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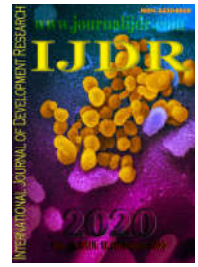
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RESEARCH ARTICLE

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TEMPORAL DISTRIBUTION OF GESTATIONAL SYPHILIS CASES IN METROPOLITAN AREA IN BRAZILIAN AMAZON

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ABSTRACT

Objective: This study aimed to know the occurrence of gestational syphilis cases in a municipality in the Brazilian Amazon from a historical series of cases. **Method:** A descriptive cross-sectional analysis with a quantitative approach was carried out from the official gestational syphilis notifications between 2015-2019, in the municipality of Ananindeua, state of Pará, northern Brazil. **Results:** Notified 421 cases of syphilis in pregnant women in the given period, with prevalence of cases between 2015 and 2016 (43%). In socioeconomic aspects, more than half of the mothers were aged 20-29 years (57%), with schooling below the average level (77.6%), brown race (85.5%). It can also be observed that the majority had the diagnosis notified in the third trimester of pregnancy (77.1%), with the primary syphilis classification (50.3%), being treated with penicillin (79.0%). An analysis of the correlation of congenital syphilis cases of the same period with prenatal performance was made, observing that most mothers performed prenatal (78.6%), but that the moment of diagnosis was the delivery (51.2%), and those who received treatment during pregnancy was inadequate (56.1%), with predominance of untreated partners (61.8%). **Conclusion:** The study brought information of a serious public health problem in the metropolitan areas of the Brazilian Amazon, with a profile compatible with what is also found elsewhere in the world. Although there is a prenatal care network, there is a lack of early adherence, adequate guidance, broader treatment including partners, and permanent maintenance of preventive actions and therapeutic inputs ensured.

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INTRODUCTION

The syphilis is an infectious disease, secular, of systemic character, exclusive of the human being, caused by the spirochete *Treponema pallidum*. It is predominantly sexually transmitted, with great repercussions when it affects pregnant women because of the risk of vertical transmission.

It is considered a disease that has no predilection of gender, social class or age (Secretaria de Vigilância em Saúde Departamento de DST, 2010; Brasil, 2017; Brasil, 2016). The World Health Organization (WHO) estimates 12 million new cases of syphilis diagnosed annually worldwide, with more than 1 million in pregnant women (Secretaria da saúde do governo do Paraná, 2017).

As a result, 130 million cases of congenital syphilis have been reported, with 6.3 million deaths (Brasil, 2017). The magnitude of the problem revealed an increase in the incidence rate of congenital syphilis that increased about 3.6 times and gestational syphilis detection rates (Magalhães, 2011; Cabral, 2018). The inclusion of gestational syphilis as a compulsorily notifiable sexually transmitted infection (STI) is justified by its high prevalence and rate of vertical transmission (which can vary from 30% to 100% if untreated or inadequately treated) (Secretaria de Vigilância em Saúde Departamento de DST, 2010; Costa, 2016). In 2018, 158,051 cases of acquired syphilis, 62,599 cases of gestational syphilis, 26,219 cases of congenital syphilis, and 241 deaths from the latter category were reported in Brazil (Cabral, 2018). In the same year in Pará, 2,625 cases were reported, and approximately 77.6% of the cases during pregnancy (Marques, 2018).

According to the Brazilian Ministry of Health's Epidemiological Bulletin on Syphilis (2019), 5,675 (9.1%) new cases of gestational syphilis were registered in the Northern Region, with an increase in the rate of syphilis diagnosis in the first trimester of pregnancy (28.3%). However, no unit in the Federation had a higher incidence rate of congenital syphilis than the syphilis detection rate in pregnant women, which may reflect better control and reporting in the country (Cabral, 2018). In 2015, syphilis was reported in 80.69% of the municipalities in the State of Pará, reaching as a whole pregnant women aged 20-29. In the period 2013-2018 the records showed 4,580 cases, supporting the high prevalence of this pathology in the north of the country. In Belém, capital of Pará, the incidence of congenital syphilis was above the accepted limit (0.5 cases for every 1000 live births) (Costa, 2016; Marques, 2012; BRASIL, 2019).

In the clinical evaluation of syphilis, there are symptomatic and asymptomatic periods, which can be classified as primary, secondary, latent and tertiary (Costa, 2016). In the first, the appearance of hard cancer - a hard and painless ulcer - occurs in genital and mucous organs. In the second, six months after the initial wound healing, it presents symptoms such as maculopapular exanthemas of systemic distribution, including palms and soles of the feet, fever, malaise and headache (BRASIL, 2019; Silva, 2019). In the latency period, in which the infection may become asymptomatic for a period of two years or more, the diagnosis is made only by laboratory tests. If there is no adequate diagnosis and treatment, the individual may present the form of tertiary syphilis, with gummy lesions on the skin and mucous membranes, glossitis, cardiovascular and neurological problems, hepatosplenomegaly, including the possibility of death (Costa, 2017; Machado, 2018). When not properly treated in pregnancy, cases of congenital syphilis arise through the transplacental transmission of the etiological agent, the spirochete *Treponema pallidum*. When transmission from mother to child occurs in the first trimester, the pictures tend to be more severe, and may reach the outcome with fetal or neonatal deaths. Those who survive may have respiratory complications, skin and dental lesions, blindness, bone problems, deafness or mental deficiency.¹³ However, 50% of congenital syphilis cases are asymptomatic at birth. The picture can also be established before 2 years (early congenital syphilis) or after 2 years (late congenital syphilis), when the picture can be irreversible (Lino, 2019). The laboratory diagnosis is performed through the rapid treponemic test, the serological treponemic test (Venereal Disease Research Laboratory - VDRL) and the non treponemic (Fluorescent

Treponema Antigen Absorbent Antibodies - FTA-ABs). The rapid treponemic test was instituted in the public system in Brazil in 2011. It is a technology that allows early diagnosis in vulnerable populations, pregnant women and their partners, indigenous populations, and localities and / or health services in regions of difficult access, which have no laboratory structure (Silva, 2016). Syphilis in all its forms and phases is readily diagnosable and treatable, with protocols recognized throughout the world, which is also available in Brazil, having penicillin as the drug of first choice (Secretaria da saúde do governo do Paraná, 2017). The temporal analysis of case series provides an integrated view of the socio-environmental scenario and health structure in syphilis control, allowing proposing measures to reduce the number of cases, especially in adverse areas such as most municipalities in large metropolitan areas. In the context, this study proposes to know the temporal distribution of syphilis cases in pregnant women in the metropolitan area of the Brazilian Amazon, municipality of Ananindeua-PA.

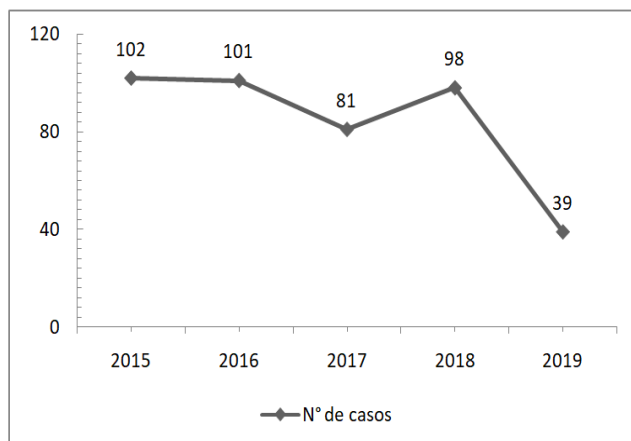
MATERIALS AND METHODS

This is a cross-sectional, analytical, descriptive study, with a quantitative approach, on cases of syphilis in pregnant women, carried out in Ananindeua-PA, metropolitan region of Belém, capital of the state of Pará, which concentrates a population of approximately 525,566 inhabitants, served by 84 Basic Health Units and 30 Family Health Teams (Instituto Brasileiro de Geografia e Estatística, 2010). Official data from the Department of Information Technology of the Unified Health System (DATASUS), the archives of the Aggravates Notification Information System (SINAN) and the Ananindeua Municipal Health Secretariat (SESAU) were used to analyze syphilis cases in the site's pregnancy for the period 2015-2019. The data were processed with filtering of the selected variables. Steps were followed: (1) Filtering of information for the database (2) Systematization of data. (3) Elaboration of tables according to the cases of syphilis in the pregnancy of the city of Ananindeua-PA. (4) Organization of data in Microsoft Excel table, consolidated in absolute and/or relative numbers. To obtain the incidence of syphilis in pregnant women, the resident population of 2010 was taken as a sample, according to data from the Brazilian Institute of Geography and Statistics (IBGE). Following the rules of the National Commission on Ethics in Research (CONEP), with the use of secondary data the work was exempt from submission to the Committee on Ethics and Research (CER).

RESULTS

In the analysis of the annual prevalence of reported syphilis in the period of study, in the years 2015 (21.66%) and 2016 (21.45%) the highest registers occurred, being noticeable the decrease of cases in the remaining years (Figure 1). In the analysis of the socio-demographic variables the notifications showed that more than half of the cases were in the 20-29 age group (57%), with incomplete elementary education (25.3%), of brown race (85.5%) (Table 1). It was also observed that the majority had the diagnosis notified in the third trimester of pregnancy (77.1%), with the primary syphilis classification (50.3%), which received treatment with penicillin (79.0%), (Table 2). The correlation of congenital syphilis cases of the same period with prenatal performance was analyzed, noting that: most mothers performed prenatal (78.6%), but had delivery as the moment of diagnosis (51.2%) (Table 3), and

those who received treatment during pregnancy was inadequate (56.1%), with predominance of untreated partners (61.8%) (Table 4).



Source: Department of Information Technology of the Brazilian Unified Health System- DATASUS, 2020

Figure 1. Series of syphilis cases in pregnant women between 2015-2019, in the municipality of Ananindeua-PA, Brazil

Table 1: Sociodemographic profile of women with syphilis in pregnancy according to age and education, 2015-2019, in the municipality of Ananindeua-PA, Brazil

Sociodemographic characteristics	Number of cases	%
Age group		
10 to 14 years	3	0,7
15 to 19 years	115	27,3
20 to 29 years	240	57,0
30 to 39 years	57	15,9
40 >	6	1,4
Ignored	-	-
Schooling		
Illiterate	3	0,7
1th to 4th incomplete grade	9	2,1
4th full series	9	2,1
5th to 8th incomplete grade	89	21,1
Complete Fundamental	23	5,4
Incomplete Medium	86	20,4
Full Medium	82	19,4
Incomplete Superior	9	2,1
Complete Superior	2	0,4
Does not apply	-	-
Ignored	109	25,8
Race or color		
White	17	4,0
Black	16	3,8
Yellow	2	0,4
Brown	360	85,5
Indigenous	3	0,7
Ignored	23	5,4
Total	421	100%

Source: Department of Information Technology of the Brazilian Unified Health System- DATASUS, 2020.

DISCUSSION

Syphilis is a infectious disease that even after four centuries of its discovery still remains uncontrolled in several countries, among them Brazil. Its occurrence is directly affected by the social and economic context in which each population lives (OMS, 2015). Pregnancy is a time when women are closer to the health services for prenatal care, giving the opportunity to diagnose syphilis through the mandatory laboratory tests. The prevalence of syphilis in Brazil has increased since 2015, and that same year 1,495 cases of gestational syphilis were reported in Pará, contributing to place the northern region as the one with the highest percentage of syphilis diagnoses in the third trimester of pregnancy, and the southeast as the lowest.

Table 2. Profile of syphilis cases in pregnancy, second trimester of diagnosis and treatment, 2015-2019, in the municipality of Ananindeua-PA, Brazil

Clinical characteristics	Number of cases	%
Gestation time		
1th quarter	31	7,3
2th quarter	36	8,5
3th quarter	325	77,1
Gestational age ignored	29	6,8
Ignored	-	-
Classification		
Primary syphilis	212	50,3
Secondary syphilis	5	1,1
Tertiary syphilis	28	6,6
Latent syphilis	9	2,1
Ignored	167	39,6
Type of treatment adopted		
Penicillin	333	79
Other treatment	7	1,8
Unrealized	20	4,7
Ignored	61	14,5
Total	421	100%

Source: Department of Information Technology of the Brazilian Unified Health System- DATASUS, 2020.

Table 3. Profile of congenital syphilis cases according to prenatal care and moment of diagnosis of the mother, in the period 2015-2019, in the municipality of Ananindeua-PA, Brazil

Clinical characteristics	Number of cases	%
Prenatal care		
Yes	192	78,6
No	40	16,3
Ignored	12	4,9
Time of diagnosis of maternal syphilis		
During prenatal care	57	23,3
During childbirth/curettage	125	51,2
Postpartum	43	17,6
Unrealized	2	0,8
Ignored	17	6,9
Total	244	100%

Source: Department of Information Technology of the Brazilian Unified Health System- DATASUS, 2020.

Table 4. Profile of congenital syphilis cases according to mother and partner treatment scheme in the period 2015-2019, in the municipality of Ananindeua-PA, Brazil

Type of treatment	Number of cases	%
Treatment regimen		
Suitable	10	4,0
Inappropriate	137	56,1
Unrealized	44	18,0
Ignored	54	22,1
Treated partner		
Yes	37	15,1
No	151	61,8
Ignored	56	22,9
Total	244	100%

Source: Department of Information Technology of the Brazilian Unified Health System-DATASUS, 2020.

Such observations reinforce the data observed in this work revealing that in some areas of the Brazilian Amazon, syphilis rates continue to be high with a tendency to fall, especially in females, contrasting with other regions under control (Meneses, 2012; Brasil, 2013; Brasil, 2017). Other studies show that between 2000-2016 772 cases of gestational syphilis were reported in Pará, with the highest number of reported cases in 2015 (273), falling again in 2016 (139) (BRASIL, 2015a; BRASIL, 2016a), corroborating this study with 102 and 101 cases of gestational syphilis reported in Ananindeua-PA, in the same years.

According to the epidemiological bulletin², this finding can be justified by several factors, among which it cites the increase in access to rapid tests in basic health units, resistance in the application of penicillin by health professionals, in addition to the reduction in condom use by the population. According to Cardoso et al. (2016) this situation may be related to the worldwide shortage of penicillin in this period, making access to treatment difficult for pregnant women and partners, and this is another determining factor for the spread of the disease with substantial impact to increase congenital syphilis. Even with wide worldwide dissemination, few recent studies address the absence of penicillin as a contributing factor to the increase in the number of syphilis cases in the world in the period that led up to 61% of Brazilian states to be without Penicillin G Benzatina in March 2016. As an emergency measure to try to alleviate the problem, pregnant women became part of the priority group for receiving and accessing medication for the treatment of gestational syphilis, but which did not have a positive impact on the progress of the disease (Costa, 2013; BRASIL, 2012; Domingues, 2016). In the analysis of the sociodemographic profile of the research, the variables age group (57% between 20-29 years), schooling (low) and color (brown majority) revealed compatibility with national data as observed in the historical series of 2005-2017 that the majority (51.6%) was also in the 20-29 age group, with a high rate of illiteracy and black or brown social color². Thus, the records of the area under study are in accordance with others of similar scope, as observed in Pará by Henderson et al. (2018) and Costa et al. (2013) in northeastern Brazil. In Brazil, prenatal care as a public policy includes seven consultations and three serological tests for syphilis (Domingues, 2015), which is compromised when prenatal care starts late. Some studies show greater vertical transmission of syphilis in pregnant women with a later onset of prenatal care, a lower proportion of adequate number of consultations, and fewer serologic tests for syphilis.

This was observed in the survey in Ananindeua-PA where the majority of mothers (77.1%) had the diagnosis notified only in the third trimester of pregnancy, with the primary form of the disease (50.3%) revealing the lack of care services. In the same context, in the research, the correlation of congenital syphilis cases from the same period with prenatal care was analyzed, noting that: most mothers performed prenatal care (78.6%), but the time of diagnosis was at delivery (51.2%), and those who received treatment during pregnancy was inadequate (56.1%), with predominance of untreated partners (61.8%). Silva, 2016 reinforces this idea in his publication, showing that incomplete or even inadequate prenatal care, whether due to late onset or lack of attendance, prevents routine syphilis diagnosis and early intervention. Through an analysis carried out with 46 puerperal women who had a history of syphilis or positive VDRL attended in a maternity ward in the State of Pará, it was possible to conclude that, of the pregnant women who performed prenatal care, only 55.6% performed the VDRL and only 13.9% repeated the test in the 3rd trimester. This shows the low quality of care, because only 53.8% of the mothers who were diagnosed with syphilis during the prenatal period and received adequate treatment (Henderson, 2018; Machado, 2020). Regarding another impact factor on syphilis control, Costa et al. (2013) in a study of 1,500 parturients found that only 50% of those with positive VDRL were able to take their partner to prenatal care and be counseled for syphilis treatment. An even smaller percentage managed to get the partner tested and not all agreed with the treatment.

This reality points to the need for intensification of socio-educational actions for the beginning of prenatal care in the first quarter as a great strategy in the early detection of syphilis, providing timely prophylaxis and treatment, reducing damage in the infectious diseases of the mother-child binomial. The relevance of the results presented is thus considered to reinforce the regional reality pointing out the weaknesses so that quantitative and qualitative measures can be promoted to better assist the health of women and children since the beginning of pregnancy in a qualified and humanized way, adopting welcoming behaviors and with timely interventions in the municipality of Ananindeua-PA, in the Brazilian Amazon.

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