

Congenital syphilis: epidemiological characteristics of the mother/child binomial treated in a public teaching hospital

Sífilis congênita: características epidemiológicas do binômio mãe/filho atendidos em um hospital público de ensino

Sífilis Congénita: características epidemiológicas del binomio madre/hijo atendidos en hospital estatal de enseñanza

Received: 08/11/2018

Approved: 28/02/2018

Published: 13/05/2019

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This study aimed to identify cases of congenital syphilis and characterize mothers and newborns from January 2010 to December 2015, carried out in 2016. It is a descriptive, retrospective study with data from the Epidemiological Surveillance Unit of the Hospital de Clínicas of the Federal University of Triângulo Mineiro, Uberaba-MG. It identified 70 cases of congenital syphilis. Mothers aged 20 to 29 years (51.3%), with low level of education (48.6%), single (48.6%) with prenatal diagnosis (70%), inadequate or no treatment (80%). The newborns were males (54.3%), with a mean gestational age of 37 weeks, symptomatic (51.4%), underwent treatment (97.3%) and were discharged (95.4%). The number of cases increased from 5.7% in 2010 to 58.6% in 2014. The findings of this study are relevant as they highlight a significant increase in the cases of congenital syphilis, high level of inadequate treatment of the pregnant women and no adherence of the partner to it, especially because of the deficit in the Primary Care.

Descriptors: Syphilis; Congenital syphilis; Prenatal care; Descriptive epidemiology.

O presente estudo teve como objetivo identificar os casos de Sífilis Congênita e caracterizar as mães e os recém-nascidos no período de janeiro de 2010 a dezembro de 2015, realizado em 2016. Estudo descritivo, retrospectivo, com dados do Núcleo de Vigilância Epidemiológica do Hospital de Clínicas da Universidade Federal do Triângulo Mineiro de Uberaba-MG. Identificou-se 70 casos de sífilis congênita. As mães com idade entre 20 a 29 anos (51,3%), com baixa escolaridade (48,6%), solteiras (48,6%), diagnosticadas no pré-natal (70%), sendo o tratamento inadequado ou inexistente (80%). Os recém-nascidos eram do sexo masculino (54,3%), com idade gestacional média de 37 semanas, eram sintomáticos (51,4%), foram tratados (97,3%) e receberam alta hospitalar (95,4%). O número de casos elevou-se de 5,7% em 2010 para 58,6% em 2014. Os achados desse estudo são relevantes à medida que evidencia um aumento significativo de casos de sífilis congênita, alta taxa de tratamento inadequado das gestantes e não adesão do parceiro ao mesmo, em especial por déficit na atenção primária à saúde.

Descritores: Sífilis; Sífilis congênita; Cuidado pré-natal; Epidemiologia descritiva.

El presente estudio tuvo como objetivo identificar los casos de Sífilis Congénita y caracterizar las madre y los recién nacidos (neonatos) en el período de enero de 2010 hasta diciembre de 2015, realizado en 2016. Estudio descriptivo, retrospectivo, con datos del "Núcleo de Vigilância Epidemiológica" del "Hospital de Clínicas da Universidade Federal do Triângulo Mineiro", Uberaba-MG, Brasil. Se identificó 70 casos de sífilis congênita. Las madres con edad entre 20 a 29 años (51,3%), con baja escolaridad (48,6%), solteras (48,6%), diagnosticadas en prenatal (70%), siendo el tratamiento inadecuado o inexistente (80%). Los neonatos eran del sexo masculino (54,3%), con promedio de edad gestacional de 37 semanas, eran sintomáticos (51,4%), fueron tratados (97,3%) y recibieron alta hospitalaria (95,4%). El número de casos se elevó del 5,7% en 2010 al 58,6% en 2014. Los hallazgos de ese estudio son relevantes a la medida que evidencia un aumento significativo de casos de sífilis congênita, alta tasa de tratamiento inadecuado de las gestantes y no adhesión del compañero a la vez, en especial por déficit en la atención primaria a la salud.

Descritores: Sífilis; Sífilis congênita; Atención prenatal; Epidemiología descritiva.

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INTRODUCTION

Congenital syphilis (CS) is a serious public health problem. In 2013 Brazil had a proportion of 7.4 cases per thousand live births of syphilis in the parturient, and 13,705 CS cases were reported in infants under one year of age, corresponding to an incidence rate of 4.7 cases per thousand live births, with the highest concentration in the Southeast (43.1%) and Northeast (32.2%)¹.

It is considered that the reduction of the SC and its control depend on the quality of prenatal care and childbirth, by investigating the serology of pregnant women for identification of *Treponema pallidum* and the completion of appropriate treatment of pregnant women and sexual partners^{2,3} using Benzathine Penicillin G²⁻⁴.

Brazil has not complied with the CS elimination goal. In contrast, the epidemic continues to grow and results in significant fetal and neonatal mortality. There was an increase in cases of SC reported to the Ministry of Health (MOH) from 6,916 cases (2.27/1,000 live births) in 2010 to 13,705 (4.70/1,000 live births) in 2013. But the number of cases increased before declining to 6793 cases in 2014⁵.

The increased incidence of syphilis and congenital syphilis in pregnant women was also observed in the city of Uberaba-MG, demonstrated by the increase SC 2015⁶.

Transmission to the newborn (NB) may result in spontaneous abortion, stillbirth, premature birth, low birth weight infants, with skin lesions, bone abnormalities, anemia, petechiae, purpura, generalized lymphadenopathy, nephrotic syndrome, meningitis, Parrot's pseudoparalysis, respiratory distress, leukocytosis or leukopenia^{4,7}.

In Brazil, from 2000 to 2013, the Mortality Information System (SIM) registered 1,241 deaths by CS, with 536 in the Southeast, and in 2013, 161 deaths in children under one year were declared, corresponding to a mortality rate of 5.5 cases per 100,000 live births¹.

Through the aspects involved in the occurrence of the disease and the current

morbidity and mortality indexes, it is highlighted the importance of the study in Uberaba and in the Southern Triangle Macro-region of the State of Minas Gerais, which contribute to the understanding of the epidemiology of the disease, since it was found that there are no published studies on this topic in the region. Therefore, this study aims to identify cases of Congenital Syphilis and characterize mothers and newborns from January 2010 to December 2015.

METHOD

This is a descriptive, retrospective study using secondary data, regarding the cases of CS reported in the Clinical Hospital of the Federal University of Triângulo Mineiro (HC-UFTM). This hospital is a reference for the treatment of CS in patients coming from Uberaba-MG and the Southern Triangle Macro-region of the State of Minas Gerais. The study population consisted of 70 newborns with confirmed diagnosis of CS after birth, and their mothers.

Data collection was performed in two stages: active search of the notification forms in the Epidemiologic Surveillance Unit of the Hospital (NUVE) and collecting information of existing records in the Medical Records Service (SAME) HC-UFTM.

Information was collected for a period of three months, from April to June 2016, recorded in specific instrument created by the researchers, covering variables related to the mother: age education; race; marital status; origin; number of previous pregnancies; abortion or stillbirth; prenatal; number of prenatal consultations; prenatal onset VDR test; having the 1st VDRL; 2nd VDRL; at birth; time of diagnosis; treatment of the pregnant woman; treatment of the partner; type of delivery. And variables related to RN: gender; age; gestational age; birth weight; clinical signs of congenital infection, tests performed at screening; treatment implemented and progress of the NB.

Data were stored in a database in Excel® format, double entry for further validation. Then, they were imported into the *Statistical Package for the Social Sciences* (SPSS) version 21 for processing and analysis. The qualitative variables were analyzed using

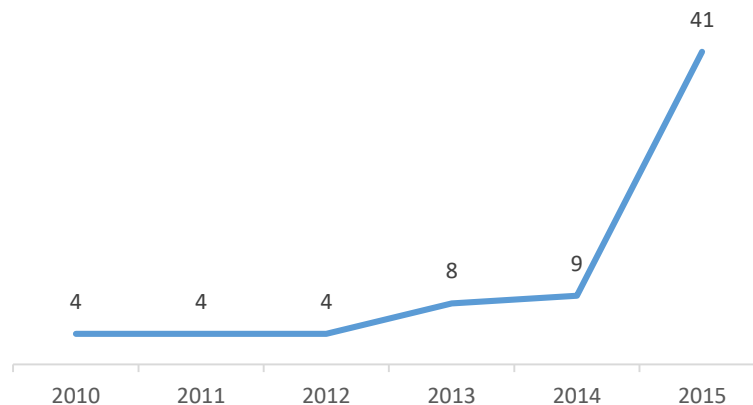
descriptive statistics through the distribution of absolute frequency, and percentual, while for quantitative variables descriptive measures of centrality (mean) and dispersion (minimum and maximum value) were used.

The study was approved by the Research Ethics Committee of the UFTM, in the opinion number 1457717, according to Resolution No. 466/12 of the National Health Council (CNS) and its complementary under CAAE 52469615.6.0000.5154.

RESULTS

They identified 70 cases of CS reported to NUVE, HC-UFTM, of the study period in the population younger than one year, with 49 coming from Uberaba-MG and 21 of the Southern Triangle Macro-region of the State of Minas Gerais. It is observed an increase in reported cases over the years, highlighted in 2015 with 41 cases (58.6%) (Figure 1).

Figure 1. Congenital Syphilis cases in the HC-UFTM in the period from 2010 to 2015. Uberaba, 2016.



As for the sociodemographic characteristics of the women who had newborns diagnosed with CS, there was a predominance of 51.3% of mothers aged 20 to 29 years, 24.3% with elementary school II incomplete and complete, respectively, 64.3% of the race not white and 48.6% were single (Table 1).

Regarding obstetric history of maternal syphilis reported, 65.6% of pregnant women already had one or more previous

pregnancies, 67.1% have never had abortion, 88.6% received prenatal care and that 40.0% had six to ten visits, 70.0% were diagnosed during prenatal care, 58.6% had vaginal delivery, 80.0% had inadequate treatment for syphilis and 67.1% did not have their partners treated (Table 2).

As the characteristics of newborns, there is a prevalence of 54.3% males and a higher frequency of color/non-white race 52.9% (Table 3).

Table 1. Sociodemographic characteristics of pregnant women with syphilis reported in the HC-UFTM, from January 2010 to December 2015. Uberaba, 2016.

Sociodemographic characteristics	N	%
Age		
15 to 19	22	31.4
20 to 29	36	51.3
30 to 39	12	17.3
Education		
Illiterate	1	1.4
Elementary I incomplete	1	1.4
Elementary I complete	1	1.4
Elementary II Incomplete	17	24.3
Elementary II complete	17	24.3
High school incomplete	6	8.6
High school complete	11	15.7
Unknown	16	22.9
Color		
White	25	35.7
Black and brown	45	64.3
Marital Status		
Single	34	48.6
Married	12	17.1
Stable union	13	18.6
Widow	1	1.4
Unknown	10	14.3

Table 2. Obstetric history of pregnant women with syphilis, reported in the HC-UFTM, from January 2010 to December 2015. Uberaba, 2016.

Epidemiological history	N	%
Number of previous pregnancies		
≥ 1	46	65.6
0	18	25.7
Unknown	6	8.6
Number of abortions		
≥ 1	17	24.2
0	47	67.1
Unknown	6	8.6
Prenatal care		
Yes	62	88.6
No	6	8.6
Unknown	2	2.9
Number of consultations		
1 to 5	17	24.3
6 to 10	28	40.0
> 10	5	7.1
0	5	7.1
Unknown	15	21.4
Diagnosis		
During prenatal period	49	70.0
At labor	17	24.3
Post-labor	2	2.9
Unknown	2	2.9
Delivery		
Vaginal	41	58.6
Cesarean	26	37.1
Unknown	3	4.3
Treatment of pregnant woman		
No	7	10.0
Adequate	6	8.6
Inadequate	56	80.0
Unknown	1	1.4
Treatment of the partner		
Yes	11	15.7
No	47	67.1
Unknown	12	17.1

Table 3. Sociodemographic characteristics of NBs with CS diagnosed and reported at HC UFTM, from January 2010 to December 2015. Uberaba, 2016.

Sociodemographic characteristics	N	%
Gender		
Male	38	54.3
Female	32	45.7
Color/race		
White	31	44.3
Black and brown	37	52.9
Ignored	2	2.9

It is noted that the average age of the NBs when performed the diagnosis is six days, with the minimum zero day and the maximum 60 days; mean gestational age was 37 weeks and 02 days, with the minimum 28 and the maximum 41 weeks the average birth weight was 2637g, with 845g the minimum and 3960g the maximum.

Regarding the signs and symptoms, 51.4% of the NBs were symptomatic and the main clinical signs presented were: jaundice 31.4%, hepatosplenomegaly, 7.1%, anemia

2.9% and skin lesions 1.4%. Other unrelated symptoms were reported by 11.4%.

VDRL test was performed in 98.6% of the NBs, long bones x-ray images in 82.9% and CSF (cerebrospinal fluid) collection in 75.7%. The most widely drug used in the treatment was Crystalline Penicillin G 100,000 to 150,000 IU/kg/day - 10 days in 72.9% of the NBs (Table 4). Regarding the outcome of hospitalization, 95.7% were discharged and 4.3% died.

Table 4. Treatment prescribed for NBs with CS diagnosed and reported in HC-UFTM, from January 2010 to December 2015. Uberaba, 2016.

Treatment	N	%
Crystalline Penicillin G 100,000 to 150,000 IU/kg/day - 10 days	51	72.9
Procaine Penicillin G 50,000 IU/kg/day - 10 days	9	12.9
Benzathine Penicillin G 50,000 IU/kg/day	6	8.6
Another scheme	2	2.9
Not performed	1	1.4
Unknown	1	1.4

DISCUSSION

The increase in the number of CS cases in NBs reported in HC-UFTM from 2010 to 2015 are worth mentioning. The Southeast is the region with the highest incidence of syphilis cases during pregnancy and CS with a vertical transmission rate of 36.3%⁸.

In Colombia, the incidence increased from 2.15 cases in 2005 to 3.28 cases/1,000 live births in 2011⁹. Spain presented a modest increase, from 0,000 cases in 2003 to 0.223 cases/1,000 live births in 2007¹⁰. However, in a study carried out in China, the incidence decreased from 1.15 in 2002 to 0.10 cases/1,000 live births in 2011¹¹. The UK had lower rates than 0.02 cases/1000 live births

during all the period from 2010 to 2015¹². In the United States, the number of cases, mortality and morbidity by CS are decreasing annually^{13,14}.

Syphilis affects all social classes of all reproductive age groups, but studies corroborate the current research showing that syphilis and CS reach the low-income and education population who have difficulty to access service to have prenatal care of quality¹⁵⁻¹⁷.

Findings indicate a failure in assistance in prenatal care, with regard to syphilis treatment, since most pregnant women had 06-10 consultations and 49 of the women were diagnosed prenatally. It is necessary that

in the Primary Health Care (PHC), especially in the Family Health Strategy (ESF), in addition to identification, monitoring and also the treatment of cases occurs. In order to have the decrease of CS, attention to prenatal care should be adequate, because through it there are opportunities for intervention, besides guidance regarding the treatment of the pregnant women and their infected partners, concomitantly^{18,19}.

Brazil is experiencing a deficiency in relation to PHC, especially in prenatal care. Results indicate an increase in demand of prenatal care, with early diagnosis of infection, but pregnant women and their partners do not receive adequate treatment, which contributes to an unfavorable outcome²⁰.

The deficiency in prenatal care leads to inadequate treatment of pregnant women and consequently results in the high number of CS cases. The diagnosis and treatment of CS involves a prolongation of hospitalization, as it is more complex than the maternal syphilis, because it involves a more laborious research, being exhausting to the NB, family and generates additional costs to the health system².

This study found that treatment of pregnant women and their partners was inadequate, as in other studies^{2,15,21-23}. The shortage of penicillin complicates treatment of pregnant women and their partners, thus becomes a major threat to vertical transmission²⁴. An alternative treatment is the substitution by ceftriaxone for both pregnant women and for the NB, but priority is the penicillin^{4,24}.

With regard to the sociodemographic characteristics of the NBs, similar results were found in other studies^{17,21,23}, as in relation to birth weight and color/race, as gestational age it was consistent with the current study, which observed the predominance of 37 weeks or more of pregnancy^{17,23}. In another study, it was found dissonance in relation to gender, with higher incidence in female^{21,25}.

Regarding the tests to make the diagnosis of CS, one observes that the performance of VDRL peripheral blood analysis was conducted in most NBs, but CSF

collection and x-ray of long bones was not performed^{23,26}. Thus, these data contradict with the present study in which 82.9% underwent x-ray of long bones and 75.7% collection of CSF.

Despite the increase in the number of CS cases, a prevalence of symptomatic NBs was observed, who were discharged, results that differ from the signs and symptoms and regarding the discharge are similar to other studies^{2,23,26-28}.

This study supports the standards of the Ministry of health⁴, and the respective treatments are described in the notification records that are Crystalline Penicillin G 100,000 to 150,000 IU/kg/day for 10 days, Procaine Penicillin G 50,000 IU/kg/day for 10 day, Benzathine Penicillin G 50,000 IU/kg/day in a single dose. And, depending on the case, another treatment scheme may be prescribed, with predominance in this study of the scheme Crystalline Penicillin G 100,000 to 150,000 IU/kg/day for 10 days, with only one of the study population not being treated.

PHC is considered the gateway of health services, so its performance is essential in the fight against syphilis maternal-fetal transmission, as the family health teams are the strongest link between professional and patient, having much to contribute for change in the epidemiological picture of the CS²⁹.

CONCLUSION

The findings of this study are important as they show that the CS had a significant increase from 2010 to 2015 and high inadequate treatment rate of pregnant women and the non-adherence of the partner in the treatment, since 70% of pregnant women were diagnosed during prenatal care.

The study concluded that of the population studied, the majority of mothers were young, with low education, single, with CS diagnosed during prenatal care and treatment were performed improperly. The NBs were male, born with a mean gestational age of 37 weeks, symptomatic, and after treatment they were discharged. There was an increase in the number of cases reported in southern Minas Triangle macro-region during the study period.

As limitations of this study, there is the use based on secondary data available in medical records and the quality of information recorded. It was identified missing data in the reporting forms and records, being necessary to use the two sources for data collection, a possible reflection of the high demand for work of the care team. In turn, despite these limitations, the importance of the study to work together with the PHC is given.

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CONTRIBUTIONS

All authors had equal contribution in the design and study design, collection and data analysis, writing and revision.

How to cite this article (Vancouver)

Nasciutti LR, Vasconcelos RBS, Rocha BBO, Contim D, Amaral JB. Congenital syphilis: epidemiological characteristics of the mother/child binomial treated in a public teaching hospital. *REFACS* [Internet]. 2019 [cited in inserting day, month and year of access]; 7(2): 167-174. Available in: enter access link. DOI: DOI insert link.

How to cite this article (ABNT)

NASCIUTTI, L. R.; VASCONCELOS, R. B. S.; ROCHA, B. B. O.; CONTIM, D.; AMARAL, J. B. Congenital syphilis: epidemiological characteristics of the mother/child binomial treated in a public teaching hospital. *REFACS*, Uberaba, MG, v. 7, n. 2, p. 167-174, 2019. DOI: *insert DOI link* Available from: *<insert access link>*. Access in: *insert day, month and year of access*.

How to cite this article (APA)

Nasciutti, L.R., Vasconcelos, R.B.S., Rocha, B.B.O., Contim, D. & Amaral, J.B (2019). Congenital syphilis: epidemiological characteristics of the mother/child binomial treated in a public teaching hospital. *REFACS*, 7(2), 167-174. Retrieved in: *insert day, month and year of access* from *insert link access*. DOI: *insert DOI link*.