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THE PREVALENCE OF SYPHILIS IN A CITY OF MINAS GERAIS, BRAZIL

***[1]Policardo Gonçalves da Silva, [2]Jony Pimenta de Vasconcelos Neto, [2]Larissa Beatriz Evangelista Santana, [2]Silas José Braz Filho, [1]Luana Matos Silva Araújo and [3]Sérgio Valverde Marques dos Santos**

[1]Master Teacher at Universidade do Estado de Minas Gerais, UEMG, Unidade Passos, Minas Gerais, Brasil
[2]Medical School Graduate at Universidade do Estado de Minas Gerais, UEMG, Unidade Passos, Minas Gerais, Brasil
[3]PhD Teacher at Universidade do Estado de Minas Gerais, UEMG, Unidade Passos, Minas Gerais, Brasil

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****Corresponding author:***
Policardo Gonçalves da Silva

ABSTRACT

Syphilis is caused by *Treponema pallidum* bacterium. The precocious detection of the infection is possible with treponemal and non-treponemal tests that contribute to the implementation of public health policies. The aim of this study is to investigate the prevalence of syphilis in a city of the south of Minas Gerais, Brazil. It is characterized as an observational, retrospective and quantitative study accomplished between 2013 and 2018. The data were obtained from Sistema de Informação Nacional de Agravos de Notificação (SINAN - National Reporting Disease Informational System). It was observed that there were 468 diagnosed syphilis cases, showing an annual growth. Statiscally, 59.6% of those cases were male, 55.5% were white and 26% had completed High School. The age group with the highest number of diagnoses was from 15 to 34 years old, counting on 50.64% of the cases. Therefore, it can be seen the syphilis increase in the investigated city and the most affected groups, facilitating the development of more effective prevention, diagnosis and treatment policies aimed at these groups.

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INTRODUCTION

Syphilis is an infectious condition with systemic involvement, resulting from transmission of bacteria of *Treponema pallidum* (*T. pallidum*) species, which can be called congenital or acquired. The first one is transmitted vertically, from mother to fetus and the other, through sexual contact (STAMM, 2016).

It should be noted that this is an infection that can entail serious consequences for the health of the untreated or improperly treated person, since no vaccine has yet been produced for syphilis, requiring other prevention and control methods such as condom use, early detection and early treatment of the infected and of their sexual partnerships. Furthermore, there are precocious detection methods and effective treatments in post-contagion when they are performed in a timely manner (GOMES *et al*., 2017; STAMM, 2016). It is known that the acquired infection form through sexual contact has primary, secondary, latent and tertiary stages.

Primary syphilis is characterized by the emergence of small wounds where the bacteria were inoculated. The secondary one can last for weeks or months and show simultaneously to the appearance of those wounds or right after their vanishing. Between it and the tertiary stage, there is the latent form, in which there are no symptoms, but there is the antitreponemic antibody detection. About two thirds of non-treated infected people live at this stage for whole life (STAMM, 2016). In the context of congenital syphilis, the newborn is severely affected and it can evolve to perinatal death in 40% of the cases of non-treated pregnant woman. The symptoms and signals show up after two years of life, as examples there are saber shin, saddle nose, deformed superior median incisive teeth, short mandible, high-arched palate, interstitial keratitis, neurological deaf, learning difficulties, among others (STAMM, 2016; GAMEIRO, 2017). If the pregnant is not adequately treated, the probability of vertical transmission is almost 100%; however, the timely diagnosis and treatment provide a 97% effectiveness in combating this kind of transmission (MINAS, 2017).

There are two detection methods to syphilis infection: treponemal and non-treponemal tests. Their basic distinction is that the first one detects the specific antibodies to *T. pallidum*, and the other detects the nonspecific antibodies to this bacterium species (BRASIL, 2010). The non-treponemal tests most used at pregnant are VDRL - Venereal Disease Research Laborator - and RPR - Rapid Plasma Reagin -, both performed by the flocculationtechnique during the first prenatal consultation, the third trimester and the admission to childbirth. They show less reactivity to the early stages of the infection, for the serological response absence, and to the late stages. The most applied treponemal tests to syphilis investigation are through passive agglutination - THPA -, indirect immunofluorescence - FTA-Abs - and immunoenzymatic assay - ELISA (SADECK 2016; STAMM, 2016). The rapid test is a treponemal immunological test done with a blood, serum or plasma sample, supplying a reliable result within 30 minutes, being instituted in health centers to suppress the necessities of precocious syphilis diagnosis and treatment, justified by the cited problems entailed by non-treatment or inadequate treatment (GOMES *et al*, 2017). According to 2018 Brazilian Syphilis Epidemiological Bulletin, the numbers of acquired infection increased from two cases per 100 thousand inhabitants in 2010 to 58.1 cases per 100 thousand inhabitants in 2017 at national view. In Minas Gerais, it has been seen an elevation of this period from 0.8 to 50.9 per 100 thousand inhabitants (BRASIL, 2018). Therefore, syphilis in general is a great challenge to public and collective health due to the increase in diagnosed cases. Therefore, this studied is justified by that, in order to investigate the prevalence of syphilis in a city of Minas Gerais, Brazil.

MATERIALS AND METHODS

Transversal, observational, retrospective study with quantitative approach performed through the data available from Sistema de Informação Nacional de Agravos de Notificação (SINAN - National Reporting Disease Informational System) about acquired syphilis diagnostics from 2013 to 2018 in a city of Minas Gerais, Brazil. There are approximately 114,679 inhabitants in this city (IBGE, 2019a) and has 28 public services of primary attention to health, counting on 7 Basic Health Unities and 21 unities of Estratégia de Saúde da Família (ESF - Family Health Strategy) where the rapid tests are done (PMP/SEMSA, 2017). The data were collected according to the available variants from SINAN; it means the number of acquired syphilis diagnostics per sex, ethnicity, schooling and age group. Those were sent to Excel 2017 and, posteriorly, analyzed descriptively through absolute and percentage values.

RESULTS

According to obtained data, it turned out an important increase in the number of acquired syphilis cases in this city since 2013, when the information began to be collected and stored in this system (Figure 1). Primarily, in this period, there were 468 new acquired syphilis cases, whose greatest increase occurred in 2014 and in 2015 (1066% and 190% respectively), when the rapid test policy was being established. Beyond that, there was no reducing in the number of new cases through the years. The number of men diagnosed with syphilis was 60% bigger than the women's, including that there were moments (in 2017) in which female diagnostics diminished in relation to the previous year, counteracting the general population panorama (Figure 2).

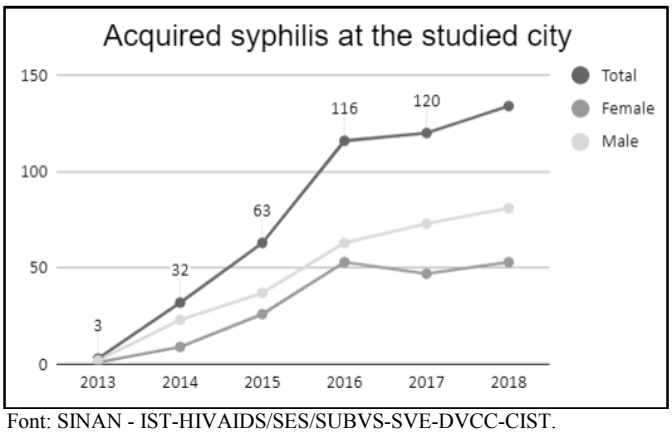

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Figure 1. Acquired syphilis diagnostics annually from 2013 to 2018

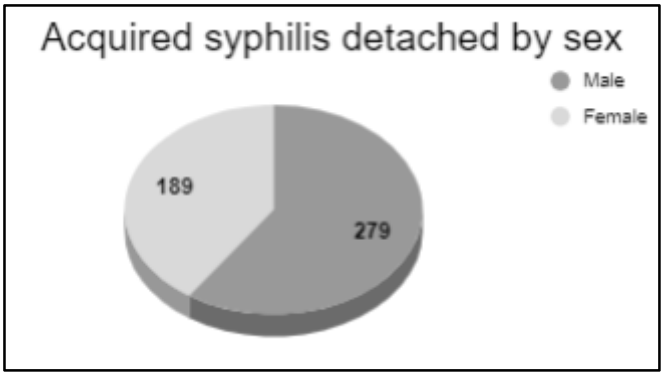

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Figure 2. Acquired syphilis detached by sex at the studied syphilis from 2013 to 2018

About the ethnicity, there are much more positive diagnostics for the bacterium in white and brown people than black and yellow ones. 55.55% of the cases were from white people, 26.35% from brown, 17.5% from black and 0.4% with yellow (Figure 3).

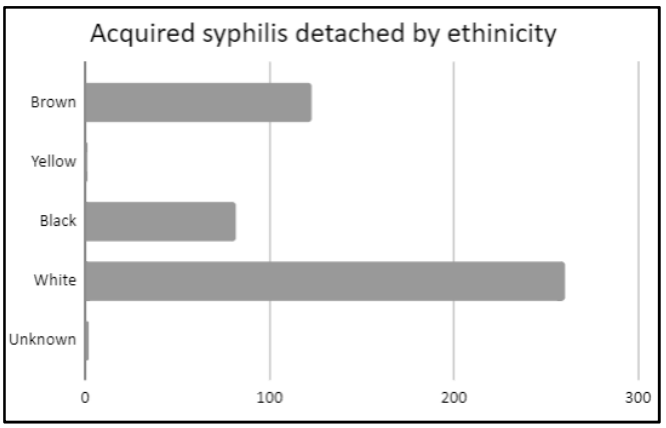

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Figure 3. Acquired syphilis detached by ethnicity at the studied syphilis from 2013 to 2018

The schooling shows itself as a very variable factor, since people who has completed High School or has not completed Middle School are the groups with more diagnostics, verifying, respectively, 26% and 12.8%. However, the diagnostics among illiterate and those who has not completed Superior degree are the fewer, counting on 1% and 3.6% respectively (Figure 4).

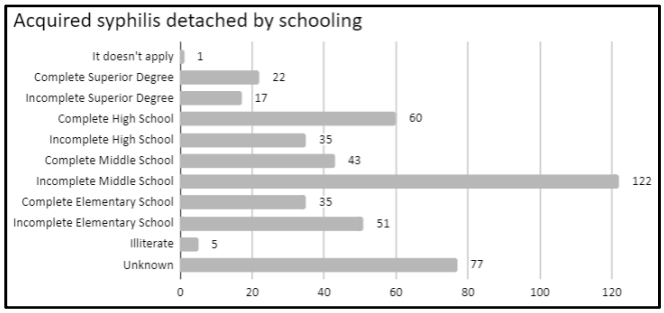

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Figure 4. Acquired syphilis detached by schooling at the studied syphilis from 2013 to 2018

The age group formed by adolescents and young adults (15 to 34 years old) correspond to the biggest number of diagnostics, with 50.64% of the cases. Adults between 35 and 64 years old had 41.9% of the cases, the elder than 65 years old, 6.8% and the younger than 15 years old, 0.6% (Figure 5).

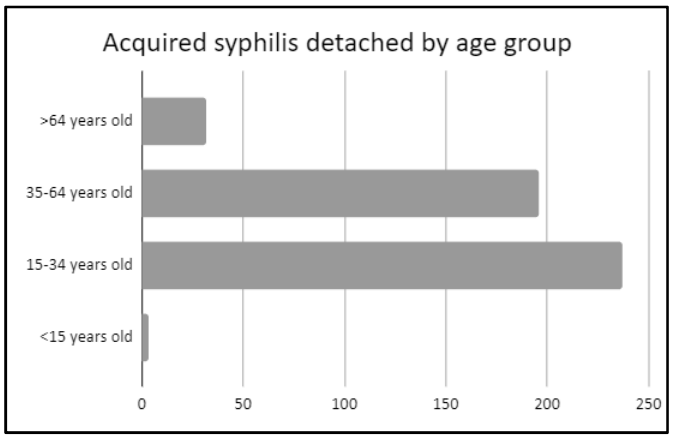

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Figure 5. Acquired syphilis detached by age group at the studied syphilis from 2013 to 2018

DISCUSSION

According to the World Health Organization (WHO), it is estimated that, every day, emerges a million new cases of STI worldwide, including syphilis, which reaches 11 million new cases annually (BRASIL, 2017; STAMM, 2016). Therefore, as exposed in this article, it may discourse about this infection and the aspects related to its prevalence. Primarily, it is important to talk about the decentralization of rapid tests for syphilis detection. Until 2016, the tests were performed by only one reference service to STI/AIDS and Viral Hepatitis, but, after several training methods in the studied city and also in the region, all of the 28 primary attention to health services became able to execute the exams. With that, the incidence of positive results for acquired syphilis drastically raised from 63 in 2015 to 116 in 2016, representing an 84% increase in just one year. This growth demonstrates that the decentralized approach, counting on available rapid tests at several stations of primary attention, such as the consecutive directing to AMBES (reference health service to treatment and orientation about STI), has a great relevance to acquired syphilis detection. The permanent education process to health professionals and users is a prime differential in the diminishment of the difference between the real number of infected people by *Treponema pallidum* and the number of this infection diagnostics, since the access to information allows, for an example, more people to reach health services in the moment that they realize the urogenital lesions. With the observation of growth in number of cases during the studied period among the total population of the city, it is worthy to talk about the close relation between syphilis and HIV infection. Syphilis/HIV coinfection is not rare and studies demonstrate bigger prevalence of syphilis among seropositive to HIV individuals than among the general population, reaching eight times bigger. However, the data to thatinformation cannot be collected in the compulsory notification records from SINAN, for it does not ask about HIV. This coinfection is characterized by the increase in HIV transmissibility and by the presentation of typical and more aggressivetreponemal infection manifestations (LUPPI, 2018; SILVA, 2018).

Consolidated studies in this area shows that genital ulcers, commonly found in primary stage, allows the entrance of HIV virus, as well as T-CD4+ lymphocytes - main HIV targets - to this region (BRASIL, 2019). When someone who lives with HIV virus is infected by syphilis, it may develop some signal and symptoms particularities: multiple deep atypical slower resolution chancre development, stage overlap showing concomitantly primary and secondary lesions during the diagnosis as an example, more intense secondary symptoms with more aggressive cutaneous lesions and bigger bias to ophthalmic and neural involvement (BRASIL, 2019). Beyond that, it is important to highlight about syphilis/HIV coinfection that the diagnosis may need a better investigation when it happens to show non-reagent immunological results or there are doubts about their interpretation, against which it resorts to alternative methods, such as lesion biopsy and dark field microscopy of the lesion material (BRASIL, 2019). The prevention is associated to these factors, as it has been already cited, there is no vaccine to syphilis immunization, and therefore the infection can be combated using other methods, like the condom use during sexual intercourse. However, a study about teenagers from 13 to 16 years old from a public school at Recife (Pernambuco, Brazil), 38.4% of them reported that they don't use condoms and 41.54% affirmed the use of this prevention method (SANTOS *et al*. 2016). Another study with superior degree students from a federal public university ate Brazil's south showed that the prevalence of the use of condoms while the last sexual intercourse were 41.5% (MOREIRA, 2018). It is observable that, in despite of the distinct group age, the values referent to condom use point to a relatively low accession in both studies, for the number of individuals who use/used condoms didn't reach half of the sample, contributing to justify the lack of reduction in the number of STI cases in Brazil. In this context, Ministério da Saúde (Ministry of Health) and health institutions highlight safe sex practice, bringing in the combined prevention strategy, which stands for conjugation of different actions to STI, HIV and viral hepatitis and it is associated factors prevention (BRASIL, 2019). Besides that, it is possible to draw parallels among the city data and the number of syphilis diagnostics growth in the state of Minas Gerais and Brazil, where those have increased annually from 2013 to 2017, as well as in the city (IBGE, 2019a). However, counteracting the 11.66% growth in the city of Minas Gerais in 2018, it is noticeable the important diminishment in Brazil (49.6%) and in Minas Gerais (42.8%). Therefore, in 2018, as indicated, the city has shown an index of 117.5 cases of acquired syphilis per 100 thousand inhabitants, four times Brazilian index (28.9 per 100 thousand inhabitants) and Minas Gerais' one (29.0 per 100

thousand inhabitants) (BRASIL, 2018; IBGE, 2019b). In a general panorama, the diagnosis numbers are still very high in all geographical spheres. However, considering that diminishment in acquired syphilis diagnostics, it is observable that in the studied city it is necessary to reduce those indexes much more to, at least, equate themselves to the state and the country or even eradicate this infection.

Conclusion

It is undeniable that syphilis is a real problem of the decade. The growth in number of diagnoses cases do not have its base just at the condition etiology, but also at the governmental acting at prioritizing its identification to start the treatment. Syphilis inclusion among the reporting diseases showed itself as a mean through the SUS (Sistema Único de Saúde - Brazilian public healthcare system) users have paid attention to the risks about *T. pallidum* infection. The raise in the number of diagnostics identifies that not only the governmental policies to detection are more efficiently, but also the health network user are searching for the available free tests and treatments. Beyond that, a possible interpretation for the data obtained through this research is that the studied city may have an access to sexual health and to STI prevention extension proportionally bigger than Minas Gerais and Brazil itself, making the underdiagnosis tax lower. In despite of that, there are much more to reduce about the numbers of syphilis diagnostics. It is extremely important to perpetuate the permanent education of multi-professional health equip members and public healthcare system users.

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