienic conditions of the pregnant women who participated in this investigation are pre-arranged to adopt this parasitic infection because they present several types of domestic animals including cats with unfavorable health conditions in some dwelling houses, also the conditions Most homes are very vulnerable to the development of this parasite. According to the book of Human Parasitosis of Botero and Restrepo, poor personal hygiene is a favorable factor for its presence. The absence of washing or the use of contaminated water to wash raw food is a frequent cause of fecal infections by mouth.

Therefore, not washing food before eating it, not using hand washing and eating undercooked meats are essential factors for the reproduction of this parasitic agent. Eating habits or eating habits, contamination of food and drink water favor intestinal parasitism. Ingestion of raw or undercooked meat allows *Toxoplasma* infection (Botero & Restrepo, 2012, pp. 15-16)

The blood samples of pregnant women who participated in the study were analyzed in the teaching laboratory of the UNAN-FAREM-CHONTALES, in an ELISA reader, obtaining as a result reflected in the work protocol that 23.8% sample presented presence of antibodies of type IgM for Toxoplasma Gondii, which corresponds to previous studies on the incidence of Toxoplasma gondii in our country.

In this study, 21 pregnant serological samples that inhabit Zone 4 of the city of Juigalpa-Chontales were analyzed. In this way, we disclose valuable information that will be very useful as a background to the study.

The results obtained in the analysis of the samples reflected the presence of this type of antibody, which validates our proposed hypothesis.

The presence or absence of symptoms or an epidemiological history suggestive of exposure to T. gondii is not a useful tool for deciding whether to do laboratory tests. Therefore, although there are several serological methods available, its diagnosis is still very difficult. Elevated levels of specific anti-Toxoplasma antibodies indicate infection, differentiating between a recent or past infection.

The purpose of this study was to determine the frequency of maternal Toxoplasma gondii infection by detecting IgM ELISA antibodies.

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