The crucial role of the partner in the incidence of cases of congenital syphilis in the state of Sergipe: an analysis in 17 years

O papel crucial do parceiro na incidência dos casos de sífilis congênita no estado de Sergipe: uma análise em 17 anos

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ABSTRACT

Introduction: Congenital syphilis is a highly preventable infectious disease. The relevance of the partner in the transmission of the disease is undeniable, and the underestimation of its treatment is a great risk with serious fetal consequences. **Objective:** The aim of this study was to analyze the partner's contribution to the inadequate treatment of pregnant women and the incidence of cases of congenital syphilis in Sergipe between 2005 and 2022. **Methods:** A cross-sectional, retrospective, and descriptive study was carried out through the collection of reported cases of congenital syphilis from the Notifiable Diseases Information System (SINAN). **Results:** There was a considerable increase in the number of reported cases of congenital syphilis in Sergipe in the past 17 years, with a predominance of untreated partners (61.5%) over treated ones (14.9%), excluding the 23.6% who had this information ignored. The variations presented from 2018 onwards stand out, resulting from the softening implemented in the notification of partner data, with an average of 23.7% of ignored information. Consequently, the diagnosis of recent congenital syphilis was found in 83.7% of newborns whose parents were not treated, in addition to 50% of cases of late infection and the vast majority of cases of stillbirths/abortion (92.6%) and deaths from the disease (78.8%). Furthermore, the non-inclusion of the partner in prenatal care (83%) contributed mainly to delays in the diagnosis of maternal syphilis, with 90.1% during delivery/curettage, 76.7% after delivery, and 77.2% of them not even identified with the disease. **Conclusion:** In addition to the increase in cases of congenital syphilis, there was a predominance of untreated partners, coinciding with changes in the notification criteria in 2018, which contributed to most cases of delay in maternal diagnosis, reinfection, and vertical transmission. Thus, the partner's approach is essential to guarantee the treatment and interruption of the transmission of the disease.

Keywords: Syphilis. Congenital. Partner. Transmission.

RESUMO

Introdução: A sífilis congênita é uma doença infectocontagiosa altamente prevenível. A relevância do parceiro na transmissão da doença é inegável, sendo a subestimação do seu tratamento um grande risco, com graves consequências fetais. **Objetivo:** Analisar a contribuição do parceiro na inadequação do tratamento da gestante e na incidência dos casos de sífilis congênita em Sergipe entre 2005 e 2022. **Métodos:** Realizou-se um estudo transversal, retrospectivo e descritivo, através da coleta de casos notificados de sífilis congênita do Sistema de Informação de Agravos de Notificação (SINAN). **Resultados:** Observou-se um aumento considerável do número de casos notificados de sífilis congênita em Sergipe nos últimos 17 anos, com o predomínio de parceiros não tratados (61,5%) em relação aos tratados (14,9%), descontando-se os 23,6% que tiveram essa informação ignorada. Destacam-se as variações apresentadas a partir de 2018, decorrentes da amenização implementada na notificação dos dados do parceiro, com uma média de 23,7% de informações ignoradas. Consequentemente, o diagnóstico de sífilis congênita recente foi encontrado em 83,7% dos recém-nascidos cujos pais não foram tratados, além de 50% dos casos de infecção tardia e a maioria dos casos de natimortos/aborto (92,6%) e óbitos pelo agravo (78,8%). Outrossim, a não inclusão do parceiro na assistência pré-natal (83%) contribuiu majoritariamente nos atrasos no diagnóstico da sífilis materna, sendo 90,1% no parto/curetagem, 76,7% após o parto, além de 77,2% delas que nem mesmo foram identificadas com a doença. **Conclusão:** Além do aumento de casos de sífilis congênita, houve predomínio de parceiros não tratados, coincidindo com as mudanças nos critérios de notificação em 2018, o que contribuiu para a maioria dos casos de atraso no diagnóstico materno, reinfecção e transmissão vertical. Assim, a abordagem do parceiro é imprescindível para garantia do tratamento e da interrupção da transmissão da doença.

Palavras-chaves: Sífilis. Congênita. Parceiro. Transmissão.

INTRODUCTION

Congenital syphilis is an infectious disease of systemic character, curable, and exclusive to human beings. It is caused by *Treponema pallidum*, a gram-negative bacterium of the spirochete group[1]. Vertical transmission occurs transplacentally from an untreated or inadequately treated infected pregnant woman to the conceptus or through the birth canal if there is an active lesion[2].

Thus, maternal-fetal transmission is possible at any gestational stage or stage of maternal disease. In this way, congenital syphilis is part of the group of infections acquired in the womb or during the birth process: toxoplasmosis, others (syphilis, HIV, hepatitis B and C, ZIKA, parvovirus B19, and Coxsackie), rubella, cytomegalovirus, and herpes virus simplex 1 and 2 (HSV), forming the term TORCH[3]. Fetal contamination by the maternal spirochete can result in adverse outcomes in more than half of untreated pregnancies, which include prematurity, low birth weight, fetal deformities (neurological, bone, and organ damage), miscarriage, and stillbirth[4].

Among the causal factors for fetal cases are inadequacies in prenatal care or therapy with benzathine benzylpenicillin, the medication of choice for the treatment of syphilis, performed before or during pregnancy. In addition, the partner's infection is a significant source

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of maternal reinfection, increasing the pregnant woman's exposure to the etiological agent and increasing the chances of vertical transmission[3,5]. Thus, syphilis infection in the partner is a considerable factor in the incidence of congenital syphilis. To prevent this condition, they must be tested and treated jointly with their companions[5,6].

However, since the 2018 edition of the Syphilis Epidemiological Bulletin, there have been questionable changes in this aspect, with the removal of the obligation to notify the treatment of the sexual partner in the notification/investigation form for congenital syphilis. Thus, the insertion of the information "1-SIM" in field 46 (partner treated concomitantly with the pregnant woman) becomes provisional, regardless of the information collected[7].

However, this view is questionable, considering that joint treatment of the sexual partner is an important strategy to prevent transmission of the disease. Therefore, the withdrawal of the mandatory notification can considerably increase non-adherence rates, putting the health of the pregnant woman and the fetus at risk.

Thus, it is worth noting that congenital syphilis is a public health issue and that its prevention is a collective responsibility. Therefore, the evaluation and treatment of sexual partnerships are crucial to interrupt the chain of transmission of the infection[5,8-10].

Given the above, the objective was to carry out a survey with SINAN data to assess the still considerable contribution of the partner in the incidence of cases of congenital syphilis in the State of Sergipe in the period from 2005 to 2022.

For this, a cross-sectional, observational, retrospective, and descriptive study was used, with the collection of data from notified cases of gestational and congenital syphilis contained in DATASUS.

The analysis of this information may allow for the complete withdrawal of the partner's contribution to the rates of congenital syphilis, understanding it as an important risk factor to be considered in the prevention of this serious disease in the State. This can serve as a subsidy for the development of preventive measures and the structuring of quality services, in addition to enabling the planning of government health strategies and policies in this regard.

OBJECTIVE

The aim of this study was to analyze the contribution of sexual partners to inadequate treatment of pregnant women and the incidence of consequent cases of congenital syphilis through statistical data from SINAN on congenital syphilis in the State of Sergipe from 2005 to 2022.

METHODS

This is a cross-sectional, observational, retrospective, and descriptive study using SINAN as a database, inserted in the "Epidemiological and Morbidity" item of the Tabnet program, through the Department of Informatics of the Unified Health System (DATASUS). It was considered a criterion of inclusion to include all notified and confirmed cases of congenital syphilis in the period from 2005 to 2022, for a total of 5,409 cases. The exclusion criteria used were the reported cases of children with syphilis from regions of Brazil other than Sergipe (UF Prenatal 28, according to SINAN).

The variables used were taken from the SINAN investigation sheets for congenital syphilis. Among them, there are data alluding to the mother, such as the moment when the diagnosis was given and whether or not prenatal care was performed; to the partner, such as treatment by the same; and to the infected child, as final classification and evolution to death.

After evaluating the aforementioned SINAN data, they were inserted into respective tables and spreadsheets in the Excel program, where descriptive analyses were carried out. The statistical analysis used was descriptive and differential. Categorical variables were presented using absolute and relative frequencies, which characterize the descriptive analysis. In the differential part, Pearson's chi-square test was used with Monte-Carlo simulations and associations between variables. The adopted statistical significance level was 5% ($p \leq 0.05$), and all tests were two-tailed. The Statistical Package for the Social Sciences (IBM SPSS 25.0) software was used for the analyses.

This study was not submitted to the Research Ethics Committee (CEP) since, according to item 3 of the sole paragraph of Article 1 of Resolution No. 510 of April 7, 2016, the data were extracted from a public domain platform that does not identify the research participants. Furthermore, the content of the present study is only documentary, through data from DATASUS, with the TCLE and TALE being released, as well as the submission on the Brazil platform.

RESULTS

In the period from 2005 to 2022, 5,409 cases of children with syphilis in the State of Sergipe were quantified in Sinan. In **Figure 1**, the time interval between 2012 and 2021 is highlighted, observing a considerable increase in the incidence rate of notified cases of congenital syphilis between 2017 and 2020 (approximately 181.9%), even surpassing the rates from the Northeast region and even the national ones.

The analysis of the execution of the treatment by the partner showed that the vast majority of them did not (61.5%) and that in

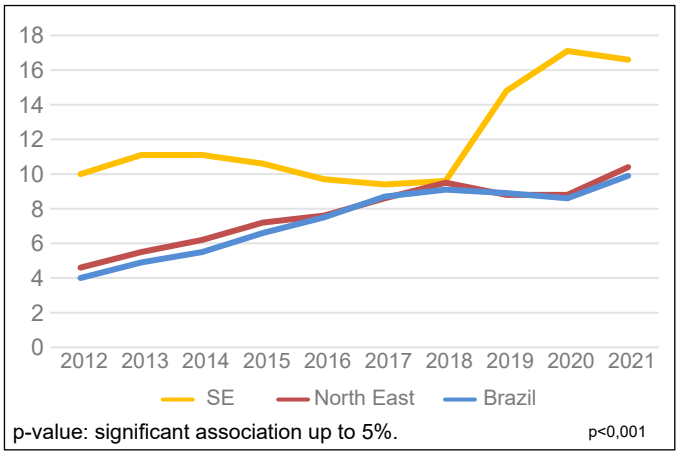

Figure 1. Incidence rate of congenital syphilis in the State of Sergipe in the past 10 years, 2012–2022.

23.6% of cases, this information was ignored (**Figure 2**). Such data are available up to the year 2019, just before the changes implemented in 2018 in the notification of field 46 of the notification/investigation form for congenital syphilis (partner treated concomitantly with the pregnant woman). Therefore, a minimum number of 14.9% of the partners treated among the total number of reported cases of consequent congenital syphilis in Sergipe is evident.

In general, in this time interval, there were some variations in the number of untreated partners, with a maximum value of 68.4% in 2011 and a minimum value of 52% in 2019, with an average of 62.7%. Thus, there is a tendency toward a majority prevalence of these cases to the detriment of treated ones. In addition, the considerable number of cases that presented this ignored information stands out, with an average of 23.7% and a maximum value of 26.2% precisely in 2019, coinciding with the easing of the joint approach of sexual partners (**Figure 3**).

Concerning the performance of prenatal care by the pregnant woman, 83% of the cases were not accompanied by the joint treatment of her partner. Therefore, **Table 1** highlights that the diagnosis of recent congenital syphilis was found in 83.7% of newborns whose parents were not treated, in addition to most cases of stillbirths/abortions due to the condition (92.6%) and late congenital infection (50%).

Furthermore, **Table 2** highlights the cases of congenital syphilis resulting from the fact that the partner was not treated, a reason that was related to most cases in which the detection of syphilis during pregnancy was made late, 90.1% during childbirth/curettage, 76.7% after delivery, in addition to 77.2% who did not even receive the diagnosis. In addition, this factor was also related to 78.8% of child deaths due to the condition.

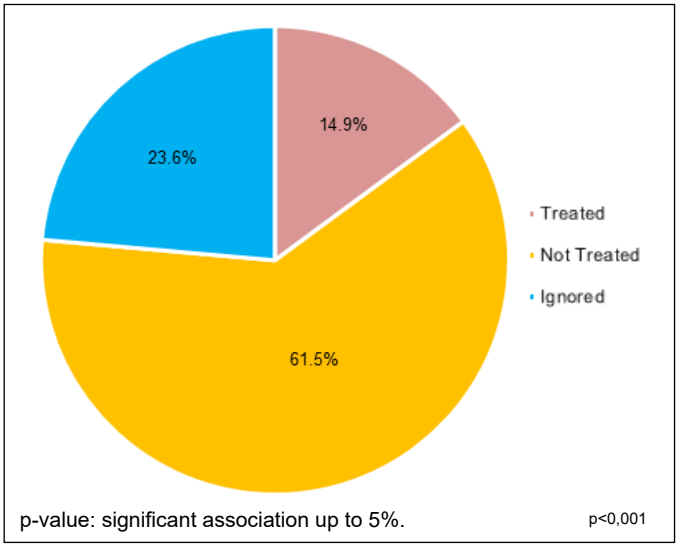

Figure 2. Number and percentage distribution of cases of congenital syphilis by treatment performed by the partner in Sergipe, 2005–2019.

DISCUSSION

The state of Sergipe surpassed the Brazilian trend and that of the Northeast region in the incidence of quantified cases of congenital syphilis in the period from 2005 to 2022, with a total of 5,409 cases reported on SINAN. These data agree with the last Syphilis Epidemiological Bulletin (2022), which shows the same evolution in the number of cases in this period, highlighting the increase of approximately 181.9% observed between 2017 and 2020[11-14].

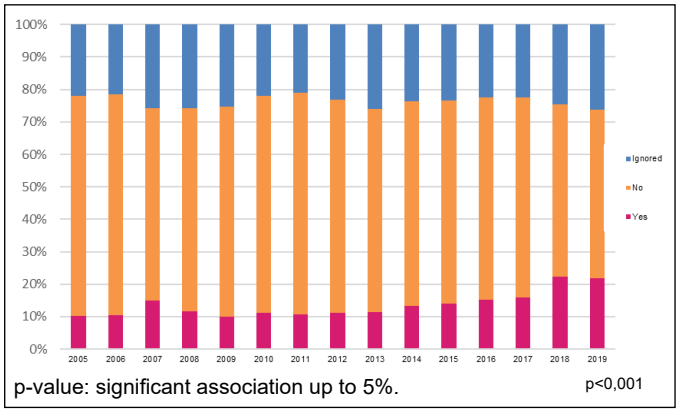

Figure 3. Percentage distribution of congenital syphilis cases according to information on partner treatment per year in Sergipe, 2005–2019.

Table 1. Number of cases of congenital syphilis according to information on treatment of the partner by final classification of the child and by information on the performance of prenatal care by the mother in Sergipe 2005-2022.

Characteristic	Partner treatment				p-value
	Yes (%)	No (%)	Ignored (%)	Total	
Final classification of the child					
Recent SC	427 (8.7)	4089 (83.7)	368 (7.5)	4884	
Late SC	0	4 (50)	4 (50)	8	<0.001
Stillbirth/abortion	17 (3.3)	479 (92.6)	21 (4)	517	
Mother performed prenatal care					
Yes	437 (10.6)	3415 (83)	262 (6.4)	4114	
Not	29 (3.13)	860 (92.7)	38 (4.1)	927	<0.001
Ignored	4 (1)	251 (68.2)	113 (30.7)	368	

p-value: significant association up to 5%; Fisher's exact test; Chi-square test; SC: syphilis, congenital.

Table 2. Number of cases of congenital syphilis according to information on treatment by the partner at the time of diagnosis of maternal syphilis and by evolution of the child in Sergipe 2005–2022.

Characteristic	Partner treatment				p-value
	Yes (%)	No (%)	Ignored (%)	Total	
Moment of diagnosis maternal					
During pre-natal care	335 (15.5)	1683 (78)	138 (6.4)	2156	
During childbirth/curettage	80 (3.7)	1940 (90.1)	133 (6.2)	2153	
After childbirth	48 (9)	406 (76.7)	75 (14.2)	529	<0.001
Not done	2 (4.5)	34 (77.2)	8 (18.2)	44	
Ignored	5 (4.7)	42 (39.6)	59 (55.6)	106	
Evolution of the child					
Death from syphilis congenital	4 (5.6)	56 (78.8)	11 (15.5)	71	<0.001

p-valor: significant association up to 5%; Fisher's exact test; Chi-square test.

Consequently, as of 2018, the state of Sergipe presented the highest increase in the Gross Coefficient of Mortality due to congenital syphilis (9.4), a calculation carried out based on the total number of deaths in the period divided by the quantity of the total population in half of the period and multiplied by 1,000[13,14].

This increase can be attributed, in part, to the changes described in the 2018 Syphilis Epidemiological Bulletin, which defines regarding the notification/investigation form for congenital syphilis, the new case definition that considers adequate treatment to be completely performed for each stage of clinical treatment of syphilis, with benzathine penicillin, and started up to 30 days before delivery, disregarding the information on the concomitant treatment of the pregnant woman's sexual partner.

The justification for such a change is the fact that "it does not generate inconsistency in Sinan," making the insertion of information "1-SIM" in field 46 (partner treated concomitantly with the pregnant woman) temporary, regardless of the information collected[7].

The previous version of the Syphilis Epidemiological Bulletin (2017) determined the following conditions to be inadequate treatment: treatment performed with any medication other than penicillin; incomplete, even though it was done with penicillin; inappropriate for the clinical phase of the disease; institution of treatment within 30 days of delivery; and sexual partner(s) with untreated or inadequately treated syphilis[15].

Thus, testing and joint treatment of the couple are essential measures to prevent transmission of the disease and, consequently, congenital syphilis. In addition, such a change can lead to a reduction in therapeutic adherence, consequently increasing the incidence of vertical transmission.

It is important to remember that the prevention of congenital syphilis is a collective responsibility and that everyone involved in the care of pregnant women must be committed to preventing the disease[16,17].

According to the Clinical Protocol and Therapeutic Guidelines for Comprehensive Care for People with Sexually Transmitted Infections (STIs)[18,19], treating the partner is considered imperative in preventing congenital syphilis. One-third of the sexual partners of syphilitic pregnant women will develop the disease within 30 days of exposure.

Therefore, in addition to clinical evaluation and laboratory follow-up, if there is exposure for up to 90 days, it is recommended to offer presumptive treatment to such partners (regardless of clinical stage or signs and symptoms) with a single dose of benzathine benzylpenicillin (2.4 million IU [International Unit]) intramuscular (1.2 million IU in each buttock). Furthermore, they all must be tested; when reactive, treatment of adult-acquired syphilis is recommended according to the clinical stage[20,21].

The results show that when the partner is not treated, there are a series of harmful consequences for the fetus, reflected in most cases of recent congenital syphilis (83.7%), late congenital syphilis (50%), stillbirths/abortions (92.6%), and deaths due to the disease (78.8%). Thus, it is necessary that strategic measures for the joint treatment of the father be developed in view of the persistence of the predominance of untreated cases (61.5%) to the detriment of treated cases (14.9%).

Despite this, the numbers indicate that this public is still not sufficiently included in the targets of the prenatal strategy, with 83% of the cases of syphilitic pregnant women who underwent prenatal care not being accompanied by the joint treatment of their partner.

It is known that the Ministry of Health considers the rates of congenital infection as a parameter for evaluating the quality of prenatal care, linking the follow-up of the pregnant woman and her partner to measures that aim to eradicate congenital syphilis. Thus, the inclusion of a partner should be encouraged so that it is possible to effectively control the infectious risk in women of childbearing age[21,22].

With regard to the time of maternal diagnosis in cases of untreated partners, the values still tend to be late, with 90.1% of cases detected at the time of delivery/curettage and 76.7% after delivery, in addition to 77.2% who did not even receive the diagnosis. This reveals the existence of gaps in the interruption of vertical transmission and in the timely and adequate treatment of parents, goals planned since 2012, with emphasis on the Projeto Nascer, which instituted the control of congenital syphilis through its early diagnosis and treatment[11,20,22].

It is worth noting that not having joint treatment from the partner (or having it inadequately) and not documenting the therapeutic scheme carried out in the prenatal card are important reasons for classifying the treatment as inadequate. However, many cases of congenital syphilis are underreported or poorly reported. Added to this are cases ignored/left blank and discarded[10,11,15,19].

This is worrying because adequate notification is part of the congenital syphilis prevention strategy itself. Therefore, it should ideally be performed in prenatal services when intervention is still possible, that is, when there has been no transmission to the fetus[23]. In late cases, reporting is also possible in delivery/puerperal care settings since October 2017[7,10].

Moreover, it is based on these notifications that epidemiological and sociodemographic studies on the subject can be carried out, directing the Ministry of Health in the planning of health actions and the creation of intervention measures in this regard. Thus, health professionals should be encouraged and made aware of the correct completion of the documents that feed the DATASUS database[16,17,23].

The World Health Organization has established the goal of eradicating congenital syphilis by 2015, and for this, health strategies must be developed to monitor the quality of prenatal care provided, with the joint intervention of the couple essential to prevent the disease transmission chain[24].

Therefore, it is essential that syphilis control and prevention guidelines maintain the mandatory approach to the partner to guarantee the effectiveness of maternal treatment and the health of the newborn.

Furthermore, it is essential that strategies are developed to promote permanent education for health professionals involved in each sphere of care. Thus, from doctors and nurses in open-door services to obstetricians, they must be trained and qualified to identify risk conditions for congenital infection.

Strengths

The epidemiological analysis allowed observing important characteristics of these population segments and demonstrating the magnitude that the disease still represents in the state.

Limitations

It is worth noting that cases of congenital syphilis are still underreported or misreported, and this fact can be considered one of the limitations of this study, as well as the data available in DATASUS. In addition to this, the cases ignored/left blank and those discarded, in view of the changes implemented in the partner notification criteria since 2018, require the insertion of the "1-SIM" information in field 46 (partner treated concomitantly with the pregnant woman), regardless of the information collected.

CONCLUSION

In the State of Sergipe, there has been a significant increase in the number of reported cases of congenital syphilis in the last 17 years. With regard to the performance of the treatment by the partner, the prevalence of non-treated partners and those who had this information ignored stands out.

Such indices coincide with the changes instituted in 2018 in the notification criteria of the congenital syphilis investigation form, which eased the need for a joint approach with the partner in prenatal care.

Consequently, the diagnosis of congenital syphilis, with its negative outcomes of deaths from the condition, was found in the vast majority of newborns whose parents were not treated.

Furthermore, the non-inclusion of the partner in prenatal care contributed greatly to cases of delay in the diagnosis of maternal syphilis by not respecting the minimum therapeutic interval of 30 days before delivery. Thus, the detection and adequate treatment of the male population are essential to interrupt the chain of transmission of the infection.

Participation of each author

ROF: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. IMDL: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Visualization, Writing – review & editing. AJBB: Formal analysis, Investigation, Methodology, Project administration, Visualization. LGS: Funding acquisition, Investigation, Methodology, Resources. ASCD: Funding acquisition, Investigation, Methodology, Resources.

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Conflict of interest

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