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ORIGINAL

Epidemiology of toxoplasmosis in pregnant women in Loma Pyta (January - August 2025)

Epidemiologia de la toxoplasmosis en gestantes de Loma Pyta (enero - agosto 2025)

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ABSTRACT

Introduction: Toxoplasmosis, a parasitic infection caused by *Toxoplasma gondii*, represents a major concern during pregnancy due to the risk of vertical transmission and its potential consequences for the fetus, such as congenital malformations, spontaneous abortion, or stillbirth. In many cases, the infection in pregnant women is asymptomatic, making it difficult to detect without adequate prenatal monitoring. In countries like Paraguay, where socioeconomic and environmental conditions can favor transmission of the parasite, controlling this infection in pregnant women is essential to prevent complications in maternal and child health.
Objective: to determine the prevalence of toxoplasmosis in pregnant women in the first trimester treated at the Loma Pyta Maternal and Child Hospital in the period from January to August 2025.
Method: a descriptive, retrospective, cross-sectional study based on a review of 30 medical records of pregnant women treated during the defined period.
Conclusion: most women were young, with secondary education, and occupational diversity. They presented mild symptoms, received treatment with spiramycin, and had a good clinical response, with few maternal and fetal complications. IgG and IgM serology was positive in 100 % of cases, while 23,3 % tested positive for the IgG avidity test, highlighting the importance of timely clinical follow-up.

Keywords: Malformations; Prevalence; Vertical Transmission.

RESUMEN

Introducción: la toxoplasmosis es una infección parasitaria causada por *Toxoplasma gondii*, que representa una preocupación importante durante el embarazo debido al riesgo de transmisión vertical y sus posibles consecuencias para el feto, como malformaciones congénitas, aborto espontáneo o muerte fetal. En muchos casos, la infección en embarazadas es asintomática, lo que dificulta su detección sin un seguimiento prenatal adecuado. En países como Paraguay, donde las condiciones socioeconómicas y ambientales pueden favorecer la transmisión del parásito, el control de esta infección en embarazadas es esencial para prevenir complicaciones en la salud materno infantil.
Objetivo: determinar la prevalencia de toxoplasmosis en gestantes en el primer trimestre atendidas en el Hospital Materno Infantil Loma Pyta en el periodo de enero a agosto de 2025.
Método: estudio descriptivo, retrospectivo y transversal, basado en la revisión de 30 fichas médicas de gestantes atendidas en el período definido.
Conclusión: la mayoría de las mujeres eran jóvenes, con educación secundaria y diversidad ocupacional. Presentaron síntomas leves, recibieron tratamiento con espiramicina y tuvieran una buena respuesta clínica,

con pocas complicaciones maternas y fetales. La serología IgG e IgM positiva en el 100 % mientras que el 23,3 % resultó positivo para el test de avidez de IgG, resaltando la importancia del seguimiento clínico oportuno.

Palabras clave: Malformaciones; Prevalencia; Transmisión Vertical.

INTRODUCTION

Toxoplasmosis is an infection caused by the protozoan *Toxoplasma gondii*, an obligate intracellular parasite with a broad global distribution.[1] Although in most cases the infection in immunocompetent individuals is asymptomatic or manifests mildly, with nonspecific symptoms similar to those of a flu-like syndrome, its clinical importance is highlighted when the infection occurs during pregnancy, due to the significant risks of vertical transmission and potentially serious consequences for the fetus.[2,3]

Infection can occur through the ingestion of sporulated oocysts present in contaminated soil, poorly sanitized or undercooked food, especially raw or undercooked meat, unpasteurized milk, or even through improper handling of infected cat feces.[4] Domestic cats are the definitive hosts of the parasite and play a key role in the epidemiological chain of toxoplasmosis, as they eliminate sporulated oocysts in their feces.[5] The ability of T. *gondii* to cross the placental barrier makes toxoplasmosis a congenital infection of public health concern.[6]

Congenital toxoplasmosis can have different manifestations, depending on the gestational period in which the infection occurs. The earlier the disease, the greater the severity of fetal damage, although the transmission rate is lower in the first trimester.[7] In the more advanced stages of pregnancy, the vertical transmission occurs more frequently but tends to cause less severe manifestations. Fetal sequelae may include hydrocephalus, intracranial calcifications, chorioretinitis, neuropsychomotor developmental delay, and even spontaneous abortion or intrauterine fetal death.[8]

Therefore, prenatal follow-up plays a crucial role in early diagnosis and prevention of complications. Serological screening for toxoplasmosis is part of the basic healthcare protocol for pregnant women in several countries, including Paraguay. Identifying susceptible pregnant women and providing them with guidance on preventive measures are essential to avoid primary infection during pregnancy.[9,10] Similarly, timely diagnosis and treatment of acute infection can significantly reduce the risk of transmission to the fetus and minimize potential complications.[11]

Despite the importance of the issue, toxoplasmosis in pregnant women is still underestimated in many regions, especially in developing countries, where epidemiological surveillance is limited and laboratory resources are not always sufficient to ensure adequate diagnostic coverage.[12,13] Knowledge of the local prevalence of infection among pregnant women enables more targeted prevention, diagnosis, and treatment strategies. It supports the formulation of public policies on maternal and child health.[14,15]

The Loma Pyta Maternal and Child Hospital, located in Asunción, Paraguay, is a referral center for prenatal care and childbirth assistance for pregnant women in the region. The analysis of the prevalence of toxoplasmosis in pregnant women attended this institution represents an opportunity to understand the local epidemiological landscape and identify possible gaps in the preventive approach to the disease during prenatal care. It is hoped that this will contribute to understanding the magnitude of the problem in the population studied, promote awareness among health professionals, and support interventions aimed at improving prenatal care and reducing the risks associated with congenital toxoplasmosis.

METHOD

Study design

Descriptive, retrospective, observational cross-sectional.

Sampling, type

Non-probabilistic, convenience sampling.

Instruments

Well-structured forms with demographic, clinical, laboratory, and evolutionary variables, constructed from standardized fields in medical records and hospital records. All data collected was done so while ensuring the confidentiality and secrecy of the information in accordance with established ethical principles.

Data analysis

The collected data were organized and analyzed using EpiInfo 7 software. Qualitative variables were

described using absolute and relative frequencies in percentages, while quantitative variables were presented using measures of central tendency with the median and standard deviation dispersion according to their distribution.

Sample size

The minimum sample size established for the study was 30 cases.

Ethical considerations

This study followed the ethical principles established in the Declaration of Helsinki, which guides all research conducted on human subjects in terms of respect, dignity, autonomy, beneficence, non-maleficence, and justice. This protocol guaranteed anonymity, confidentiality, and the right to withdraw at any time without prejudice. The research did not include invasive clinical interventions or practices, focusing solely on the review of secondary data from the complete medical records available.

RESULTS

Table 1. Sociodemographic variables of pregnant women in the first trimester of pregnancy with serology for toxoplasmosis

Variable	Category	Absolute F (n=30)	Relative F (%)
Age	15-19	4	13,3
	20-24	10	33,3
	25-29	11	36,7
	30-34	4	13,3
	35-39	1	3,3
	>40 years old	0	0,0
Marital status	Single	8	26,7
	Married	3	10,0
	Common-law marriage	19	63,3
	Separated	0	0,0
	Widowed	0	0
Educational level	Primary	9	30,0
	Secondary	19	63,3
	University	2	6,7
	Technical	0	0,0
Origin	Peripheral regions outskirts of Asunción	9	30
	Villa Hayes	2	6,7
	MRA	5	16,7
	Clean	9	30
	Trinidad	2	6,7
Occupation	Ambush	3	10
	Housewife	7	23,3
	Student	4	13,3
	Worker	10	33,3
	Unemployed	6	20,0
	Informal	3	10,0

Most of the pregnant women were in the 25-29 age range (36,7 %), followed by 20-24 (33,3 %). The majority were women in common-law relationships (63,3 %) with a secondary education (63,3 %). The most common place of origin was Limpio (30 %) and areas in the outskirts of Asunción (30 %). In terms of occupation, most were workers (33,3 %), followed by housewives (23,3 %) and unemployed women (20 %).

Table 2. Clinical of pregnant women with diagnosis of toxoplasmosis during pregnancy

Variable	Category	F. Absolute (n=30)	Relative (%)
Symptoms	Fever	0	0,0
	Lymphadenopathy	0	0,0
	Headache	2	6,7
	General discomfort	1	3,3
	Nonspecific symptoms unspecified	27	90,0
Treatment received	Erythromycin	27	90,0
	Sulfadiazine	0	0,0
	Pyrimethamine	0	0
	Foline acid	0	0,0
	No treatment	3	10,0
	Stabilization	27	90,0
Response to treatment	Improvement	0	0,0
	No change	3	10,0
Maternal complications	Spontaneous abortion	0	0
	Premature birth	3	10,0
	RPM	0	0,0
	Others	0	0,0
Fetal complications	No complications	27	90,0
	Hydrocephalus	0	0,0
	Calcifications	0	0
	Chorioretinitis	0	0,0
	Low birth weight	6	20,0
	Fetal death	0	0,0
	No complications	24	80,0

Most pregnant women with toxoplasmosis were asymptomatic and received spiramycin in 90 % of cases, with clinical stabilization in 90 % of cases. Maternal complications were little frequent, occurring in only 10 % of cases (premature birth), and low birth weight accounted for 20 % of cases, making it the main fetal complication recorded.

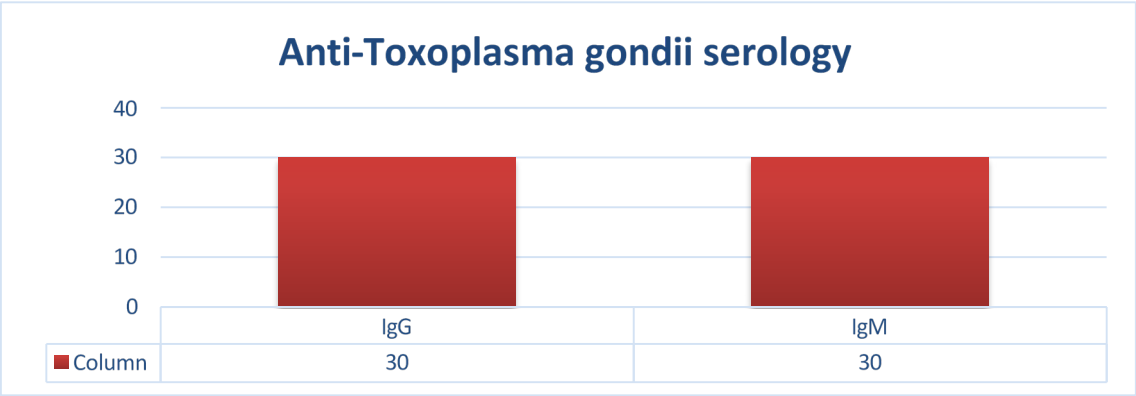

Figure 1. Proportion of pregnant women in the first trimester with positive serology for IgG or IgM anti-Toxoplasma gondii

Of the 30 patients included in the study, only 23 % underwent the IgG avidity test and had a positive result. In the other pregnant women, this test was not performed; however, all tested positive for IgG and IgM were received treatment with spiramycin. It should be noted that, to confirm an acute infection during pregnancy, it is necessary to supplement the evaluation with additional tests, such as the IgG avidity test, since the presence

of IgM can remain positive for several months, which could lead to incorrect interpretations if analyzed in isolation.

DISCUSSION

Toxoplasma gondii infection during pregnancy can cause maternal and perinatal complications, such as miscarriage, premature birth, or low birth weight. It is often asymptomatic, so early diagnosis and timely management are essential to reduce risks and prevent transmission to the newborn.[16]

The present study found a higher proportion of pregnant women in the 25-29 age range, coinciding with studies conducted in Lambayeque and Loreto, Peru,[17,18] which reported a predominance of those with secondary education and in common-law relationships. The population is mainly concentrated in Limpio and Mariano Roque Alonso, and its occupations primarily include workers and homemakers. These findings reflect that the service is being used by young adult women with secondary education and diverse employment situations, highlighting the need to design health programs adapted to these sociodemographic characteristics.

No patients from Loma Pyta were registered in our study, which could be related to sociocultural factors such as shame and fear of stigma, which can negatively influence the decision to seek medical care. These findings are consistent with those of previous studies conducted in other regions of Brazil, where it was found that many pregnant women avoid medical consultations or seek hospitals further away due to similar barriers.[19,20] This absence of cases in our sample reflects how social and cultural factors can affect patient recruitment and, therefore, the epidemiological surveillance of toxoplasmosis in pregnant women.

In terms of clinical presentation, most women in this study had mild or nonspecific symptoms, and treatment with spiramycin was well tolerated, with stabilization in most cases.[20] These results are consistent with previous studies reporting a favorable outcome when diagnosis and treatment are timely. However, some studies have documented greater complications in different contexts, which could be attributed to differences in the timing of diagnosis, adherence to treatment, or the presence of maternal comorbidities.[21]

The finding of IgG and IgM positivity in all women studied is notable and suggests a high prevalence of active or recent infection. This result is consistent with studies that have reported high rates of infection in pregnant women, underscoring the importance of implementing effective prevention and control strategies. However, it is essential to note that serological results should be interpreted with caution, as antibody presence may not indicate active infection.[21]

In our study, only 23,3 % of pregnant women had a positive avidity test, which confirmed acute infection in this group, among the other participants, suspected infection was based on serological positivity and receipt of empirical treatment. Given that this test has inherent limitations in terms of sensitivity and specificity, data collection may have been affected by the lack of availability of the avidity test in the hospital. This methodological difficulty is a limitation noted in previous studies on *Toxoplasma gondii* infection in pregnant women.[22]

Regarding maternal and fetal complications, this study found a low frequency of adverse events, suggesting that timely therapeutic intervention and clinical follow-up are effective in minimizing risks. These findings are consistent with the existing literature, which highlights the importance of early detection and appropriate management to prevent complications associated with infection during pregnancy.

CONCLUSION

With this study, we determine the prevalence of toxoplasmosis in pregnant women in the first trimester of pregnancy treated at the Loma Pyta Maternal and Child Hospital, finding the highest percentage of patients to be young adult women with secondary education and diverse occupations. No patients from Loma Pyta were registered; on the contrary, most came from regions further away from the hospital, which could be related to the fear of stigmatization or prejudice if someone they knew became aware of their toxoplasmosis diagnosis. Most presented with mild or nonspecific symptoms and were treated with spiramycin, with good clinical response and low incidence of maternal and fetal complications, with only a few cases of premature birth and low birth weight. Of the 30 patients, only 23 % tested positive for IgG avidity, while the rest did not undergo the test. However, 100 % of the patients tested positive for IgG and IgM and received treatment with spiramycin. Among the main limitations of this study is the lack of access to all IgG avidity test results, as it was not possible to perform the test on all pregnant women included in the study. Furthermore, when available, the results were reported only qualitatively as “high” or “low,” without the exact numerical value, which restricted a more detailed analysis and limited the accuracy of the interpretation of the findings.

Given these limitations, routine implementation of the IgG avidity test is recommended for pregnant women with positive *Toxoplasma gondii* serology, especially during the first trimester, when its diagnostic utility is highest. This test would allow for more reliable differentiation between acute and past infections, optimizing diagnosis, reducing unnecessary empirical treatments, and promoting more appropriate prenatal care.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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