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CONGENITAL TOXOPLASMOSIS IN THE SOUTH AND SOUTHEAST OF BRAZIL: A NEGLECTED DISEASE?

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ABSTRACT

INTRODUCTION Toxoplasmosis is a chronic infection caused by the parasite *Toxoplasma gondii*, which crosses the placental barrier, causing serious and often irreversible problems for the physical and motor development of neonates, newborns and children. Prenatal care is relevant for screening in susceptible pregnant women and rapid initiation of treatment. In Brazil, the prevalence is 5-23 infected children per 10,000 live births. According to the high prevalence of this infection in Brazil, can we say that congenital toxoplasmosis is a neglected disease? **OBJECTIVE** To evaluate congenital toxoplasmosis rates in the South and Southeast of Brazil and, thus, perform a comparative analysis with Brazilian data in the 2019-2022 period. **METHODS** This is a cross-sectional, descriptive ecological study with a quantitative approach, covering a time-series analysis of congenital toxoplasmosis indices in the South and Southeast, between 2019 and 2022. **RESULTS:** Data show a significant increase in cases of newborns with congenital toxoplasmosis in Brazil. The country, in the period from 2019 to 2022, notified the total number of 12,885 new cases. And in the same period, the states of the South and Southeast presented 7,122 new cases – equivalent to 55.3% of the national data. It was also evidenced that among the states with the most reported cases of congenital toxoplasmosis in the Southeast was Minas Gerais (MG),

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followed by São Paulo (SP). As for the states in the South region, Rio Grande Do Sul (RS) is highlighted, followed by the state of Paraná (PR). **CONCLUSION** It is of paramount importance to perceive the relevance of the theme presented for a better approach and, consequently, a better outcome for the growing number of cases. Further research on the theme is extremely necessary, as well as a more accentuated look at the importance of well-performed prenatal care.

Keywords: Health. Toxoplasmosis. Congenital. Vertical Transmission.

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INTRODUCTION

Toxoplasmosis is a chronic infection caused by the parasite *Toxoplasma gondii. Its contamination occurs when cysts of the parasite are ingested through raw or undercooked animal meat, or the ingestion of oocysts in water or food contaminated by feces of infected cats, among others. Infection in non-pregnant immunocompetent women is usually self-limiting and, in most cases, asymptomatic.*[1] However, this disease passes transplacently to the growing fetus. *Toxoplasma gondii* crosses the placental barrier, causing serious and often irreversible problems for the physical and motor development of neonates, newborns and children. The severity of clinical manifestations depends on the gestational age at the time of infection, the parasite load, the virulence of the mother, and the immune status of the mother.[2] Thus, it is worth noting that congenital toxoplasmosis, through vertical transmission, has significant rates of infant morbidity and mortality.[1]

Prenatal care is essential for adequate gestational follow-up, which aims to ensure the proper development of the pregnancy without unfavorable impacts on the mother-baby binomial.[3] In this context, serological neonatal screening is recommended, with IgM and IgG tests, in the first trimester of pregnancy, a period in which the infection can cause more serious sequelae for the fetus, for the detection of toxo-susceptible mothers.[3,6] Thus, it is of paramount importance to identify the disease early in order to recognize susceptible pregnant women and also to initiate timely treatment in cases of recent acute infection, aiming at suppressing vertical transmission and fetal infection.[3]

The diagnosis of toxoplasmosis should be made when the disease is clinically suspected, i.e., a patient who presents with acute fever associated with lymphadenopathy with possible exposure to *Toxoplasma Gondii.*[4] In view of this, it is necessary to request laboratory tests, the most common being the ELISA serological assay, through which it is possible to evaluate the phase of infection.[4,5] It is known that the moment of maternal contamination is directly related to the increased risk of fetal contamination, as this increases with gestational age.[4] Treatment is done with antiparasitic therapy for pregnant women who acquired the disease during pregnancy and babies under 1 year old with a confirmed or highly indicative diagnosis.[4,5] In general, the therapy used is the use of Pyrimethamine, sulfadiazine and folic acid.[4]

After the diagnosis is established and treatment is initiated, it is necessary to continue accompanying the child in a series of consultations3. In routine childcare evaluations, it is necessary to be aware of the appearance of symptoms of congenital

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toxoplasmosis3. A measure recommended by the health department is the measurement of IgG until 18 months of age or until treatment is completed4. Other necessary measures include evaluations with specialists, such as ophthalmological, auditory and neurological evaluations4. Ophthalmologic evaluations should take place periodically until the age of preschool, when the child may report the onset of certain symptoms, if symptoms are not reported, consultations continue annually4. Hearing evaluations should be done until 14 months of age, if hearing loss is not identified in the first test, the evaluation should be done again between 24 and 30 months4. Finally, the neurological evaluation should take place every 3 or 6 months until the age of two, the doctor should request neuroimaging and electroencephalogram in order to observe abnormalities, once the alteration is identified, it should be treated early for the best development of the child.[4]

In Brazil, the prevalence of congenital toxoplasmosis is 5-23 infected children per 10,000 live births. It can be observed that about 90% of these children are asymptomatic, however, 60 to 80% of the cases investigated present alterations, mainly neurological and ophthalmological.[7] According to the high prevalence of toxoplasmosis in Brazil, can we say that congenital toxoplasmosis is a neglected disease?

Thus, this study aims to evaluate congenital toxoplasmosis rates in the South and Southeast regions of Brazil, covering the states of Rio Grande do Sul (RS), Santa Catarina (SC), Paraná (PR), São Paulo (SP), Rio de Janeiro (RJ), Espírito Santo (ES) and Minas Gerais (MG) and thus, carry out a comparative analysis with Brazilian data in the period from 2019 to 2022.

METHODOLOGY

This is a cross-sectional, descriptive ecological study with a quantitative approach, covering a time-series analysis of congenital toxoplasmosis rates in the South and Southeast regions, between 2019 and 2022. From the proposed period, the total values of this infection in Brazil and individual values of the states of São Paulo (SP), Rio de Janeiro (RJ), Espírito Santo (ES) and Minas Gerais (MG) representing the Southeast region and the states of Rio Grande do Sul (RS), Santa Catarina (SC) and Paraná (PR) representing the South region were analyzed. National and regional data were extracted from the Notifiable Diseases Information System (SINAN) using the TabWin Tabulator of the Department of Informatics of the Unified Health System (DATASUS), based on the

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registration of this disease in the highlighted period. The data were analyzed. These searches were carried out in June 2023.

RESULTS

The data analyzed for the preparation of the article will show the cases of newborns with congenital toxoplasmosis in Brazil compared to the South and Southeast regions of the country, divided and compared by year, totaling a period of four years, corresponding to 2019, 2020, 2021 and 2022.

Brazil, in 2019, had a total of 2456 new cases, representing an average of 491.2 cases per Brazilian region. In the same year, the states of the Southeast had a total of 859 cases and those of the South, 443. Together, they add up to 1,302 cases of the disease and are equivalent to more than half (53%) of new cases of congenital toxoplasmosis in Brazil. Unfortunately, the coming years will not be different, since in all the years studied the South and Southeast, together, reported more than 50% of the cases.

Tabela 1 - Total de casos de recém nascidos com toxoplasmose no Brasil no período de 2019-2022

Período dos casos	Número de casos	Média de casos por região brasileira
2019	2456 casos	491,2
2020	2826 casos	565,2
2021	3515 casos	703
2022	4088 casos	817,6

Prepared by the authors (2023), based on secondary data from DATASUS.

Tabela 2 - Total de casos de recém nascidos com toxoplasmose no Sul e Sudeste do Brasil no período de 2019-2022

Período dos casos	Nº casos no Sul	Nº casos no Sudeste
2019	443	859
2020	521	1113
2021	674	1321
2022	710	1483

Prepared by the authors (2023), based on secondary data from DATASUS.

In 2020, the national value of new cases was 2,826 and the average per Brazilian region was 565.2. The states of the South and Southeast, in 2022, totaled 1632 new cases - corresponding to 57.7% of the cases reported in Brazil. The southern states reported a total of 521 new cases, while the southeastern states reported 1113.

In 2021, Brazil reported a total of 3515 new cases of congenital toxoplasmosis, representing an average of 703 new cases per region. The South reported a total of 674 new cases and the Southeast, 1321. The states of the South and Southeast, together, corresponded to 1995, representing 56.7% of the new national cases.

In 2022, the states of the South and Southeast reported 710 and 1483 cases, respectively - totaling 2,193 new cases in the regions. Brazil presented, this year, 4088

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new cases, and 817.6 as an average of cases by region. Emphasizing, once again, that the states of the South and Southeast regions, together represent more than half of national cases (53.6%).

The data prove a significant increase in cases of newborns with congenital toxoplasmosis in Brazil. The country, in the period from 2019 to 2022, notified the total number of 12,885 new cases. And in the same period, the states of the South and Southeast presented 7,122 new cases – equivalent to 55.3% of the national data.

Tabela 3 - Total de casos de recém nascidos com toxoplasmose no Brasil em comparação com a soma total de casos com toxoplasmose no Sul e Sudeste do Brasil no período de 2019-2022

Período dos casos	Nº casos no Brasil	Nº casos no Sul e Sudeste
2019	2456	1302
2020	2826	1634
2021	3515	1995
2022	4088	2193

Prepared by the authors (2023), based on secondary data from DATASUS.

Also, during the research, it was evident that among the states with the most reported cases of congenital toxoplasmosis in the Southeast was Minas Gerais (MG), in which in the period from 2019 to 2022, it totaled 1,718 new cases, followed by São Paulo (SP) which reported 1,697. As for the states in the South region, Rio Grande Do Sul (RS) stands out with 898 new cases, followed by the state of Paraná (PR), with 786.

Tabela 4 - Total de casos de recém nascidos com toxoplasmose nas regiões do Brasil no período de 2019-2022

Regiões do Brasil observadas no estudo	Nº casos no período 2019-2022
Minas Gerais	1718
São Paulo	1697
Rio Grande do Sul	898
Paraná	786

Prepared by the authors (2023), based on secondary data from DATASUS.

DISCUSSION

In view of the data exposed in the results, it is possible to see the growing number of new cases of congenital toxoplasmosis, which covered the entire national territory in the period from 2019 to 2022. In this context, the southeast and south regions of the country showed the greatest increase, which are responsible for more than half of the number of new occurrences in the extension of the Brazilian territory, especially the states of Minas Gerais and Rio Grande do Sul, respectively.

It is of fundamental relevance to consider that a possible reason for the lower prevalence of events in the Midwest, Northeast and North regions compared to the South and Southeast regions may be due to negligence in prenatal adherence, causing a

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deficiency in adequate screening for the disease as recommended by the Ministry of Health.[3] This public agency recommends that diagnostic tests be performed quarterly during the gestational period as a strategy to control congenital toxoplasmosis, however, the frequent reassessment of laboratory tests as well as the attendance of consultations to interpret these increases costs and is uncomfortable for patients.[3.7]

In this logic, a probable point for failure to adhere to attendance at testing appointments is due to economic, cultural and regional diversities, such as the fact that some pregnant women suffer from physiological changes expected during pregnancy and also the difficulty with travel to the nearest health unit, an inconvenient situation because it generates financial costs for the family.

In addition, it is known that most pregnant women with the protozoan are asymptomatic, and that the small symptomatic portion exhibits nonspecific findings, which can often simulate a common cold, being, therefore, one of the possible reasons for not seeking medical care.[3]

Another assumption takes into account the difficulty in standardizing diagnostic methods as well as their interpretations by health professionals.[8] It is known that due to the variety of techniques used and the absence of a standardized literature that recommends testing according to gestational age, this is a scenario conducive to an increase in the incidence of false negatives, making it difficult to identify toxo-sustainable mothers and infected mothers.[8]

Another hypothesis of this seroprevalence is the lack of information of pregnant women in relation to some practices that should be avoided during the conceptional period. According to the results, a large part of this population group, contaminated with toxoplasma gondii, occurs through contaminated food and water, thus being an important theme to be raised during prenatal consultations.[6] During medical care, it is up to the professional to emphasize the importance of consuming well-cooked meats, in addition to using filtered water and, if such a resource is not possible, due to the financial cost, advise that it be boiled and only after it is made available for ingestion.

In addition, it is important to highlight the care that pregnant women should take with felines, such as domestic cats, throughout the prenatal period, since they are the definitive hosts of protozoa.[4] In this case, it is recommended that pregnant women who have cats ask another individual to clean the litter box daily.[6] Thus, seronegative women of

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reproductive age and immunocompromised women should act with more caution. However, there is a weak relationship between transmission of acute infection with cats.[4.6]

Therefore, it is notable that the materials found in the literature on such an increase in cases of congenital toxoplasmosis throughout Brazil are scarce, considering that most studies address isolated cases in specific populations.

CONCLUSION

We conclude, according to the data presented, that congenital toxoplasmosis may represent a neglected disease in Brazil. The significant increase in cases demonstrates the lack of approach to the subject, as well as the lack of attention to the correct performance of prenatal care during pregnancy. In addition, we observed the lack of incentive on the part of health professionals for better dissemination, testing and approach to this disease, as well as informative materials and further research on the topic addressed. It is up to the health professional to promote better prenatal care, just as it is up to the pregnant woman to do her part. However, for this to happen, it is necessary to take greater consideration of these alarming and increasingly increasing levels of congenital toxoplasmosis in Brazil.

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