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Analysis of the epidemiological profile of congenital syphilis in the State of Pernambuco from 2015 to 2017

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Abstract: Syphilis is considered an infectious disease, when it affects pregnant women, it can cause congenital syphilis, causing consequences for the conceptus. Congenital syphilis is due to the hematogenous dissemination of Treponema pallidum from pregnant women to her conceptus, by transplant. Congenital syphilis is considered a serious public health problem for Brazil. To describe the epidemiological profile of syphilis in the state of Pernambuco from 2015 to 2017. Secondary data were used from the Database of the Department of Informatics of SUS (DATASUS) through notifications of congenital syphilis, covering the state of Pernambuco from 2015 to 2017 by the Notifiable Diseases Information System (SINAN) and tabulated by TABNET. 5,097 cases of congenital syphilis were recorded in the state of Pernambuco from 2015 to 2017. The year in which a higher rate of cases was observed was in 2017 with 37.15% (n=1,894) the city of Recife had the highest rate of reported cases, among all cities of Pernambuco with 59.46% (n= 3,031) according to the most predominant race was mixed with 70.23% (n=3,580) it was observed that most mothers had the 5th to 8th incomplete grade of elementary school, totaling 34.37% (n=1,752). The number of mothers who underwent prenatal care was 77.26%, (n=3,938) it was also observed that the majority did not treat their partners reaching 45.16%. (n=2,302). With the high numbers of confirmed cases of congenital syphilis, it is necessary that primary care has control of the disease, investigates syphilis in pregnant women, creating strategies to reduce these numbers, it is suggested, early diagnosis of maternal infection, because the earlier the diagnosis, the greater the possibility of completing treatment in a timely manner, thus avoiding vertical transmission to the newborn, preventing complications from appearing to the fetus.

Keywords: Infectious disease. Syphilis. Vertical Transmission

1. Introduction

Defying humanity for centuries, syphilis has occupied a prominent place among sexually transmitted infections (STIs). Known in Europe, at least since the 15th century, it is estimated that the first epidemic occurred in 1495 in France, and reached the American continent along with the European conquerors with its rapid spread throughout the continent, it was worrying the growth of syphilitic endemic disease in the nineteenth century, and soon became one of the world's major pests. In 1928 penicillin was discovered by bacteriologist Alexander Fleming and first used to treat the disease, succeeding[1].

Syphilis is an infectious disease transmitted by a bacterium, Treponema pallidum, which is predominantly sexually transmitted. When untreated, the disease can evolve to stages that compromise the skin and internal organs, such as the heart, liver and central nervous system [2].

The diagnosis of syphilis is made through the Venereal Disease Research Laboratory (VDRL) test and/or rapid test for syphilis during pregnancy, at the first prenatal consultation and at the 28th week. When VDRL is positive, the treatment of pregnant women and partner is adopted to prevent the conceptus from being born with congenital syphilis[3].

Although the diagnosis and treatment of syphilis is easy to access and low cost, its control is still a challenge for many countries. Syphilis still affects a high number of pregnant women worldwide, presenting negative outcomes, represented by fetal losses at 22 or more gestational weeks, neonatal deaths, premature newborns or low birth weight and newly born infected. The Region of the Americas has the second highest prevalence of syphilis during pregnancy and the third highest number of cases.

Congenital syphilis (CS) is due to hematogenous dissemination of Treponema pallidum from untreated pregnant women or when the treatment regimen is improperly performed, the infection is transmitted to its conceptus, trans placentally. Vertical transmission can occur at any stage of pregnancy or clinical stage of maternal disease and during childbirth if there are maternal genital lesions. However, the more recent the infection, the more treponemas will be circulating and therefore the more severely the fetus will be affected. If treatment of syphilis is started by the 20th week of gestation, fetal losses as well as infant deaths may decrease. Actions such as improving the quality of prenatal care, prevention actions, treatment of sexual partners, can help to reduce congenital syphilis.

In Brazil, the number of reported cases of syphilis during pregnancy has increased every year. The notification of cases of congenital syphilis has also increased in all regions of the country, reaching the incidence of 4.7 cases per 1,000 live births in 2013 2. Low treatment adhering makes vertical transmission of syphilis high, and may reach values close to 100% in recent forms of the disease. However, proper diagnosis and treatment are extremely effective and reduce vertical transmission by up to 97%. The treatment of congenital syphilis is done with penicillin according to the criteria established by the Ministry of Health. The prevention of Congenital Syphilis consists in the early diagnosis and appropriate treatment not only of the pregnant woman, but also

of her sexual partner, thus allowing the control or even reduction of the number of cases of infection[6].

Congenital syphilis is considered a serious public health problem for Brazil, considering that the notification of cases has gradually increased. In Pernambuco alone in 2017, 1,894 cases of congenital syphilis were recorded against 1,685 in 2016 and 1,518 in 2015, thus revealing the high rates of the prevalence and incidence of congenital syphilis infection in the state[7].

In view of the above, it is still seen today that congenital syphilis (CS) remains a serious public health problem in Brazil requiring immediate intervention to reduce as much as possible the possibility of vertical transmission and its complications. In view of the large rates of cases of incidence of infection that occur gradually year after year, causing serious consequences for pregnant women and their conceptus and relevant study that is studied on the subject, in order to develop strategies to create health actions, health planning that allow the early detection of the infection, as well as identify the most vulnerable classes, and adequate treatment. The aim of this study was to analyze the epidemiological profile of cases of congenital syphilis in the state of Pernambuco from 2015 to 2017.

2. Methodology

This is a comparative epidemiological study of the descriptive type of cross-sectional, whose data were collected through the secondary database of the Notifiable Diseases Information System (SINAN), provided by DATASUS/Ministry of Health. The population consisted of the records in the notification forms for the disease "Congenital syphilis" in the SINAN Database (Notifiable Diseases Information System) in Pernambuco from 2015 to 2017. The Informatics Department of the Unified Health System (DATASUS) provides information that can serve to support objective analyses of the health situation, evidence-based decision-making and the development of health action programs.

The tabulation of the data in the Department of Informatics of the Unified Health System (DATASUS) was carried out through the Information System of Notifiable Diseases - SINAN, which is fed by the notification and investigation of cases of diseases and injuries that are included in the national list of diseases of compulsory notification, including congenital syphilis, which is the aim of the study. The variables studied in the congenital syphilis database were: Age group, race, year of notification, municipality of notification, among others.

A Database was constructed in the SPSS Statistical Program version 22 with the variables included in the study. For the analysis of these data, percentage calculations were used to observe the dispersion among the collected variables, analyzed by simple percentage. The information was analyzed through the SPSS version 22 program for data formatting.

3. Results and Discussion

A total of 5,097 reported cases of congenital syphilis were observed in the state of Pernambuco from 2015 to 2017. He observed that the year with the highest number of notifications was 2017 with 37.15% (Graph I).

The municipality with the highest disease rate was Recife, characterizing 59.46%, followed by Caruaru with 8.27%. (Table I) The brown race with 70.23% was the most affected in the state, followed by the white color/race with 9.26%, a failure was observed in this variable, because 949 cases were ignored or blank reached 18.61%. (Table II). However, there was a significant number of women who underwent prenatal care, 3,938 (77.26%). Regarding the evolution of these cases, 83.57% progressed to cure, followed by 2.45% of deaths related to congenital syphilis and 0.90% of deaths from other causes (Chart III). It was also observed that 45.16% did not treat their partners, followed by only 17.91% who underwent the partner's treatment, considering that 1,882 cases had this variable ignored or blank, representing 36.92%.

Table 1. Distribution of cases by municipality with higher numbers of notifications.

Municipality	2015	2016	2017	N	%
Caruaru	84	135	203	422	8,27
Jaboatão dos Guararapes	82	103	132	317	6,21
Olinda	59	181	11	351	6,88
Recife	1.006	913	1.112	3.031	59,46
Total	**1.231**	**1.322**	**1.458**	**4.121**	**68,87**

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net Lit: 11/25/2018

Table 2. Distribution of congenital syphilis by race in Pernambuco from 2015 to 2017.

Race	2015	2016	2017	N	%
Ign/White	329	320	300	951	18,65
White	159	172	141	483	9,47
Black	26	27	26	81	1,58
Yellow	0	04	02	06	0,11
Brown	999	1.159	1.422	3.600	70,62
Indigenous	05	03	03	11	0,21
TOTAL	**1.518**	**1.685**	**1.894**	**5.097**	**100**

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Lit: 25/11/2018

Table 3. Distribution by situation of closure of congenital syphilis in Pernambuco from 2015 to 2017.

Closure	2015	2016	2017	N	%
Ign/White	62	105	67	234	4,59
Healing	1.266	1.369	1.625	4.260	83,57
Death from CS	36	38	51	125	2,45
Death from other causes	10	21	15	46	0,00
TOTAL	**1.374**	**1.533**	**1.758**	**4.665**	**90,61**

Source: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Lit: 25/11/2018

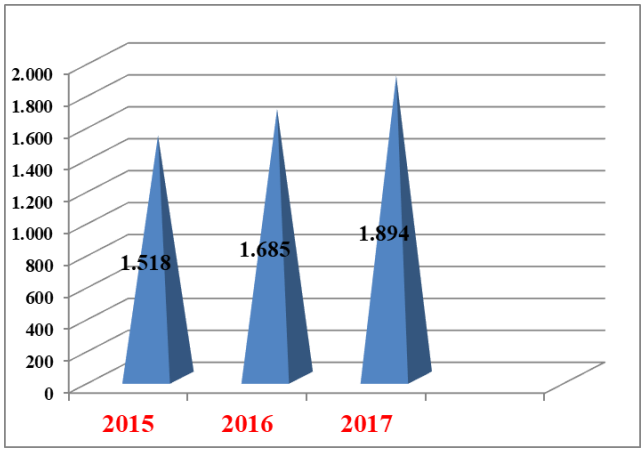

Figure 1. Proportion of cases per year**. Source**: Ministry of Health/SVS - Notifiable Diseases Information System - SINAN Net. Lit: 25/11/2018

Congenital syphilis is still a serious public health problem in Brazil and other countries, considering that it is an infectious disease with vertical transmission, one sees the need for immediate intervention to reduce the possibility of fetal contagion and its complications.

5,097 cases of congenital syphilis notifications were recorded in Pernambuco from 2015 to 2017, and it was observed that this number was significantly higher in 2017 with 1,894 confirmed cases, considering that in 2015 there were 1,518 and 2016 1. 685.having the municipality of Recife with the highest rate of cases, with 3,031 reaching 59.46%. The findings indicate that the color /race most affected was the brown color with 3,580 cases (70.23%) corroborating our studies other data also show that this variable actually the brown color prevails, also followed by the white color/race with 9.26%." The studies also showed that the schooling of the mother with the highest prevalence takes place in incomplete elementary school, but specifically from the 5th to the 8th grade, reaching 34.37%, followed by complete high school with 13.85%. The completed high school 10.73% and the 1st to 4th grade of incomplete elementary school 9.37%. A total of 1,013 cases were found to fail in this variable, because the whites and ignored correspond to 19.87%. Data confirmed in another study that shows that the prevalence of congenital syphilis occurs more frequently in incomplete elementary school.

It was also observed in the variable schooling that about 19.87% of the cases were ignored or were blank, a higher and a percentage was verified by another study conducted in Paraná that obtained 28.20% in this variable [1].

In the variable prenatal care, it was observed that most pregnant women had prenatal care, reaching 3,938, a total of 77.26%. On the other hand, it was observed that 45.16% did not treat their partner. Thus, harming the treatment. The same result was obtained in other studies, where pregnant women mostly perform prenatal care, but fail to treat their partners. The treatment was then considered inadequate according to the parameters of the Ministry of Health, since the partners were not treated by the following[11], [12].

Prevention of vertical transmission depends on early and appropriate diagnosis and treatment. Because although mothers perform prenatal care, most are only diagnosed with syphilis at the time of delivery or curettage [13].

Although most of the pregnant women had prenatal care, however, high rates of vertical transmission and severe forms of the disease were observed, thus relating these numbers to the low quality of care, including failures such as: late onset of prenatal care, interruption in continuity of care, difficulties in the diagnosis of syphilis during pregnancy, and lack of guidance on the disease and condom use, the same could be observed in another study[1].

Regarding the evolution of congenital syphilis, it was observed that 4,260 of the babies of mothers with syphilis were born alive, corresponding to 83.57%, followed by 2.45% deaths due to congenital syphilis and 0.90% deaths from other causes, ignored and white correspond to 4.59%.

Corroborating our results, another study shows that the rates of deaths from CS are still high, reaching 2.8 per 100,000 live births[1].

The aim of early identification of pregnant women at risk of syphilis is to ensure early treatment during pregnancy. The Ministry of Health (MS), through Ordinance No. 1,459/GM/MS13, of June 24, 2011, instituted rapid testing within the Stork Network as actions for prevention and treatment of sexually transmitted diseases (STDs)[16].

To control or even eradicate congenital syphilis it is necessary that research continues to be carried out. Because congenital syphilis in pregnancy and childhood remains relevant to public health. The elimination of vertical transmission of syphilis will only become a reality through health actions with a high-quality prenatal care[17].

4. Conclusion

It was observed that the greatest number of cases was in pregnant women who underwent prenatal care, however inadequate treatment or lack of it could explain the vertical transmission of syphilis. Another worrying factor was the treatment of the partner, where the number reaches approximately 47% of the notifications.

It was observed that in 2017 there was a gradual increase in cases of congenital syphilis, thus showing that there is a failure in prenatal care, because it was identified that most pregnant women performed prenatal care. In view of the above, it is necessary that actions be implemented aiming at the early detection of congenital syphilis, as well as the treatment of the partner, to avoid vertical transmission and possible complications for the conceptus.

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