Prevalence of syphilis, HIV and toxoplasmosis in prenatal screening in the population of the northern region of the state of Rio de Janeiro, Brazil

Prevalência de Sífilis, HIV e Toxoplasmose no pré-natal em uma população no Norte Fluminense

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ABSTRACT

Introduction: There is a need for studies to know the real situation and outline measures to guarantee a reduction in the rates of pregnant women diagnosed with HIV, Syphilis and Toxoplasmosis. **Objective:** To determine the prevalence of Syphilis, HIV and toxoplasmosis in puerperal women assisted at the largest public maternity hospital in Campos dos Goytacazes in 2016. **Methods:** Cross-sectional study, using secondary data from the puerperal women assisted at the largest maternity hospital in the northern region of the State of Rio de Janeiro, in the year 2016. **Results:** There were 970 puerperal women, with a prevalence of HIV, Syphilis and Toxoplasmosis in pregnancy of 1.6, 2.7 and 2%, respectively. Most pregnant women were diagnosed at delivery due to low serological coverage during pregnancy. **Conclusion:** The high prevalence of Syphilis, HIV and Toxoplasmosis in pregnancy requires efficient prenatal care for its identification and approach.
Keywords: pregnancy; HIV; syphilis; toxoplasmosis; infectious disease transmission, vertical.

RESUMO

Introdução: São necessários estudos para conhecer a real situação e delinear medidas que garantam a redução dos índices de gestantes com diagnóstico de vírus da imunodeficiência humana, sífilis e toxoplasmose. **Objetivo:** Determinar a prevalência de sífilis, vírus da imunodeficiência humana e toxoplasmose em puérperas atendidas na maior maternidade pública de Campos dos Goytacazes (RJ) no ano de 2016. **Métodos:** Estudo transversal, utilizando dados secundários das puérperas atendidas na maior maternidade do Norte Fluminense no ano de 2016. **Resultados:** Foram 970 puérperas, com prevalência de vírus da imunodeficiência humana, sífilis e toxoplasmose na gestação de 1,6, 2,7 e 2%, respectivamente. A maioria das gestantes foi diagnosticada no momento do parto em razão da baixa cobertura sorológica durante a gestação. **Conclusão:** A alta prevalência de sífilis, vírus da imunodeficiência humana e toxoplasmose na gravidez requer um pré-natal eficiente para sua identificação e abordagem.
Palavras-chave: gravidez; HIV; sífilis; toxoplasmose; transmissão vertical de doenças infecciosas.

INTRODUCTION

The purpose of the World Health Organization (WHO) is to reduce the number of cases of congenital Syphilis to <50 cases for every 100,000 children born alive[1]. However, Syphilis remains a global health problem, with an estimate of 1,8 million pregnant women worldwide being infected with Syphilis, out of which less than 10% are diagnosed and treated[2]. Infection of the fetus, which reaches up to 70-100% in recent maternal illness, can result in a series of comorbidities, such as abortion, neonatal death, symptomatic infection of the neonate and severe complications in the absence of treatment[3].

To reduce HIV-1 Maternal-Infant Transmission (IMT), prenatal screening is essential so that prophylactic interventions can be carried out and determine the reduction of HIV IMT to levels below 2%. The goal is that 90% of pregnant women take the rapid HIV-1 test in the first trimester of pregnancy and repeat the test before delivery[4]. Cuba was the first country to achieve WHO validation of an HIV-free IMT country upon reaching the value <2%[5]. However, other countries have not achieved it, which shows failures in the health management responsible for not achieving the goal.

The prevalence of gestational toxoplasmosis varies depending on social, economic, regional factors, eating habits, age group and urban or rural origin. Contact with cats, eating undercooked vegetables and undercooked meats are the most common ways of contracting the disease, in addition to drinking water contaminated with oocyst[6]. The prevalence rate varies from 20 to 90% in the adult world population, depending on the region, being higher in hot and humid regions mainly associated with poor primary sanitation conditions, difficult access to drinking water and eating habits[7]. Sororeactivity in Brazil ranges from 56.4 to 91.6%, and this variation is mainly related to socioeconomic conditions[7].

With the purpose of overcoming this deficiency, the proposing group presents this study on the prevalence of pregnant women diagnosed with Syphilis, HIV and Toxoplasmosis in the northern region of the State of Rio de Janeiro, Brazil.

OBJECTIVE

This study aims to evaluate the prevalence of screening and diagnosis of syphilis, toxoplasmosis and HIV during pregnancy and delivery at a public hospital in Campos dos Goytacazes, State of Rio de Janeiro.

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METHODS

Design

Cross-sectional study, based on data collected from puerperal women's medical records, assisted at the largest public maternity hospital in the northern region of the State of Rio de Janeiro, at *Hospital Plantadores de Cana*, between January and May 2016. Prenatal care at the hospital is practically restricted to women with medium and high pregnancy risk. Data collection was performed by YHSA, HFVF, CMLR and EDM researchers between January 2017 and June 2019. This research included data from medical records of pregnant women followed up at *Hospital Plantadores de Cana*, between January and May 2016. The exclusion criteria were medical records with a loss of more than three exposure variables. The outcome variables observed was the presence of anti-HIV-1, VDRL reactor and anti-toxoplasmosis positive antibodies response. Additionally, exposure variables were age, number of pregnancies, district of origin, education, marital status, use of cigarettes, use of alcoholic beverages and use of drugs.

Ethical aspects

This study was approved by the clinical director of Hospital Plantadores de Cana, in Campos dos Goytacazes, RJ, and by the Research Ethics Committee involving human beings of the Medicine School of Campos, RJ, under number CAAE 64905917.0.0000.5244.

Data analysis

Secondary data and the results of serological tests were managed by Epidata 3.1 (https://www.epidata.dk/download.php) and analyzed in a coded manner, using the R program for frequency determination[8] by TLS and RCSCF researchers.

RESULTS

Data were collected from 970 medical records of puerperal women assisted at HPC; this number represents 27% of annual care, with 79.4% of pregnant women from Campos dos Goytacazes.

Among young pregnant women aged 19 years or less, and adult women over 19 years old, the prevalence of various sociodemographic characteristics is similar (**Table 1**).

The prevalence of abortion, alcohol and tobacco use, drugs and gestational diabetes was higher in pregnant women over 19 years old. However, stillbirth was more prevalent in pregnant women aged under 19.

Despite being a large referral hospital for sexually transmitted diseases to the fetus and high-risk pregnancies, the prevalence of HIV-1, Syphilis and Toxoplasmosis infection is high (**Table 2**).

Low testing throughout pregnancy for the three infections contrasts with coverage close to the total HIV and syphilis tests at delivery. The coverage during pregnancy for HIV, Syphilis and Toxoplasmosis has a percentage close to and below 25% (**Table 3**).

DISCUSSION

Infectious diseases are the main causes of morbidity and lethality in the world population. The impact of global health with an increase in the years of life lost due to illness and disability requires specialized monitoring. Infections transmissible to the fetus, such as

Table 2 – Seropositivity for HIV, Syphilis (VDRL) and Toxoplasmosis.

Variables	All, n=970 (%)
HIV	16 (1.6)
Syphilis	26 (2.7)
Toxoplasmosis	
IgM+IgG-	5 (2)
IgM+IgG+	6 (3)
IgM-IgG+	105 (45)
IgM-IgG-	118 (50)

Table 1 – Prevalence of screening for Syphilis and HIV according to the sociodemographic characteristics of the analyzed population.

Variables	≤19, n=195 (%)	>19, n=775 (%)	OR (95%CI)
Ethnicity			
White	38 (19.5)	257 (33.2)	1.00
Brown	127 (65.1)	363 (46.8)	0.4226 (0.284–0.628)
Black	29 (14.9)	147 (18.9)	0.7495 (0.4437–1.266)
Yellow	-	2 (0.3)	-
Ignored	1 (0.5)	6 (0.8)	-
Miscarriage			
≥2	2 (1.1)	32 (4.8)	-
Smoke	2 (2)	33 (4.3)	-
Alcohol	1 (1)	11 (1.4)	-
Drugs	-	9 (1.2)	-
Gestacional Diabetes	1 (1)	32 (4.1)	0.429 (0.05760–3.196)
Multiple pregnancy	2 (3.1)	26 (2.9)	1.078 (0.2500–4.649)
Baby death	4 (6.3)	31 (3.5)	1.822 (0.6221–5.335)

OR: odds ratio; 95%CI: confidence interval of 95%.

Syphilis, HIV and Toxoplasmosis, are even more harmful, as they directly impact the country's future, which is the new generations.

Cuba was the first country to achieve WHO's validation as an HIV-free IMT country, by reaching the IMT <2% mark[5]. The only way to achieve this goal is the early diagnosis of HIV infection performed by available serological tests. Our study revealed that HIV serological testing coverage was more prevalent at the time of delivery. The data on coverage in childbirth of 99.2% surpasses other studies carried out in Brazil that show coverage of 81.7 and 96%[9,10].

The prevalence of pregnant women infected with HIV-1 was determined at two points in Campos dos Goytacazes; between 2001/2002, the prevalence was 0.4%, through data analysis of 5,188 pregnant women assisted by the SUS and tested. Afterwards, there was 0.78% in the data analysis of 1,795 pregnant women assisted by the SUS tested in 2012/2013, in a study conducted at the same hospital[11]. The prevalence indicated in this last study is found above other national data, approximately 0.4%[9,12]. One justification is that the HPC is a reference hospital in the care of HIV-positive women. For this same reason, our current data of 1.6% HIV prevalence among pregnant women is well above other studies carried out recently in Brazil. However, HPC in 2016 was responsible for 47.8% of live births in Campos dos Goytacazes (7516 cases). Furthermore, even if all HIV-infected pregnant women were seen at this hospital, the prevalence would still be approximately double the prevalence found in other studies, which was 0.38%[9].

Like HIV, the mothers in our study had a low prevalence of serological coverage for Syphilis during pregnancy, but a high coverage during delivery. The screening performance for Syphilis during pregnancy in our study presents extremely low data as compared to the literature, including that found in a national study with 2011/2012 data[2]. Despite the low coverage during pregnancy, the high prevalence of rapid testing delivery has guaranteed a growing diagnosis of Syphilis in pregnant women. The State of Rio de Janeiro had a 75% increase in the notification of Syphilis in pregnant women between 2007 and 2012. The prevalence found in our study was 2.7%, which is below the percentage found in another large Hospital in the State of Rio de Janeiro, *Hospital Pedro Ernesto*, which was 5% in 2014[13]. The 27 pregnant women identified in the current study, if faced with the 57 cases reported in DATASUS[14], constitute a low notification of cases, a factor that certainly hinders the confrontation of Syphilis.

Additionally, by examining DATASUS, we noticed that new cases of Syphilis in pregnant women in this city increased between 2016 and 2018 by 61%[14]. This data reveal the loss of control of Syphilis in pregnant women by public health in our municipality, probably associated with the poor quality of prenatal care. Most pregnant women arrive late for prenatal care and still face difficulties in making appointments, and having prompt access to serological tests, and there is constant lack of professionals.

Table 3 – Percentage of screening coverage for diseases communicable to the fetus — HIV, Syphilis (VDRL) and Toxoplasmosis.

Variable	All, n=970 (%)
HIV 1st/2nd trimester	149 (15.4)
HIV 3rd trimester	196 (20.2)
HIV delivery	962 (99.2)
Syphilis 1st trimester	162 (16.7)
Syphilis 2nd trimester	203 (20.9)
Syphilis 3rd trimester	219 (22.6)
Syphilis Delivery	954 (98.4)
Toxoplasmosis	234 (24.1)

Toxoplasmosis is an infection of worldwide distribution caused by the protozoa *Toxoplasma gondii*, a mandatory intracellular parasite. In the national literature, there is a variation in the prevalence of IgM + in pregnant women, with 0.67% in Goiás[15], 0.3% in Divinópolis/MG[16] and 2.2% in Paraná[17]. In Campos dos Goytacazes, the estimated frequency of acute toxoplasmosis during pregnancy is 0.74 and 0.2% of congenital toxoplasmosis (1 case for every 434.7 live births)[18]. The analysis of medical records of 970 pregnant women in the present study showed only the mentioned testing of 234 pregnant women, corresponding to 24% of the total group tested. In early 2001, the Health Department of Campos dos Goytacazes included Toxoplasmosis as a disease to be screened in all prenatal care performed in Campos dos Goytacazes[18]. Therefore, either this guidance is not being fulfilled, or there was only omission in the report in medical records, or there is still difficulty in accessing this laboratory exam for pregnant women. The percentage of 5% IgM + (therefore, acute infection) in pregnancy is higher than what was presented in the previous study in our municipality (0.74%). A possible explanation is the visibility conferred to Toxoplasmosis by studies carried out in the municipality, contributing to the adoption of preventive measures, with the infection being postponed to a higher age and often coinciding with pregnancy. This is corroborated by the finding of 50% of susceptible pregnant women (negative IgG and IgM). This fact should deserve greater concern in prenatal care, both in the guidelines relevant to exposure to Toxoplasma as well as in the demand for repeated tests, which should be monthly made, if possible.

Our study found the high prevalence of HIV, Syphilis, and Toxoplasmosis in pregnancy assisted at the largest maternity hospital in the Northern region of Rio de Janeiro. Furthermore, our findings detected that pregnant women were diagnosed at delivery due to low serological coverage during pregnancy. The findings presented here should be interpreted with caution because of the following limitations: first, this is an observational study, with the use of medical record data, and so we cannot rule out recall bias. Second, the study was restricted to one surveillance service. We expect that similar observational studies replicate our intriguing findings.

CONCLUSION

The present study confirms a high prevalence of Syphilis, HIV infection and Toxoplasmosis in the population of pregnant women studied, and the involvement of pregnant women, health professionals and managers is essential to reverse this reality.

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Participation of each author

TLS and RCSCM designed the study. YHSA, HFVF, CMLR and EDM collected the data from medical records. TLS, RCSCF and YHSA analyzed the data. TLS, YHSA, HFVF, CMLR and EDM wrote the manuscript. TLS e RCSCM edited the manuscript. All authors gave final approval.

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Conflict of interest

The authors declare that there is no conflict of interest.

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