TREATMENT PROTOCOLS FOR CONGENITAL SYPHILIS AND ITS EVOLUTION IN NEWBORNS IN THE MUNICIPALITY OF ANÁPOLIS FROM 2013 TO 2022

Fernanda Folgosi[1]
Ana Carolina de Holanda Machado[2]
João Matheus Elias Rezende[3]
Helen de Lima[4]
Medical students at the Evangelical University of Goiás – UniEVANGÉLICA([1]) ([2])
Alfredo Nasser University Center – Unifan[3]
Professor, Doctor of Medicine, Evangelical University of Goiás – UniEVANGÉLICA[4]

ABSTRACT
Introduction: Due to the prevalence of Congenital Syphilis (CS) in Brazil and its impact on the survival and evolution of newborns, treatment protocols have been adapted. Therefore, the objectives of this study are to describe the protocols published by the Ministry of Health and to analyze the evolution of infected newborns. **Methodology:** This is an observational and analytical cross-sectional study, in which a literature review and analysis of epidemiological data from the Notification Form of the Notifiable Diseases Information System (SINAN) were performed. **Results:** The first CS protocol was established in 2015, with modifications over the years to optimize treatment. During the penicillin shortage, alternatives such as ceftriaxone were adopted. The data show a variation in diagnosed cases, with a significant increase in 2018 and 2022. The survival of newborns improved despite the lack of penicillin, highlighting the effectiveness of the protocols implemented. **Conclusion:** It is clear that maintaining continuous surveillance and adequate treatment of newborns affected by CS has an impact on the incidence and prevalence of cases.
Keywords: “Congenital Syphilis”; “Newborn”; “Brazil”; “Protocols”.

INTRODUCTION

Congenital infections are diseases that are transmitted from mother to fetus, which can be acquired in various ways: transplacental, contact with maternal secretions or blood via the birth canal, and some can be transmitted through breast milk (MOURA, *et al.,* 2021). Congenital infections are a public health problem in Brazil, with Congenital Syphilis (CS) being particularly noteworthy. CS is caused by the bacterium *Treponema pallidum* and has a broad clinical spectrum with various forms of manifestation at any time from the neonatal period to 2 years of age, with the possibility of numerous consequences such as congenital anomalies and fetal death (DOMINGUES, *et al.,* 2021; COUTINHO, *et al.,* 2021).

In view of these consequences, the Ministry of Health established its first treatment protocol for Congenital Syphilis in 2015, with adaptations over the years to optimize treatment and prevent unfavorable outcomes for newborns (DOMINGUES, *et al.,* 2021).

Thus, this research aims to describe the protocols for Congenital Syphilis published by the Ministry of Health and analyze the evolution of newborns infected with Congenital Syphilis in the municipality of Anápolis from 2013 to 2022 according to the Notification Form of the Notifiable Diseases Information System (SINAN).

METHODS

This research is an observational and analytical cross-sectional study. Thus, a literature review was conducted with articles searched in the Medline, PubMed, and Virtual Health Library (BVS) databases, using the descriptors established by the Health Sciences Descriptors (DECS): "Congenital Syphilis", "Newborn", "Brazil", and "Protocols", with the exclusion criteria being studies that did not address Congenital Syphilis and those published before 2018. In addition, epidemiological data were analyzed using the Notification Form of the Notifiable Diseases Information System (SINAN).

RESULTS

Historically, the first protocol for CS by the Brazilian Ministry of Health was officially released in 2015, although there was already a treatment for newborns with CS, which remains in place today. Table 1 shows the Congenital Syphilis protocols according to the Ministry of Health that were in effect during the years 2013 to 2022.

Table 1. Congenital syphilis protocols related to the treatment of newborns according to the Ministry of Health from 2013 to 2022.

YEARS/ MATERNAL TREATMENT	**2013**	**2015**	**20**	**2020**
INADEQUATE MOTHER/NO TREATMENT + NEWBORN WITH CHANGES	No cerebrospinal fluid abnormalities: Penicillin G Crystalline 100,000 IU/kg/day, IV, twice a day (if < 1 week old), or; 3 times (if > 1 week old), for 10 days, or; Penicillin G Procaine 50,000 IU/kg IM per day, for 10 days. With cerebrospinal fluid changes: Penicillin G	Newborns < 28 days old: Crystalline penicillin 50,00 0 IU/kg/dose IV 12/12 hours (< 7 days old) and every 8 hours (> 7 days old), for 10 days; Newborns > 28 days: Investigation, or crystalline penicillin 4/4 hours; procaine	As a non-hospital alternative and for children in the post- r neonatal period: Procaine benzylpenicillin 50,000 IU/kg IV every 4-6 hours for 10 days	Restart treatment if delay > 24 hours

	Crystalline 150,000 IU/kg/day, IV twice daily (if < 1 week old) or 3 times (if > 1 week old), for 14 days.	penicillin 12/12 hours		
MOTHER INADEQUATELY/ WITHOUT TREATMENT + NEWBORN WITHOUT CHANGES	Penicillin G Benzathine (PB), in a single dose of 50,000 IU/kg IM;			
MOTHER TREATED	Newborn with VDRL reactive with a titer> r than the mother's and/or presence of clinical changes: perform additional tests Newborn non-reactive or with a t< r equal to that of the mother and asymptomatic: outpatient follow-up.	Asymptomatic newborn with non-reactive VDRL: outpatient follow-up; PB IM single dose of 50,000/IU/kg; Asymptomatic newborn with reactive VDRL and titer equal to or lower than the mother's: clinical follow-up.	The only situation in which treatment is not necessary: asymptomatic newborns with non-treponemal test titration up to a dilution greater than the mother's (e.g., newborns with VDRL < 1:16 and the mother's 1:8).	

SOURCE: Ministry of Health, Clinical Protocol and Therapeutic Guidelines for Syphilis – PCDT

However, during these 10 years of SC protocols, there was a period of global adversity in June 2014, which was the shortage of the main drug to treat the disease: Benzathine Penicillin (PB), due to a lack of raw materials (MIRANDA, *et al.*, 2021).

One of the alternatives adopted by the competent authorities was to prioritize PB stocks for pregnant women with syphilis and to allocate crystalline penicillin for children with CS. Among the alternative treatments, the Ministry of Health released several information notes containing the dosages for both acquired syphilis and congenital syphilis with ceftriaxone. However, it is worth noting that evidence for the effectiveness of this treatment is insufficient in the literature, according to Information Note No. 85/2015 from the Ministry of Health.

Given the consequences for newborns infected with CS, the worst outcome is fetal death; however, if the infant is born alive, there may be neurological, cardiac, skeletal, visceral sequelae such as hepatosplenomegaly, and hematological sequelae

such as anemia, among others (SILVA et al., 2024). Table 1 describes the evolution of CS in newborns in Anápolis from 2013 to 2022.

Table 1. Evolution of congenital syphilis from 2013 to 2022.

EVOLUTION	IGNORED/ WHITE	ALIVE	DEATH FROM NOTIFIED COMPLICATIONS	DEATH FROM OTHER CAUSES	TOTAL
2	-	2	-	-	25
2014	2	30	-	-	32
2015	-	12	-	-	12
2016	-	30	1	-	31
2017	-	24	-	1	25
2018	1	49	1	1	52
2019	-	44	3	-	47
2020	1	18	-	-	19
2021	-	29	2	-	31
2022	1	53	-	1	55
TOTAL	5	314	7	3	3

Source: Ministry of Health/SVS - Notifiable Diseases System - SINAN NET

According to SINAN data from 2013 to 2022, there was a variation in the number of children diagnosed with CS. However, there were few deaths, which indicates that survival rates are predominantly favorable.

Nevertheless, as this is secondary data, this result is limited due to the lack of access to follow-up of these newborns to be able to ascertain the most prevalent sequelae throughout the lives of the affected individuals.

CONCLUSION

Thus, it is clear that the implementation and application of the Ministry of Health protocols since 2015 has been fundamental in optimizing the management of congenital syphilis and reducing complications and mortality. The adaptation of therapeutic strategies during the global shortage of PB also played an important role. Despite the increase in diagnosed cases, continuous surveillance and adequate treatment are essential for the health of affected newborns.

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