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Coping with leprosy in times of COVID-19: a successful experience of implementing a tracking system in an endemic area in the Northeast

Enfrentamento da hanseníase em tempos de COVID-19: uma experiência exitosa de implantação de um sistema de rastreamento em área endêmica do Nordeste

Enfrentando la lepra en tiempos de COVID-19: una experiencia exitosa de implementación de un sistema de rastreo en un área endémica del Nordeste

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Abstract

Introduction: COVID-19 (coronavirus disease 2019) has brought numerous challenges and burdens on the Unified Health System (SUS, acronym in Portuguese), creating difficulties for the facing of other endemic diseases in the Brazilian territory, such as leprosy. **Objective:** To report an experience of coping with the hidden prevalence of leprosy by a primary health care team in the countryside of the state of Sergipe during the COVID-19 pandemic. **Methods:** The project was developed from September 2020 to January 2021 and was characterized for offering a dermatological examination to individuals seeking care at the health unit in the Cidade Nova neighborhood, Estância, Sergipe. For confirmed cases, treatment was instituted and household contacts were examined, respecting the measures to prevent contamination by COVID-19. **Results:** In the analyzed period, 235 individuals were evaluated, with six diagnoses of leprosy (2.5%), one under the age of 15. In 2020, the municipality registered nine total cases. Without the project, the detection rate of new leprosy cases in the municipality would have been 4.3/100,000 inhabitants and, with the project, this coefficient was three times higher (12.9/100,000 inhabitants). **Conclusion:** The offer of dermato-neurological exams during routine medical appointments made it possible to show the hidden prevalence of leprosy in the neighborhood of Cidade Nova, Estância. In addition, actions of this nature allow early diagnosis, preventing the occurrence of physical disabilities.

Keyword: Leprosy; Hidden prevalence; Primary health care.

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Resumo

Introdução: A COVID-19 (*coronavirus disease 2019*) trouxe inúmeros desafios e sobrecarga ao Sistema Único de Saúde (SUS), gerando dificuldades no enfrentamento das outras enfermidades endêmicas e negligenciadas no território brasileiro, entre elas a hanseníase. **Objetivo:** Relatar a experiência de enfrentamento da prevalência oculta de hanseníase por uma equipe de atenção primária à saúde do interior do estado de Sergipe durante a pandemia de COVID-19. **Métodos:** O projeto foi desenvolvido entre os meses de setembro de 2020 e janeiro de 2021 e caracterizou-se pela oferta de exame dermatológico aos indivíduos que buscaram atendimento na unidade de saúde do bairro Cidade Nova, em Estância, Sergipe. Confirmado o diagnóstico de hanseníase, foi introduzido o tratamento com esquema de poliquimioterapia da Organização Mundial da Saúde (PQT-OMS) e os contatos foram examinados, respeitando-se as medidas sanitárias de prevenção à contaminação pela COVID-19. **Resultados:** No período analisado, foram avaliados 235 indivíduos, sendo feitos seis diagnósticos clínicos de hanseníase (2,5%), entre os quais um em menor de 15 anos de idade. No município, durante todo o ano de 2020, registrou-se o total de nove casos novos de hanseníase. Sem o projeto, o coeficiente de detecção de casos novos de hanseníase no município seria de 4,3/100 mil habitantes e, com o projeto, esse coeficiente foi três vezes superior (12,9/100 mil habitantes). **Conclusão:** A oferta de exame dermatoneurológico durante consultas médicas de rotina em áreas vulneráveis permitiu evidenciar a prevalência oculta de hanseníase no bairro Cidade Nova, Estância. Além disso, ações dessa natureza permitem o diagnóstico precoce, evitando-se a evolução para incapacidades físicas.

Palavras-chaves: Hanseníase; Prevalência oculta; Atenção primária à saúde.

Resumen

Introducción: La COVID-19 (enfermedad por coronavirus 2019) trajo numerosos desafíos y cargas al Sistema Único de Salud (SUS), creando dificultades para enfrentar otras enfermedades endémicas en el territorio brasileño, como la lepra. **Objetivo:** Informar una experiencia de afrontamiento de la prevalencia oculta de lepra por parte de un equipo de atención primaria en el interior del estado de Sergipe durante la pandemia de COVID-19. **Métodos:** El proyecto se desarrolló desde septiembre de 2020 hasta enero de 2021 y se caracterizó por ofrecer un examen dermatológico a las personas que buscaban atención en la unidad de salud del barrio Cidade Nova, en Estância, Sergipe. En caso de confirmarse los casos, se instituyó el tratamiento y se examinaron los contactos domiciliarios, respetando las medidas para prevenir la contaminación por COVID-19. **Resultados:** En el período analizado se evaluaron 235 individuos, con 06 diagnósticos de lepra (2,5%), uno menor de 15 años. En 2020, el municipio registró nueve casos en total. Sin el proyecto, la tasa de detección de nuevos casos de lepra en el municipio sería de 4,3/100 mil habitantes y, con el proyecto, este coeficiente era tres veces mayor (12,9/100 mil habitantes). **Conclusión:** La oferta de exámenes dermatoneurológicos durante las consultas médicas de rutina permitió mostrar la prevalencia oculta de la lepra en el barrio Cidade Nova, Estância. Además, acciones de esta naturaleza permiten un diagnóstico precoz, evitando la aparición de discapacidades físicas.

Palabras-clave: Lepra; Prevalencia oculta; Atención primaria de salud.

INTRODUCTION

COVID-19 (*coronavirus disease 2019*) was first registered in December, 2019, and its epicenter was the city of Wuhan, capital of the Hubei province, in the People's Republic of China.[1] This disease is caused by the new coronavirus (severe acute respiratory syndrome coronavirus 2 — SARS-CoV-2).[2] On January 30, 2020, the Emergency Committee of the World Health Organization (WHO) declared a public health emergency of international concern. Rapidly, the virus spread through the continents and reached the pandemic status on March 11, 2020.[1] In Brazil, the first case was confirmed on February 26, 2020.[3]

Despite the efforts to try and contain the advances of the pandemic, on April 18, 2021, there were 140.3 million confirmed cases of COVID-19 around the globe, including 3.0 million deaths due to the disease.[4] Of the reported cases, 13.9 million were registered in Brazil, which accumulated 371.6 thousand deaths since the first record on February 26, 2020. In Sergipe, 189.5 thousand new cases and 3.9 thousand deaths represent the accumulated amount on April 18, 2021. Of these state records, 5.4 thousand new cases and 132 deaths occurred in the city of Estância, this study's scenario.[5]

The arrival of COVID-19 in the Brazilian territory brought additional challenges, such as the direct overload of the Unified Health System (SUS), only institution in charge of health care for about 75% of

Brazilians, and potential effects on the facing of other endemic diseases in the country. Among them, conditions that affect neglected populations stand out, such as leprosy, leishmaniasis, schistosomiasis, Chagas disease, dengue fever.[6,7]

Leprosy is an infectious and contagious disease caused by *Mycobacterium leprae*, potentially debilitating when diagnosed and/or treated late.[8] In the global scenario, the country is the first in the ranking considering the prevalence coefficient per 10 thousand inhabitants, and the second regarding number of cases. In 2019, 23,612 new cases of the disease were diagnosed in Brazil.[7]

Besides the challenge of maintaining leprosy surveillance, it is also necessary to protect individuals with leprosy from a possible COVID-19 contamination.[9] All of this because Primary Health Care (PHC), in charge of diagnosing and monitoring several neglected diseases, started assisting about 80% of mild COVID-19 cases, being characterized as the first point of contact of users searching for health care.[6,10]

With the advent of the pandemic, the teams composing PHC also suffered the impacts of adaptations facing the new demands and strategies for containing the dissemination of COVID-19, such as the suspension of non-essential services, pre-scheduled appointments, reduced working hours and even work leaves for many professionals.[11-13] These changes can raise the hidden prevalence of leprosy, understood as the number of cases circulating in the community, but not detected by health services.

Facing the exposed, this study aimed at reporting the experience of coping with the hidden prevalence of leprosy by a PHC team in the countryside of the State of Sergipe during the COVID-19 pandemic.

METHODS

Study area

This is an experience report carried out in Estância, Brazilian city with an area of 644,487 km^2, located in the State of Sergipe, Northeast Region of the country (Figure 1). The city is located southwest of the State, integrating the micro-region of the South Coast of Sergipe. It is located 56 km (in a straight line) and 70 km (by the federal highway) from the capital, Aracaju. Its estimated population, in 2020, was 69,556 inhabitants. Its Human Development Index (HDI) is 0.647, being the sixth in the State's ranking. It stands out as one of the main regional centers of Sergipe.[14] Between 2017 and 2019, the city registered 20 new cases of leprosy, of which eight were in 2019 (general detection of 11.6/100 thousand inhabitants — classified as high endemicity in the general population). In individuals aged less than 15 years, there were only two records in the period (one in 2017 and one in 2018).[15]

In the city, the project was carried in the Cidade Nova neighborhood (Valter Cardoso Costa). Even though it is known as a neighborhood, it is actually a district including the neighborhoods Valter Cardoso Costa, subdivision Nova Esperança, subdivision Belo Horizonte, complex Valadares, complex Paulo Amaral, complex Santo Antônio, complex Mutirão and subdivision Recanto Verde. The approximate total population was 20 thousand inhabitants in 2019.[16]

Even if inserted in an endemic area, with favorable social context for the maintenance of the leprosy chain of transmission, from 2017 to 2019 the neighborhood only registered two cases of the disease, both in 2017.[15] Therefore, the assumption is that the neighborhood has a high hidden prevalence of leprosy in its territory.

The neighborhood is assisted by the Leonor Barreto Franco Family Health Unit, composed of two health teams, as established by the National Primary Health Unit (PNAB):[17] family and community

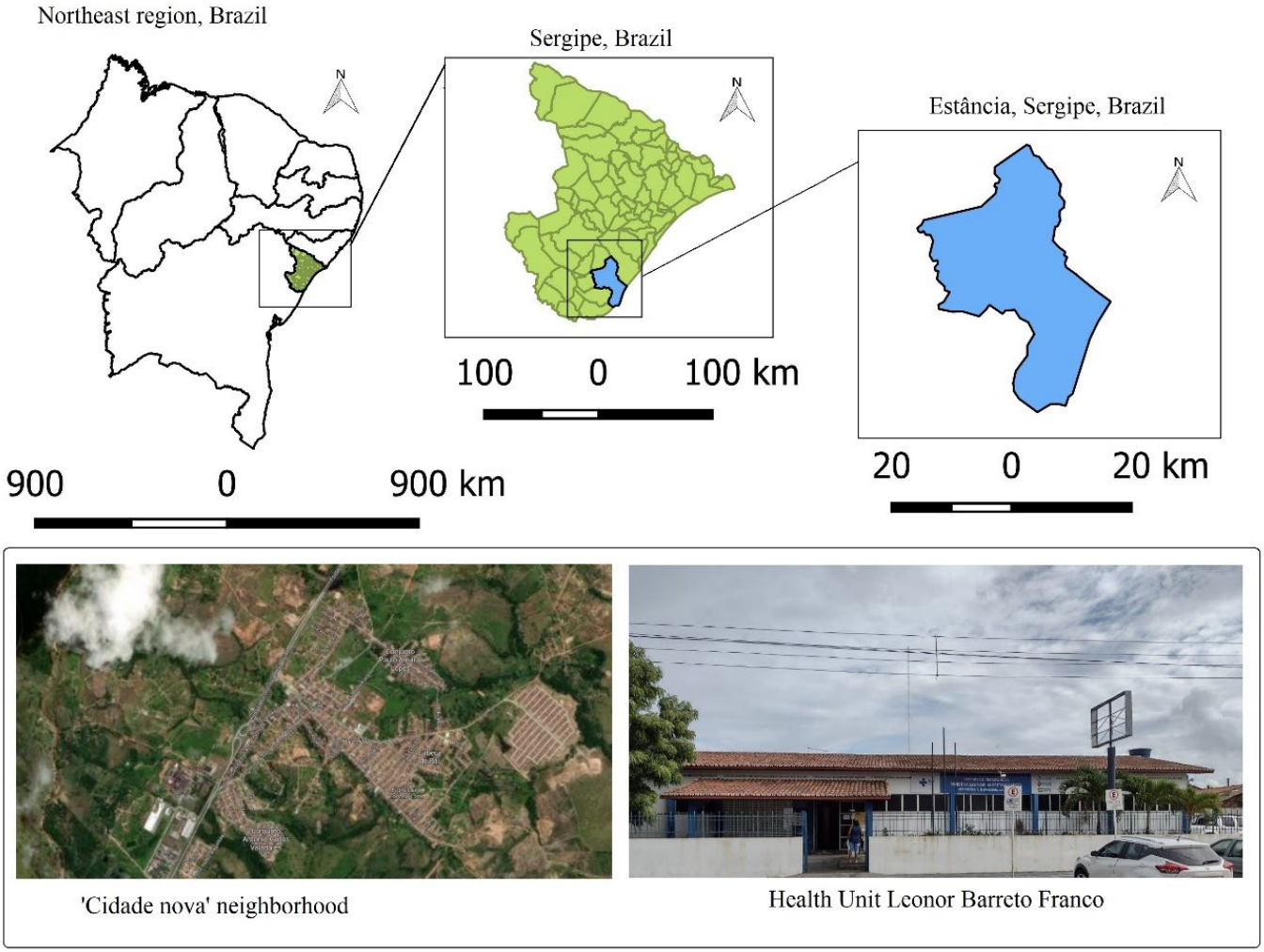


Figure 1. Study area. Neighborhood Cidade Nova, Estância, Sergipe, Brazil.

physician, nurse specialized in family health care, nursing technician, community health agents, as well as oral health professionals: general dental surgeon and Oral Health technician.

The changes in the work of Leonor Barreto Franco Health Unit during the pandemic period

Due to the pandemic, there was an impact on the health services provided by the Municipal Secretariat of Health of Estância, with changes in the systematic of services, such as reduced workload to assist the population; before the pandemic, the working hours were from Monday to Friday, from 7 a.m. to 12 p.m. and 1 p.m. to 4 p.m. Since the first records of COVID-19, it was reduced for 7 a.m. to 1 p.m. The scheduled and programmed appointments were suspended, as well as household visits, maintaining only the urgency and prenatal care services.

Between the months of June and July, 2020, with the significant increase of COVID-19 cases, as well as the existence, in that period, of only one sentinel post for the disease in the city of Estância, Family Health Units (USF) began to care for patients with symptoms of the flu, and remained as such until the

end of September, 2020. With the reduction in COVID-19 cases in the city, observed in September, 2020, besides the installation of an extra sentinel post for the flu, the health units slowly returned to their normal service, including prenatal care, childcare, outpatient care and household visits; however, the workload was still reduced (7 a.m. to 1 p.m.).

Project to cope with leprosy developed in the neighborhood Cidade Nova during the COVID-19 pandemic

The objective of the Project was to make early diagnoses of leprosy, thus reducing the impact of the COVID-19 pandemic on the detection of new cases of the disease in the city, considering the hypothesis of high hidden prevalence in the neighborhood. The project was developed from September 2020 to January 2021, and was characterized by the offer of dermatological exams to individuals who searched for care in the health unit.

All individuals assisted at the Leonor Barreto Franco Health Unit were invited to participate, as well as those who attended a medical appointment in this unit. The exclusion criteria were: respiratory complaint at the time of the appointment, withdrawn from the approval to participate in the research at any time, attending the unit for another reason, but not for a medical appointment.

Project execution systematic

In the first stage, all individuals who attended a medical appointment in the health unit in the previously demonstrated period were invited to participate in the project. In this moment, the objectives and the relevance of the work were explained, and, after acceptance, the participants signed the Informed Consent Form. For those aged less than 18 years, the Term of Assent was signed, and the Informed Consent Form was adapted for the tutors/parents.

After this initial stage, a questionnaire was applied, and a dermatological investigation was performed in search of lesions indicating leprosy. A case of leprosy was considered when the person presented with one or more of these criteria: "*i. skin lesion/lesions with changes in thermal and/or tactile sensitivity and/or pain; or b) thickened peripheral nerve, associated with sensitivity and/or motor and/or autonomic changes; or c) presence of M. leprae bacillus, confirmed in intradermal smear bacilloscopy or skin biopsy*".[18]

The test was carried out by the physician present at the unit at the time, in order to avoid the need to return to the USF and reduce the risk of contamination by COVID-19, according to the sanitary protocols established during the pandemic. Once the case was confirmed, the next steps were notification and treatment, as established by the national guidelines to cope with the disease. If other dermatological diseases were found, the professional went on with the proper treatment. Data collection was performed with an Evaluation Form that was specifically designed for the study.

The second stage consisted of the evaluation of household contacts with the individuals identified with leprosy. It is worth to mention that this evaluation measure of contacting individuals is a national recommendation, as established in the Guidelines for surveillance, care and elimination of leprosy as a public health issue.[18] In this study, people who would get in touch with individuals were invited to come to the USF at a previously scheduled time. In case of non-attendance, household visits were conducted.

The project was approved by the Research Ethics Committee of Universidade Federal de Alagoas, report number 4.600.110, and Certificate of Presentation for Ethical Appreciation (CAAE) n. 38913920.0.0000.5013.

RESULTS

In the analyzed period, 235 people were assessed, and six diagnoses of leprosy were made (2.5%), being one in a person aged less than 15 years. We emphasize that the city, in 2020, registered a total of nine new cases. Without this action, the detection coefficient of new cases of leprosy in Estância, in 2020, would have been of 4.3/100 thousand inhabitants, and, with the project, this coefficient was three times higher (12.9/100 thousand inhabitants). Besides, from a quiet neighborhood in the two previous years (2018 and 2019), the diagnosis of six new cases classified the neighborhood as one with very high endemicity for leprosy — between 20.0 and 39.9 cases per 100 thousand inhabitants (six cases represent a detection coefficient of 30.0/100 thousand inhabitants).

Next, we will describe the identified clinical cases:

Case 1

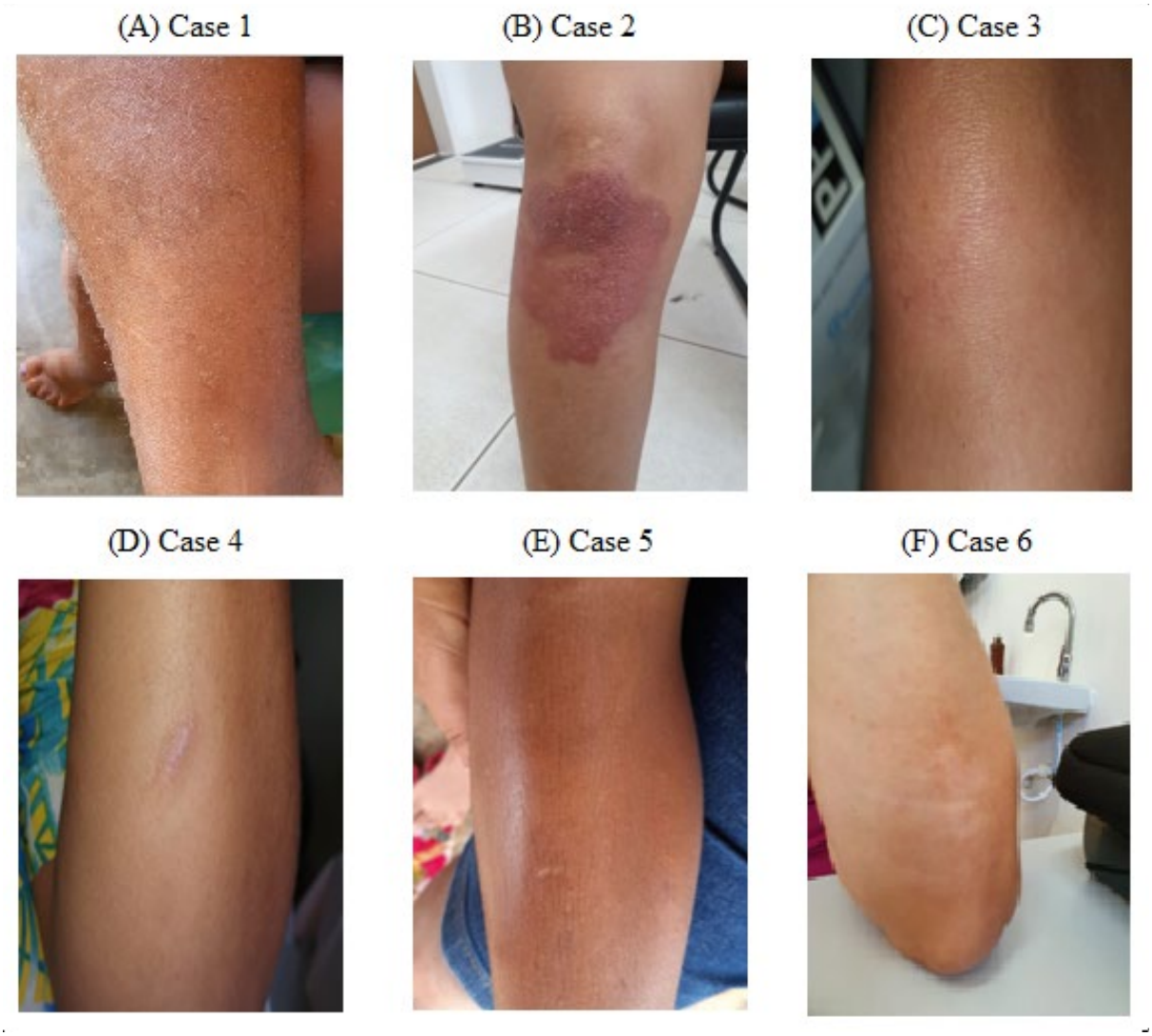
Twenty-two year old woman, diagnosed on September 10, 2020. Family history of leprosy (mother, uncle and cousin). At physical examination: loss of thermal and tactile sensitivity in the right forearm region eight months ago and hypochromic macules in the right lower limb, with loss of thermal sensitivity and reduced tactile sensitivity. At palpation, ulnar nerve slightly thick, and other nerves with no alterations. Diagnosis: tuberculoid leprosy, zero level of inability. No case was detected in the seven intra household contacts. Paucibacillary polychemotherapy (PB / PCT) was prescribed, and the case was duly notified (Figure 2A).

Case 2

Thirty-nine year old female, diagnosed on November 5, 2020. She reported a macule on her left arm, with loss of sensitivity, for approximately one year. At physical examination: erythematous plaque, with well-demarcated borders and infiltrated aspect, reduced thermal sensitivity in the posterior region of the left forearm. There was no neural thickening in the affected limb. Diagnosis: tuberculoid leprosy, zero level of inability. No case was detected in two intra-household contacts. PB/PCT was prescribed, and the case was duly notified. During treatment, the patient presented type I reaction diagnosed in the appointment to administer the fifth supervised dose; at the time, prednisone was prescribed (Figure 2B).

Case 3

Twenty-seven year old, pregnant female, diagnosed on November 23, 2020. She complained of a spot with numbness on the right knee for a little longer than one year. At physical examination: presence of a hypochromic macule with loss of thermal sensitivity and reduced tactile sensitivity in the anterior side of the right leg, on the tibial tuberosity. At palpation, nerves were preserved. Diagnosis: undetermined leprosy, zero level of inability. During examination of intra-household contacts, a new case was detected (Case 4; sister). PB/PCT was prescribed, and the case was duly notified (Figure 2C).



Photographic record of Case 2, corresponding to the fifth month of treatment, when presenting an adverse reaction.
Figure 2. Photographic record of dermatological lesions of leprosy cases diagnosed from September, 2020, to January, 2021.

Case 4

Thirty-five year old female, diagnosed on November 26, 2020. Family history of leprosy (sister). The patient reported a hypochromic macule with reduced tactile sensitivity for approximately three months. She denied having other symptoms. At physical examination: presence of hypochromic macule, with loss of thermal sensitivity in the posterior region of the left forearm. At palpation, nerves were preserved. Diagnosis: undetermined leprosy, zero level of inability and two intra household contacts with one case detected among them (Case 5; daughter). PB/PCT was prescribed, and the case was duly notified (Figure 2D).

Case 5

Seven-year old female individual, diagnosed on December 3, 2020. Family history of leprosy (mother). During the examination of the intra household contacts in Case 4, a spot suggestive of

leprosy was observed. At physical examination: presence of a hypochromic macule, loss of thermal sensitivity in the anterior region of the right leg. Diagnosis: undetermined leprosy, zero level of incapacity and assessed intra household contacts. PB/PCT was prescribed, and the case was duly notified (Figure 2E).

Case 6

Forty-three year old female individual, diagnosed on January 14, 2021. She denies any family history of leprosy. She reported a spot with reduced sensitivity on the left forearm for approximately six months. At physical examination: presence of a hypochromic macule on the proximal third of the left forearm, with reduced thermal sensitivity. At palpation, the nerves were preserved. Diagnosis: undetermined leprosy, zero level of inability. No case was detected in two intra household contacts, and none of them had any case detected among them. PB/PCT was prescribed, and the case was duly noted (Figure 2F).

DISCUSSION

The new coronavirus became a global threat and the main sanitary concern of the XXI century. It is impossible not to create connections with the social and economic disturbances caused by the pandemic, besides the obstacles generated in the scope of SUS, which needed to implement many adaptations in the services to receive and manage the suspected and confirmed cases of COVID-19, and, at the same time, maintain the care addressed to existing health issues.[1,19,20.]

Among the many adjustments performed by the administrators in search of reorganizing the services, it is important to highlight the need to organize the flows and protocols of PHC, which, in this scenario, was in charge of taking in and following-up the milder cases of COVID-19.[11,21-23] In this sense, it became one extra attribution for the teams to manage, besides the ones that already existed in the territory.

Many sectors needed to adjust and rediscover means that allowed them to continue with the services. It was not different for PHC, which, facing social isolation, the measures to contain the pandemic and the sanitary situation that already existed in the territories, was substantially affected by the pandemic, with adaptations that reduced the risk of contamination, but created problems for the follow-up of other diseases.[11] It was necessary to adopt strategies such as the use of digital tools (messaging applications, telephone, telehealth appointment, among others) to guarantee the offer of health services in a safe way, without discontinuing the treatment.[6,24]

Neglected diseases presented a narrow relationship with the work process of PHC, which, at this time of sanitary crisis, was overwhelmed with high demands and reduction of professionals and workload, factors that contribute with the reduced timely diagnosis of several conditions, both non-infectious (hypertension, diabetes, dyslipidemia) and infectious, as is the case of leprosy.[13,23]

A study carried out in the state of Bahia showed that the COVID-19 pandemic impacted the detection of new cases of leprosy when comparing the years of 2019 and 2020. There was a 24.25% reduction in the number of cities that registered the disease, from 251, in 2019, to 202, in 2020, as well as a 44.40% reduction in the number of new diagnosed cases, from 1,705, in 2019, to 948, in 2020. In the aforementioned years, there was an inverse correlation between the number of new cases of leprosy registered monthly and the number of new cases of COVID-19.[22.]

COVID-19 made the high hidden prevalence of leprosy, characterized by the absence of timely diagnosis of the disease, maintenance of multibacillary forms, presence of inabilities and impairment in individuals aged less than 15 years, worse.[25,26] In a study about the hidden prevalence of leprosy comparing the cities of Juazeiro/BA and Joinville/SC, it was observed that from 2007 to 2017, the cities did not notify, respectively, 405 (18.9%) and 295 (42.0%) new cases of leprosy.[27]

In Brazil, among the notified cases of leprosy, there is prevalence of multibacillary forms, which indicate the late diagnosis of the condition, hidden endemic and cases with physical inabilities at the time of diagnosis.[28-31] In this sense, measures that aim at the early tracking of cases in adults and children are essential to reduce the hidden prevalence of leprosy, once they promote the interruption of the chain of transmission and subsequent disease load in the community.[32]

In Brazil, the National Campaign for Leprosy, Verminosis, Trachoma and Schistosomiasis is an important strategic surveillance action, initiated in 2013. Through the integrated approach among students, it allowed the diagnosis of over one thousand cases of leprosy from 2013-2017, with a positive impact on the interruption of the chain of transmission of the disease.[33]

Initiatives of active search of cases, as the one in our study, are important, since they allow the discovery of cases in the early stages of the disease, thus preventing the installation of inabilities, deformities resulting from leprosy and interrupting the cycle of transmission.[34-36] In an action performed in Mantena/MG, 27 new cases of leprosy were diagnosed in approximately six months of recruitment in household visits and approaches to attendees of the district's health center, thus consolidating the importance of PHC in the control of the disease.[34.]

As a result of the work in Estância, six new paucibacillary cases were diagnosed, with no physical inabilities, and this fact demonstrates the presence of hidden prevalence in the neighborhood, besides emphasizing the importance of active search and early diagnosis when it comes to leprosy, even in times of pandemic. Positive results of the active search were observed in different locations of the country: in Juazeiro/BA,[35] Ananindeua/PA[37] and Buriticupu/MA.[38]

In 2020, the Brazilian Society of Leprosy (SBH) launched the *Orientations for people affected by leprosy during the COVID-19 pandemic*.[9] The aforementioned document has recommendations that aim at improving the flow of services and reduce the exposure of patients with leprosy; one of them is the orientation that PCT, whenever possible, be dismissed for up to three months during the pandemic period.[9]

The Ministry of Health (MH),[39] on the other hand, oriented outpatient clinics/health units to come up with strategies to prevent risk groups for COVID-19 from shifting to health units. Therefore, PCT could be delivered to a person in charge of the individual, or be performed by the health professional in a household visit. It is worth to mention that the ministry did not indicate the liberation of PCT for three months, considering the low stocks in the country.[39]

Even with all efforts addressed to the control of leprosy, the disease still represents a major challenge for Brazil. The measures adopted for the facing of the condition should involve the entire health network, promoting the decentralization of actions and the effective participation of health professionals and the population, both in the diffusion of knowledge, in the form of education in health, and in the adoption of strategies of active search of cases in the community.[18,40.]

The most important path in this scenario is the strengthening of PHC through investments in infrastructure and allocation of professionals, support to reference teams and continued training of professionals for the effective conduction of activities related to the facing of leprosy. Then Brazil could actually reach the goal of eliminating the disease as a public health issue.[24,41,42.]

CONCLUSION

The action carried out in the health unit allowed to reveal the hidden prevalence of leprosy in the neighborhood Cidade Nova, Estância, Sergipe. Besides, actions of this kind allow an early diagnosis, preventing the occurrence of physical inabilities. Now, more than ever, it is important to strengthen PHC, given its relevance for the Brazilian society in the facing of COVID-19 and endemic diseases in the country.

CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

RRSS: Project administration, Formal analysis, Concept, Data curatorship, Writing – first draft, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation, Visualization. TSM: Formal analysis, Concept, Data curatorship, Writing – first draft, Writing – revision and editing, Investigation, Methodology, Visualization. TFAS: Formal analysis, Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation. DSC: Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation. JRA: Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation. MFM: Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation. CSM: Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation. AKBFA: Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation. RFC: Concept, Writing – revision and editing, Investigation, Methodology, resources, Supervision, Validation. TRMOF: Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation. CDFS: Project administration, Formal analysis, Concept, Data curatorship, Writing – first draft, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation, Visualization. IMJB: Concept, Writing – revision and editing, Investigation, Methodology, Resources, Supervision, Validation.

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