The reality of 13 years of prenatal care to pregnant women with syphilis in Sergipe state (2007–2019)

Realidade em 13 anos da assistência pré-natal a gestantes com sífilis no estado de Sergipe (2007-2019)

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ABSTRACT

Introduction: Syphilis is an infectious disease caused by *Treponema pallidum*, its two main routes of transmission are sexual and transplacental (vertical). The latter is of particular worrisome, since it can generate congenital syphilis and can be avoided by early maternal serological screening. **Objective:** To analyze the conditions of prenatal care for syphilitic pregnant women in Sergipe State between 2007 and 2019. **Methods:** A cross-sectional, retrospective, and descriptive study was carried out, with the collection of notified cases of gestational and congenital syphilis in the Brazilian Notifiable Diseases Information System (*Sistema de Informação de Agravos de Notificação* - SINAN). **Results:** There was a considerable increase in the number of reported cases of gestational syphilis in the last 13 years. About 36% of pregnant women were identified in the 3rd trimester of pregnancy, 68.1% were brown, 56.8% had studied for up to 8 years, and 50.1% were between 20 and 29 years old. The clinical phase latent to the diagnosis was responsible for 70.3% of the cases, followed by the primary (11%) and tertiary (7.3%) phases. Of the total number of pregnant women, 20.2% did not perform the non-treponemal test, and 97.2% were treated with penicillin. Regarding the numbers of congenital syphilis, although 75% of the mothers performed prenatal care, 37.8% received the diagnosis at the time of delivery/curettage, resulting in 72.9% of infant deaths from the disease. Moreover, there was a predominance of untreated partners (77.7%) in relation to those treated (10.8%). **Conclusion:** Although most of them performed prenatal care, there was a predominance of diagnoses performed only in the 3rd trimester of pregnancy, mainly at the time of delivery or curettage, not respecting the minimum therapeutic interval of 30 days before delivery. Thus, in Sergipe State, the most important factor in the high prevalence of vertical transmission of syphilis is the ineffectiveness of prenatal care provided to infected pregnant women, which remains.

Keywords: Syphilis. Pregnant Woman. Public Health.

RESUMO

Introdução: a sífilis é uma doença infecciosa causada pelo *Treponema pallidum*, suas duas principais vias de transmissão são a sexual e a transplacentária (vertical). Este último é particularmente preocupante, pois pode gerar sífilis congênita e pode ser evitado por meio de triagem sorológica materna precoce. **Objetivo:** Analisar as condições da assistência pré-natal para gestantes sifilíticas no estado de Sergipe entre 2007 e 2019.**Métodos:** Foi realizado um estudo transversal, retrospectivo e descritivo, com coleta de casos notificados de sífilis gestacional e congênita no Sistema de Informação de Agravos de Notificações (SINAN). **Resultados:** Houve um aumento considerável no número de casos notificados de sífilis gestacional nos últimos 13 anos. Cerca de 36% das gestantes foram diagnosticadas no 3º trimestre da gestação, 68,1% eram pardas, 56,8% haviam estudado até 8 anos e 50,1% tinham entre 20 e 29 anos. A fase clínica latente ao diagnóstico foi responsável por 70,3% dos casos, seguida das fases primária (11%) e terciária (7,3%). Do total de gestantes, 20,2% não realizaram o teste não treponêmico e 97,2% foram tratadas com penicilina. Em relação aos números de sífilis congênita, embora 75% das mães realizassem o pré-natal, 37,8% receberam o diagnóstico no momento do parto/curetagem, resultando em 72,9% dos óbitos infantis pela doença. Além disso, houve predomínio de parceiros não tratados (77,7%) em relação aos tratados (10,8%).**Conclusão:** Apesar de a maioria das gestantes realizar o pré-natal, houve predomínio de diagnósticos realizados apenas no 3º trimestre da gestação, principalmente no momento do parto ou curetagem, não respeitando o intervalo terapêutico mínimo de 30 dias antes do parto. Assim, no estado de Sergipe, o fator mais importante na alta prevalência da transmissão vertical da sífilis é a ineficácia da assistência pré-natal prestada às gestantes infectadas, que permanece.

Palavras-chave: sífilis; gestantes; saúde pública.

INTRODUCTION

Syphilis is a sexually transmitted infection (STI) of a systemic character, curable, and exclusive to humans. It is identified by *Treponema pallidum*, a Gram-negative bacterium from the spirochete group, whose only natural host is people.[1]

Vertical transmission occurs in cases of untreated or inadequately treated syphilitic pregnant women, which can be transmitted at any stage of pregnancy and any stage of the disease, with direct transmission through the vaginal canal being possible in case of an active lesion in the region.[2]

Thus, it occurs when there is fetal contamination by a maternal spirochete. The disease is part of the group of infections acquired in the uterus or during the birth process: Toxoplasmosis, Others (syphilis), Rubella, Cytomegalovirus (CMV), and Herpes Simplex Virus (HSV), forming the term TORCH.[3]

The probability of congenital syphilis occurrence is influenced by the clinical stage in which the mother is and the duration of fetal exposure, reaching from 70 to 100% when a pregnant woman has primary or secondary syphilis. Therefore, the possibility of transplacental transmission is proportional to maternal bacteremia, and is greater the closer the infection is onset.[4]

Syphilis in pregnancy can result in adverse outcomes at birth due to half of the untreated cases, which includes: prematurity, low birth weight, fetal deformities (neurological, medical and organ damage), fetal death, and neonatal death.[5]

Due to this morbidity, great emphasis was placed on routine screening for syphilis in all pregnant women, since the incidence of congenital syphilis reflects the disease rate in women of childbearing age.

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Thus, many fetal cases develop because the mother did not receive prenatal care, treatment with penicillin, or received it inappropriately before or during pregnancy.[3]

Thus, early maternal diagnosis is crucial to ensure that appropriate and timely therapy is initiated, in addition to allowing family counseling on the prognosis for the implementation of an appropriate care plan.[3] The Brazilian Ministry of Health recommends screening for gestational syphilis in the first prenatal consultation, in addition to the third trimester (between 28 and 32 weeks) and the time of delivery.[4]

The World Health Organization (WHO) estimates a worldwide incidence of 12 million new cases of syphilis per year, with one million of them affecting pregnant women. Despite this, there is a national tendency for failures in prenatal care, with the loss of several opportunities in preventing infection and the illness of children with congenital syphilis.[6,7]

In Sergipe State, according to the latest Epidemiological Bulletin of Syphilis, 645 cases of gestational syphilis were reported in 2018, with a detection rate of 19 cases in pregnant women per thousand live births. There is no vaccine against syphilis, and a previous infection does not confer protective immunity, allowing the reinfection of pregnant women every time they are exposed to the pathogen.[8]

Regarding access to prenatal care, national data for 2018 show that most mothers of children with congenital syphilis received prenatal care (81.8%), whereas 13.3% did not, and 4.9% presented ignored information. Despite that, most of them had their diagnosis at the time of delivery/curettage (31.8%), 5.6% after delivery, and 0.8% did not even receive it, in addition to 4.3% ignored.[8]

In view of the above, the objective was to conduct a survey with data from SINAN to assess how the conditions under which prenatal care is provided to pregnant women with syphilis in Sergipe State, from 2007 to 2019. The analysis of the quality of prenatal care provided over these years may allow the identification of potential deficiencies in the care of pregnant women with syphilis in the state. This can serve as a subsidy for developing preventive measures and structuring quality services, as well as enabling the planning of government health strategies and policies in this regard.

OBJECTIVE

To analyze the reality of prenatal care in syphilitic pregnant women using statistical data from SINAN on gestational and congenital syphilis in Sergipe State, from 2007 to 2019.

METHODS

This is a cross-sectional, observational, retrospective, and descriptive study, using the SINAN database, inserted in the item "Epidemiological and Morbidity" of the Tabnet program, with the Department of Informatics of the Unified Health System (DATASUS). The considered inclusion criteria were all those reported and confirmed cases of the gestational and working groups, and congenital people, from 2007 to June 2019. The total cases of gestational syphilis was 4,028; of congenital syphilis, it was 3,814. The exclusion criteria used were the cases of syphilitic women who did not receive prenatal care in Sergipe State or other regions of Brazil.

The variables used were taken from the SINAN research forms of Syphilis in Pregnant Women and Congenital Syphilis. Among them are data referring to the mother a result of serological tests, clinical classification, time of diagnosis, whether prenatal care was performed, socioeconomic data and infected child as a final classification and evolution to death.

After evaluating the data cited in SINAN, they were inserted in Excel tables and spreadsheets, in which analytical descriptions were made. The statistical analysis used was descriptive and inferential. The categoric variables were displayed with absolute and relative frequencies, which characterize the descriptive analysis.

On the inferential part, Pearson's Chi-square Test with Monte-Carlo simulations and association between variables was used. The level of statistical significance adopted was 5% ($p \leq 0.05$), and all tests were two-tailed. The software used for analysis was the Statistical Package for the Social Sciences (IBM SPSS 25.0).

The present paper was not submitted to the Research Ethics Committee (Comitê de Ética em Pesquisa — CEP), as according to instance No. 3 of the single paragraph from the 1st article of Resolution No. 510, of April 7, 2016. The data were extracted from the public domain platform, which does not identify the research participants.

RESULTS

From 2007 to June 2019, 4,028 cases of pregnant women with syphilis in Sergipe State were quantified in SINAN. Of the total number of notified pregnant women, 22.9% were identified in the 1st trimester of pregnancy, 35.7% in the 2nd trimester, 36% in the 3rd trimester, and 5.4% had their gestational age ignored. There is a maximum number of cases of gestational diagnosis diagnosed in the 1st trimester, which had the highest peak in 2016, with a value of 36.4%, and the lowest peak in 2009, with 6.2%.

On the other hand, there was a significant increase in the number of cases diagnosed in the 3rd quarter of 2016, maintaining slight fluctuations in previous years, with a maximum value of 57.5% in 2009, and a minimum of 22.7% between 2007 and 2008 (**Figure 1**).

The socioeconomic profile of these women shows a prevalence of mixed skin-color, representing 68.1% of reported cases, followed by black people (11.8%), and, finally, white people (11.7%). Regarding education, most of them had a study time of up to 8 years (56.8%), whereas 19.3% had more than 8 years, considering up to high school. As for the age group, more than half of the cases (50.1%) occurred in women aged between 20 and 29; 25.7% between 30 and 39; and 20.2% between 15 and 19 (**Table 1**).

When analyzing a clinical classification of syphilis in pregnant women, the statistics revealed that the highest proportion of women were in a latent stage (70.3%), which shows three rates of increase in their values: the first, abrupt and significant of 60.4%, between 2010 and 2012; and the remaining two, more discreet of 9.6%, between 2013 and 2015, and 14.9%, between 2016 and 2018.

Primary syphilis was the second highest prevalence in the state (11%), displaying fluctuations in the study period with maximum and minimum values of 30.1 and 4.5%, respectively. Since 2009, it showed an approximate reduction of 22.4% until 2012, when it remained stable until 2016. As for secondary syphilis, there were almost no changes so low from 2011 to 2019, with a prevalence of 2.2%.

Finally, the relevance of the tertiary stage (7.3%) was noted with its values increasing more intensively (15.7%) between 2009 and 2010. From then on, the change on behavior of the evolution, with an intense but progressive reduction, returning in 2012 (6.1%) to values similar to those of 2009 (6.2%) (**Figure 2**).

The analysis of the prescribed treatment regimen showed that most pregnant women were treated with penicillin (97.2%). However, a significant number of cases (4.6%) of congenital individuals were associated to an appropriate method of maternal treatment.

As to the moment in which the mother was diagnosed with syphilis, 38.7% received it during prenatal care, 37.8% at the time of delivery/curettage, 10.1% after delivery, and 0.5% had no diagnosis. **Table 2** shows the relation between the late diagnosis of syphilis in pregnant women (at the time of delivery) and the occurrence of congenital syphilis (36.5%), in addition to most stillborn/abortion cases resulting from the disease (88.5%).

Concerning access to prenatal care, 75% of mothers of children with congenital syphilis performed it, whereas 19.7% did not, and 5.4% presented ignored information. Despite the fact that performing prenatal care in the syphilitic mother was related to most cases of congenital diseases (79.4%) and to most cases in which the detection of syphilis in pregnancy was done late, 48.7 % at delivery, 75.4% after delivery/curettage, and 60% did not receive the diagnosis (**Table 3**).

In the period between 2007 and 2019, there were some variations in the number of unapproved partners, with a maximum value of 90.7% in 2016, and a minimum of 59% between 2007 and 2008. In general, there is a tendency for these cases to occur (77.7%) to

Table 1 – The number and percentage distribution of cases of pregnant women with syphilis by age, education, and ethnicity in Sergipe State, 2007–2019.

Variables	nº	%
Age range		
10 to 14	39	1.0
15 to 19	812	20.2
20 to 29	2,019	50.1
30 to 39	1,034	25.7
40 or more	122	3.0
Ignored	0	0.0
Total	4,026	100
Education		
Up to 8 years	2,185	56.8
Over 8 years	742	19.3
Incomplete High School	34	0.9
Higher Education	30	0.8
Not Applicable	2	0.1
Ignored	857	22.3
Total	3,850	100
Race/skin color		
White	470	11.7
Black	475	11.8
Yellow	26	0.6
Brown	2,744	68.1
Indigenous	10	0.2
Ignored	303	7.5
Total	4,028	100

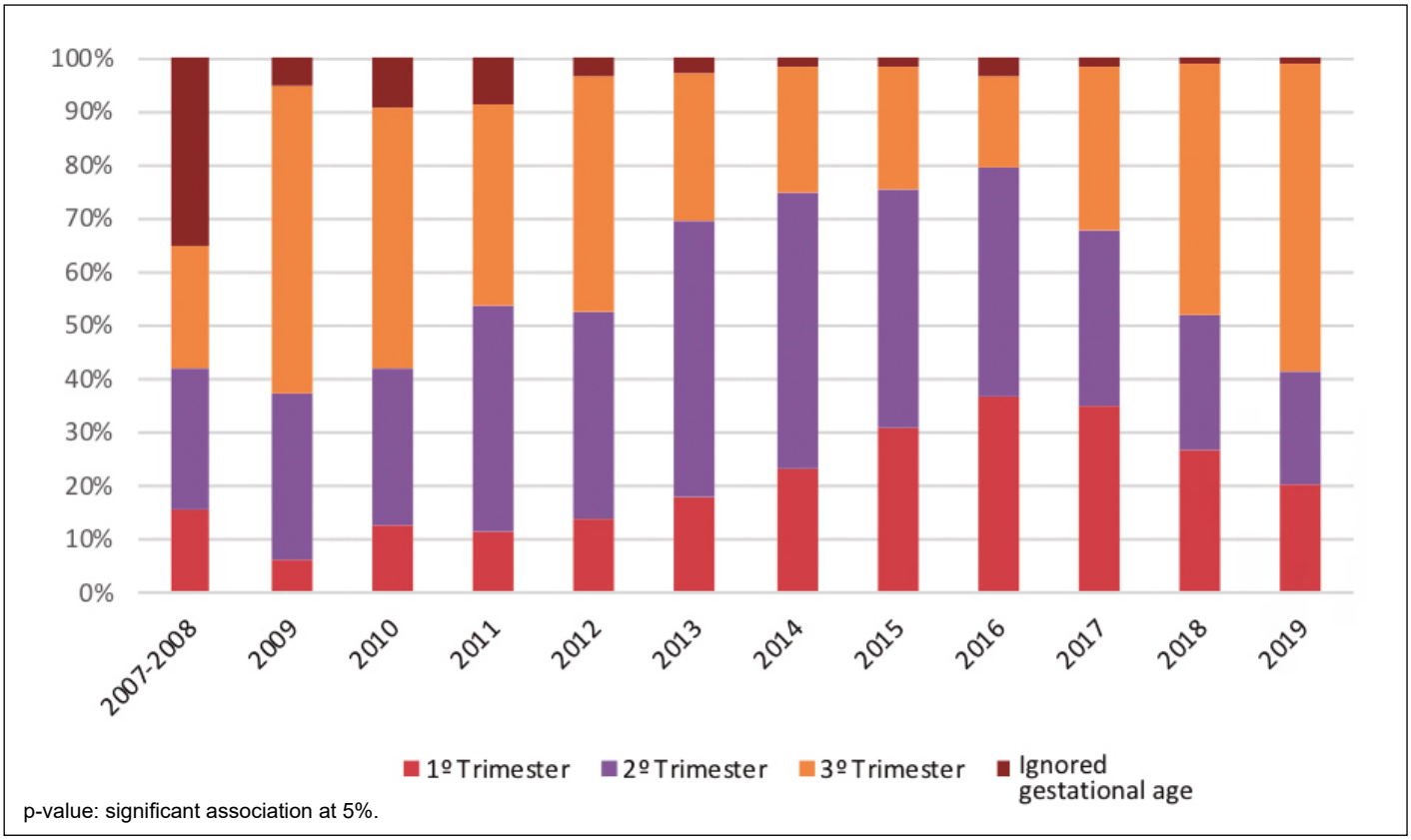

Figure 1 – Percentage distribution of pregnant women according to gestational age per year in Sergipe State, 2007–2019.

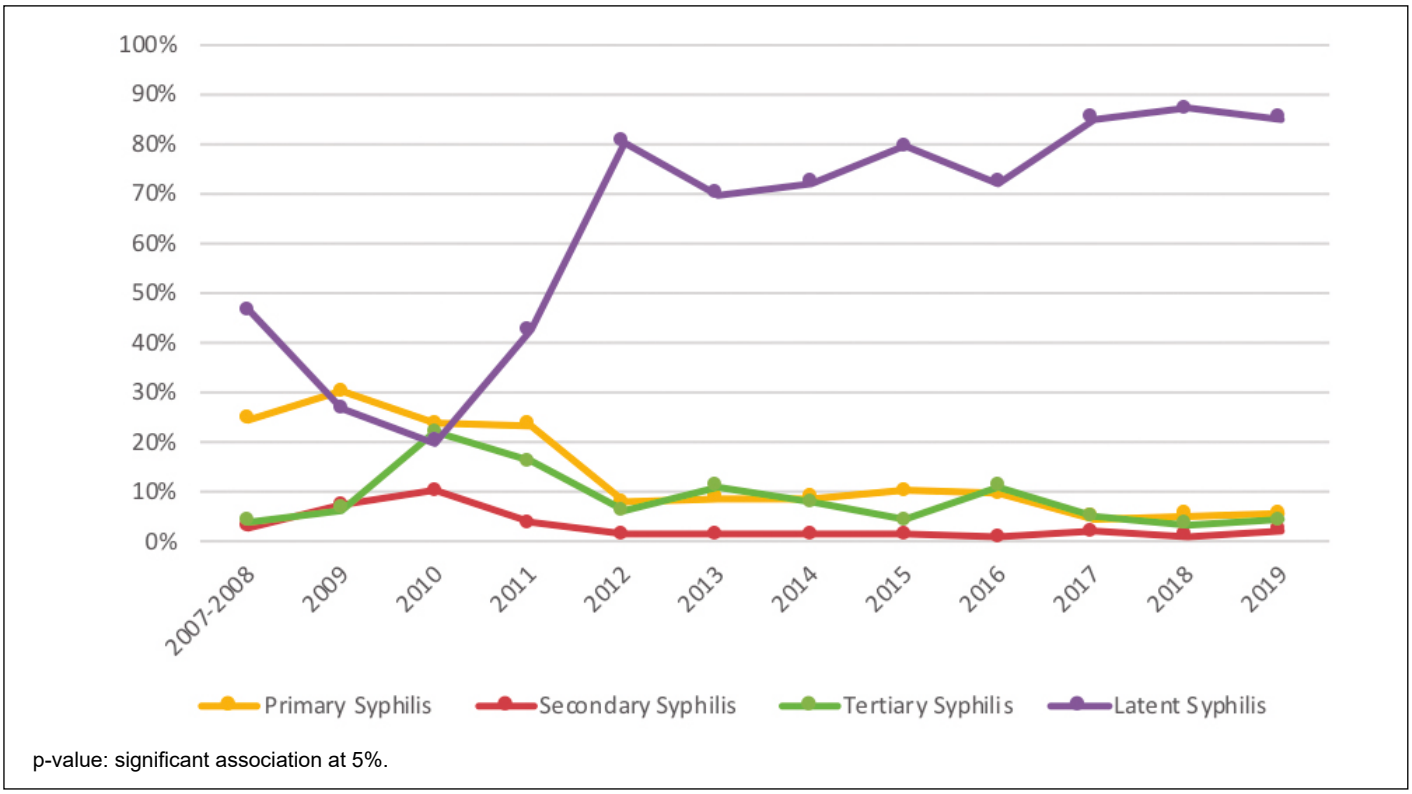

Figure 2 – Percentage distribution of cases of pregnant women with syphilis according to clinical classification by year of diagnosis in Sergipe State, 2007–2019.

Table 2 – Number of congenital syphilis cases according to the child's final classification at the time of maternal syphilis diagnosis in Sergipe State, 2007–2019.

Variables	Child's Final Classification				
	CS	Stillborn / Abortion	Discarded	Ignored	p-value
Moment of Maternal Diagnosis					<0.001
During prenatal care	1,296 (47.3%)	15 (8.2%)	42 (25.1%)	58	
At delivery	1,000 (36.5%)	161 (88.5%)	93 (55.7%)	10	
After delivery	363 (13.2%)	6 (3.3%)	22 (13.2%)	12	
Not performed	14 (0.5%)	0	0	1	
Ignored	68 (2.5%)	0	10 (5.9%)	5	
Total	2,741	182	167	86	

CS: congenital syphilis; p-value: significant association at 5%.

Table 3 – Number and percentage distribution of consequent cases of congenital syphilis according to the performance of maternal prenatal care related to the child's final classification and at the time of maternal diagnosis in Sergipe State, 2007–2019.

Variables	Performed Prenatal Care				
	Yes	No	Ignored	Total	p-value
Child's Final Classification					<0.001
Congenital Syphilis	2,177 (79.4%)	476 (17.4%)	88 (3.3%)	2,741	
Stillbirth/Abortion	31 (17%)	137 (75.3%)	14 (7.7%)	182	
Discarded	95 (56.9%)	55 (32.9%)	17 (10.2%)	167	
Ignored	80	1	5	86	
Moment of Maternal Diagnosis					<0.001
During prenatal care	1,402 (99.4)	0	9 (0.6%)	1,411	
During delivery/curettage	616 (48.7%)	572 (45.2%)	76 (6.1%)	1,264	
After delivery	304 (75.4%)	85 (21%)	14 (3.5%)	403	
Not performed	9 (60%)	4 (26.7%)	2 (13.3%)	15	
Ignored	52	8	23	83	

p-value: significant association at 5%.

the detriment of the treated ones (10.8%), even with a decrease of approximately 18.2% observed from 2016 to 2018. Lack of treatment by partners was associated to most cases of congenital syphilis (78.6%), stillborn (85.2%), and deaths (81.7%) due to congenital syphilis.

DISCUSSION

Sergipe State follows the Brazilian and the Northeast tendency of increasing the number of quantified cases in pregnant women, with a total of 4,028 cases reported in SINAN from 2007 to 2019. Data agree with the latest Epidemiological Bulletin of Syphilis (2019), which shows the same evolution in the number of cases in this period, with emphasis on the 111.5% increase observed between 2016 and 2018.[8, 9, 10]

Such increase can be partly attributed to the change on defined criteria, which started to consider notification during prenatal care, childbirth, and puerperium, since October 2017. Consequently, between 2017 and 2018, the northeastern region showed the largest increase in the number of notifications (59.6%). However, detection rates of pregnant women in Sergipe State (19.0/1,000 live births) remain below the national average (21.4/1,000 live births), despite the increase observed in the last year.[4]

An analysis of the evolution of the gestational age for syphilis detection in pregnant women in Sergipe State from 2007 to 2019, shows a reduction of about 16.3% in the number of cases diagnosed in the first trimester over the last four years. Such data is provided with the profile observed in the Epidemiological Bulletin of Syphilis (2019), which refers to the diagnosis in this gestational phase that occurs with the lowest incidence proportion in the Northeast (25.9%) and North (28.3%).[8]

On the other hand, there was an increase in the number of cases diagnosed in the third trimester over the last four years. Furthermore, in general terms, the majority of notified pregnant women (36%) were diagnosed in the third trimester of pregnancy, to the detriment of the first trimester (22.9%). It can be inferred that there were gaps in the early screening system for these women, revealing the delay in the diagnosis of maternal patients who persist in this state.[11]

Furthermore, these data can be related to the opening of new beds at Hospital Santa Isabel, in 2003, and Maternidade Nossa Senhora de Lourdes, in 2008, which contributed to the diagnosis of some pregnant women with a test from the Research Laboratory for Venereal Diseases (*Laboratório de Pesquisa para Doenças Venéreas* - VDRL) late, only at the moment of birth or curettage (third trimester). On the other hand, weaknesses in the prenatal care of these pregnant women in their basic health units in the previous trimesters and the information systems of the municipalities are highlighted, resulting in lost opportunities for early diagnosis and treatment.[11,12]

Regarding the epidemiological profile of the studied pregnant women, the results demonstrate a predominance of the age group of 20 to 29 years (50.1%) aligned with data from the Epidemiological Bulletin of Syphilis (2019), which states that, in this period, 52.5% of syphilitic pregnant women were in this age group.[8]

In contrast, the age group between 30 and 39 years old was the second most prevalent in the state (25.7%), a profile observed since 2005 showed that the proportion of this age group was greater than 15 to 19 years, with an inversion of this relation since 2011.[4] This change agrees with the inversion of the Brazilian age pyramid, which has been occurring due to the aging population, which influences the number of syphilis in pregnant women.[13]

As for the education of these pregnant women, the largest proportion of them had up to 8 years of study (56.8%), whereas those who had more than 8 years corresponded to 19.3% of them, disregarding those who had higher education.

According to Lopes et al.,[14] maternal education is considered a marker of socioeconomic status, related to being of cultural and behavioral profiles. This, in turn, is related to the health care of the mother/child binomial. Literacy can be considered a protective factor in this sense, because it facilitates the search for information and a better understanding of written medical advice.

Thus, women with low education, mainly below 8 years, and of low age, are associated to lower socio-cultural groups. The contributing factor to the restriction and limitation of adequate care, both in prenatal care and after delivery, is considered a risk factor for fetal exposure to pathogens. In contrast, mothers with a higher school level understand the health-disease process better, in addition to having more access to health services.[14, 15]

When it comes to high school, health information becomes even more specified, with details on pathogenic organisms and how to intervene in the environment and interpersonal relationships to prevent the spread of diseases, or acting on prophylaxis which increases protection against congenital infections.[14, 15]

The most prevalent race/color was brown (68.1%), following the national pattern of miscegenated population, linked to the ethnic backgrounds of Brazil.[17, 18]. Thus, the study of the epidemiological profile of syphilis cases in pregnant women in SE is an important way to assess the difficulties of accessing prenatal care of quality and even allows correlating with existing social inequalities.[19, 20]

It became evident that, among the clinical classification of gestational syphilis, the most recent latent stage is the most prevalent in 13 years in the state (70.3%), except between 2009 and 2010. Such a stage displayed a significant and abrupt increase in only two years (2010 to 2012), followed by two other peaks in 2015 and 2018.

Such data agree with the removal of category "syphilis of unknown duration" in 2014, by the Centers for Disease Control and Prevention, categorizing latent syphilis as: early period (up to one year of infection) and late period (after one year of infection or when that time is unknown). In the last protocol of the Ministry of Health of STIs (2019), this period was extended to two years of infection, which is an asymptomatic period in which most pregnant women do not know exactly when they were infected. Diagnosis is based only on the reactivity of serological tests, justifying the majority of syphilis diagnoses performed at this stage.[4]

Primary syphilis, the second most prevalent in the state (11%), fell by about 19.2%, and has been prominent since 2009. The lower incidence of this phase can be justified by the thatits characteristic lesion, the "hard cancro", lasts for only three to eight weeks and is often not noticed or valued by the patient.[9, 21]

As to secondary syphilis, there were practically no significant changes from 2011 to 2019. The non-specific symptoms of this phase, such as low fever, malaise, headache, and adynamia, which disappear in a few weeks, bring a false impression of cure that contributes to

patients not seeking health services or not reporting these symptoms on pre-natal consultations.[22, 23]. These early stages have a greater chance of fetal infection, seen there is a greater spirochetemia.[9,22]

Finally, tertiary syphilis, the third most prevalent in the state (7.3%), maintains a pattern of rising and decreasing values, with peak numbers in 2010, 2013, and 2016. Such stage occurs in 15 to 25% of untreated infections, after a variable latency period, and can appear between two and 40 years after infection with systemic manifestations.[4]

In general, among untreated pregnant women, one third remains in a latent stage for life; one third heals spontaneously, and the remaining one third develops late manifestations.[9]

Whatever the clinical stage of the gestational syphilis is, it is considered a systemic infection, generating several possibilities of exposure of the placenta to Tp, which can cross the layer of Langerhans cells and infect the fetus. Thus, several histological changes are observed, which impair placental function and its exchange with the conceptual product.[24]

Macroscopy is the increase in weight and size, paleness of the tissue and the thinning of the sinciciotrophoblast with the evolution of pregnancy, facilitating the transfer of Tp to the fetus, whereas micro is affected by inflammatory reactions and delayed maturation of the villus. In addition, there is an increase in chorionic villus and stroma densification by the increase in collagen.[7]

The high incidence of this phase reflects delays in the medical diagnosis of gestational syphilis, which agrees with studies by Barros et al.[25] and Lopes et al.[26], and suggests that, despite having a wide coverage of the Family Health Strategy (FHS), there is still an involvement in the functioning of prenatal care performed in Sergipe State.

Primary Health Care in the state has 100% territorial coverage, with at least one BHU per municipality. However, even with primary assistance coverage considered satisfactory, Sergipe follows a worldwide recrudescence tendency of syphilis, especially in pregnant women and of congenital type[11, 14, 25].

Adequate prenatal care should consist of at least six consultations and start in the first trimester, with one consultation, in addition to two in the second, and three in the third trimester. Besides that, treatment for syphilis should already have started in the first trimester to reduce the prevalence of congenital syphilis, which is a marker of a country's development. This criterion is justified by the fact that this disease is preventable with early treatment with penicillin by the mother[4, 15, 27].

The high number of cases of pregnancy problems is mainly related to the weakness of routine prenatal actions in the early identification and treatment of this condition. In many cases, the number of consultations performed, or the assistance provided is not of high quality, causing failures in the blocking of preventable diseases, such as congenital syphilis, in this case[28].

Prenatal care is one of the most important public health measures, consisting of a set of clinical and educational procedures guided by clinical protocols that have the function of providing guidance and resolving doubts and anxieties of the pregnant woman, providing the highest quality assistance to the mother/child binomial. It also aims at preventing, early detecting, and treating the most frequent intercurrences in that period. However, due to the socioeconomic status, women often do not have access to health services, laboratory and imaging tests or even a multi-professional team that is prepared to provide the appropriate assistance and guidance.[27, 28, 29]

Once the pregnant woman is diagnosed with syphilis, she must start treatment. Literature states that, in 2018, 81.1% of cases had treatment prescribed according to the clinical disease classification, with Sergipe State being the one with the highest prevalence in this case (90.4%). Nonetheless, there are restrictions to such information, because there is no guarantee that the data on the clinical classification of the reported disease is consistent with its real phase.[4, 30]

As for the reasons for a high incidence of inappropriate treatments, reduction in the use of non-penicillin regimen and incomplete treatment are highlighted for being incompatible with the clinical stage or if used in less than 30 days before delivery, which ends up facilitating a congenital infection.[7, 31]

As for the moment of maternal diagnosis, the values still show a tendency for delay, with 37.8% of cases detected at the time of delivery/curettage. This incidence is very close to the cases detected during prenatal care (38.7%); 10.1% after delivery, and 0.5% did not even receive diagnosis.

These values are above the national average, which shows a much higher prevalence of cases diagnosed during prenatal care (57.6%), in addition to the lower detection values at the time of delivery/curettage (31.8%), and after delivery (5.6%).[4]

When relating such information with data from congenital syphilis, the identification of pregnant women as syphilitic only at the time of delivery/curettage resulted in the majority of infant deaths from this condition (72.9%), and 36.5% of cases of consequent congenital syphilis.

This reveals the existence of gaps in the interruption of vertical transmission, and at the timely and adequate treatment of these concepts, targets planned since 2012, with emphasis on Nascer Project, which instituted the control of congenital syphilis, throughearly diagnosis and treatment.[32, 33, 34]

Although most of the analyzed pregnant women had performed prenatal care (75%), such information does not guarantee that care was adequate. This is reflected by the results, which show that, even with prenatal care, 48.7% of pregnant women received the syphilis diagnosis during delivery, 75.4% after birth/curettage, and 60% did not even receive it. Consequently, most of these mothers had their therapeutic regimen classified as inadequate (59.5%), that is, performed less than 30 days before the birth or not performed (28.6%).

This means that most of congenital syphilis cases (79.4%) were associated to maternal prenatal delivery. This reinforces the importance of the quality of prenatal care, with effective strategies to reduce fetal infection with syphilis, following the perspective of identifying maternal diseases still during pregnancy. Unwanted practices, such as "prenatal discharge", should be strictly inhibited, favoring the continued provision of care to pregnant women until delivery.[26, 27, 31]

According to the Brazilian Federation of Gynecology and Obstetrics Associations (*Federação Braliseira das Associações de Ginecologia e Obstetrícia* - FEBRASGO), treating the partner is considered imperative on the prevention of congenital syphilis. Results show that when partners do not treat it, there will be a series of damage caused by the fetus, reflecting the majority of cases of congenital syphilis (78.6%), stillborn (85.2%), and deaths (81.7%) for grievance. Thus, strategic measures of joint treatment of partners must be developed, given the persistence of the predominance of untreated cases (77.7%) to the detriment of those treated (10.8%).[35]

The statistics present that the public is not sufficiently included in the prenatal strategy target. Thus, projects to include these items should be encouraged so that the effective control of the risk of infection in women of childbearing age is possible. Lack of joint treatment or performance of inappropriate treatment, and not registering its therapeutic regimen performed on the prenatal card are important reasons for classifying the treatment as inadequate.[1, 7, 36]

However, many cases of syphilis in pregnant women and congenital syphilis are underreported or poorly reported, fact which can be considered one of the restrictions of the present study, as well as the data available in DATASUS. The cases ignored/left blank and those discarded are also included.

This is worrying because notification of cases of syphilis during pregnancy is part of the strategy for preventing congenital syphilis. Therefore, it must be ideally done in prenatal services, when an intervention is still possible, that is, when no transmission to the fetus has happened yet.[37] In late cases, notification is also possible in delivery/postpartum care settings since October 2017.[4]

Furthermore, epidemiological and socio-demographic studies on the topic can be carried out based on these notifications, directing the Brazilian Ministry of Health to plan health actions and create intervention measures in this regard.[37, 38] Thus, health professionals should be encouraged and sensitized to the correct filling of documents that feed the DATASUS database.

Nevertheless, the epidemiological analysis made it possible to observe important characteristics of these populationsegments and demonstrate the magnitude that the disease represents in the state. The present study is expected to contribute to the development of health strategies to monitor the quality of prenatal care provided to pregnant women with syphilis.

Strategies must be developed to promote the permanent education of health professionals involved in each sphere of care, so that they are well trained and qualified to identify risk conditions for congenital infection.

CONCLUSION

IIn Sergipe State, there was a significant increase in the number of syphilis cases notified in pregnant women over the last 13 years, which occurred, in part, due to changes in the definition criteria of cases, which started to be considered not only during pre-birth, but also on delivery and puerperium, as of October 2017.

Among the epidemiological characteristics most frequently found in these pregnant women are in their brown ethnicity, education time of up to 8 years, and an age range from 20 to 29 years old. As for the quality of the prenatal care offered, if there was a predominance of diagnoses only in the third trimester of pregnancy, with a latent clinical phase being the most found, followed by the primary and tertiary phases, most of them were performed in the prenatal period.

Moreover, a large amount of them have not even been tested. Although most of them were treated with penicillin, there is a prevalence of inadequate regimens due to high rates of diagnosis performed only at the time of delivery or curettage, because neither the minimum therapeutic interval of 30 days before delivery was respected, nor the predominance of unidentified partners, which predisposes to the reinfection of the pregnant women.

In this way, Sergipe State remains the most important factor in the high vertical transmission of syphilis due to the ineffectiveness of prenatal care provided to pregnant women with syphilis.

Participation of each author

Rute de Oliveira Farias: lead author of research.
Izailza Matos Dantas Lopes: research advisor.
Letícia Goes Santos: auxiliary research editor.
Amanda Silveira de Carvalho Dantas: auxiliary research editor.

Funding

The authors declare that there is no external source of funding for the study.

Conflict of interests

The authors declare no conflict of interests.

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Received on: 03.23.2020
Approved on: 04.16.2020