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IT COULD BE TUBERCULOSIS! ANALYSIS OF SERVICES IN SCREENING CENTERS FOR COVID-19 IN URUGUAIANA

Pode ser tuberculose! análise dos atendimentos em centros de triagem para covid-19 em Uruguaiana

¡Puede ser tuberculosis! Análisis de la atención en centros de triaje de covid-19 en Uruguayana

Karlo Henrique Dos Santos Herrera[1]
Jenifer Harter[2]
Debora da Cruz Payão Pellegrini[3]
Josefine Busanello[4]
Jarbas da Silva Ziani[5]
Rudivan Dezanet[6]

RESUMO

Objetivo: verificar entre os pacientes atendidos em centros de triagem para COVID-19 a prevalência de sintomático respiratório com presunção de tuberculose. **Método:** estudo quantitativo descritivo, no qual foram analisados dados de atendimentos em três centros de triagem de síndrome gripal e COVID-19 no ano de 2021. Considerou-se como desfecho de provável tuberculose resultado negativo no RT-PCR para COVID-19, registro de queixa simultânea de tosse, dispneia e febre sem outros sintomas. **Resultado:** foram analisadas 11.830 fichas de atendimentos, a prevalência de atendimentos classificados como presunção diagnóstica de tuberculose foi de 2,75% (n=224), sendo estes 52,4% (n=118) do sexo feminino e 67,0% (n=150) de cor da pele autodeclarada branca. **Conclusão:** estima-se que 1% das pessoas em uma população seja sintomática para tuberculose. Porém, considerando o delineamento, na cidade de Uruguaiana a prevalência supera este valor, alcançado 2,75% dos casos analisados.

DESCRITORES: Tuberculose; COVID-19; Saúde pública; Doenças respiratórias.

[1,2,3,4,6] Universidade Federal do Pampa, Uruguaiana, Rio Grande do Sul, Brasil.
[5] Universidade Federal de Santa Maria, Santa Maria, Rio Grande do Sul, Brasil.

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CORRESPONDING AUTHOR: Jarbas da Silva Ziani
E-mail: jarbasziani230@gmail.com
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ABSTRACT

Objective: to verify among patients treated in screening centers for COVID-19 the prevalence of respiratory symptoms with presumption of tuberculosis. **Method:** descriptive quantitative study, in which data from attendances were analyzed in three screening centers for flu syndrome and COVID-19 in 2021. It was considered as an outcome of probable tuberculosis a negative result in RT-PCR for COVID-19, a record of simultaneous complaint of cough, dyspnea and fever without other symptoms. **Result:** 11,830 attendance records were analyzed, the prevalence of attendances classified as a diagnostic presumption of tuberculosis was 2.75% (n=224), these being 52.4% (n=118) female and 67.0% (n=150) of self-declared white skin color. **Conclusion:** it is estimated that 1% of people in a population are symptomatic of tuberculosis. However, considering the design, in the city of Uruguaiana the prevalence exceeds this value, reached 2.75% of the cases analyzed.

DESCRIPTORS: Tuberculosis; COVID-19; Public health; Respiratory yract diseases.

RESUMEN

Objetivo: verificar entre los pacientes atendidos en centros de triaje para COVID-19 la prevalencia de síntomas respiratorios con presunción de tuberculosis. **Método:** estudio cuantitativo descriptivo, en el que se analizaron los datos de asistencia en tres centros de detección del síndrome gripal y COVID-19 en el año 2021. Se consideró como resultado de probable tuberculosis resultado negativo en RT-PCR para COVID-19, registro de queja simultánea de tos, disnea y fiebre sin otros síntomas. **Resultado:** se analizaron 11.830 fichas de atención, la prevalencia de asistencias clasificadas como presunción diagnóstica de tuberculosis fue del 2,75% (n=224), siendo estos 52,4% (n=118) de sexo femenino y 67,0% (n=150) de color de piel autodeclarado blanco. **Conclusión:** se estima que el 1% de las personas en una población son sintomáticas de tuberculosis. Sin embargo, considerando el perfil, en la ciudad de Uruguaiana la prevalencia supera este valor, alcanzando el 2,75% de los casos analizados.

DESCRIPTORES: Tuberculosis; COVID-19; Salud pública; Enfermedad respiratoria.

INTRODUCTION

Corona Virus Disease-19 (COVID-19), whose causative agent is the new coronavirus - Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), promotes acute infection and has different levels of severity in humans, from asymptomatic to life-threatening. It is known that humans are not the natural hosts of the disease and that the virus tends to be eliminated by the human body in a period of two to four weeks.[1]

The first official case of the disease was recorded in the hospitalization of a patient at the end of December 2019, following an unexplained outbreak of pneumonia in around 50 people, most of whom had direct links to the Huanan market, located in Hubei province, in the city of Wuhan, China1. On March 11, 2020, the World Health Organization (WHO) classified the new coronavirus as a pandemic, due to the worldwide circulation of the virus.[1]

On February 26, 2020, the first case of COVID-19 was confirmed in Brazil, in the city of São Paulo/SP. The disease spread rapidly and, less than a month after the first case, community transmission was already a reality. On March 17, 2020, the first death from COVID-19 was confirmed in Brazil, also in São Paulo/SP, and on March 20, 2020, the Ministry of Health (MoH) recognized community transmission of COVID-19 in Brazil.[2]

The efforts made to mitigate the advance of the COVID-19 pandemic have had a significant impact on the diagnosis of tuberculosis (TB). The Global Tuberculosis Network carried out a study in which the results showed a decrease in active and latent TB diagnoses during the pandemic in several countries.[3]

In Brazil, the pandemic has led to a number of changes in TB policies, and these changes have been noticed by program managers in various areas, such as a 25% reduction in the budget invested and a reduction in the number of teams, either due to professionals leaving or being relocated to strategic sectors to deal with COVID-19.[4] The study also showed that laboratory networks have experienced difficulties in accessing diagnosis for symptomatic patients. This has had a negative impact on the laboratory's capacity to provide TB tests, whether for initial diagnosis or treatment follow-up.

In terms of consultations and tests to monitor TB treatment, there has been a direct and significant impact from the initiatives taken in relation to the emergency plan to tackle COVID-19. According to the report, 42% of the people who took part in this survey said that their appointment routine had not been maintained and 32% said that their appointments had been canceled and/or it had been difficult to schedule them.[4]

Several health professionals who were previously involved in caring for TB patients had to be relocated to areas/centers caring for COVID-19 patients due to the increased demand in the face of the pandemic, thus having a negative impact on the care of patients with the disease. This negative impact ended up resulting in a decrease in the investigation of latent and active TB in asymptomatic adults and adolescents.[4]

Like the other main transmissible respiratory diseases, such as TB, pneumonia, influenza and H1N1 flu, the new coronavirus is also transmitted through direct, indirect or close contact with infected people, from the moment an uninfected person comes into contact with infected secretions, such as saliva and respiratory secretions or droplets and aerosols that are expelled when an infected person sneezes, coughs, speaks or sings.[5]

As far as symptoms are concerned, there is a variety in the way symptomatic patients present them, with similarities to the symptoms of existing respiratory diseases, such as TB, H1N1[6] flu, influenza[5] and pneumonia, in which there is a dry cough, fever and tiredness.[7] Some patients also had body aches, sore throats, nasal congestion and headaches, similar symptoms to the main upper respiratory tract infections, such as allergic rhinitis and chronic or acute sinusitis.[8]

In Brazil, at the time of this study (02/03/2023) there were 36,866,658 confirmed cases of COVID-19 and 697,345 deaths. In Rio Grande do Sul, 2,951,318 cases and 41,830 deaths were recorded.[9] Of the total number of cases and deaths in Rio Grande do Sul during the period of this study, 15,393 cases and 438 deaths were recorded in the city of Uruguaiana, and by then, 85,428 tests had been carried out in the municipality's health network. These figures were published by Uruguaiana City Hall in its newsletter.[10]

In view of the above, considering the weaknesses pointed out in the detection of TB cases and the similarity of symptoms between the diseases, the objective was to verify the prevalence of respiratory symptoms with presumed TB among patients seen at COVID-19 screening centers.

METHOD

Study design

This is a cross-sectional, quantitative, descriptive study carried out with data on people seen by the municipality's sorting centers between January 1 and December 31, 2021.

Context and data source

The research took place in the municipality of Uruguaiana, a city on the western border of Rio Grande do Sul, Brazil. Uruguaiana's Human Development Index is 0.744. With a population of 126,866 inhabitants, for whom the coverage of Family Health Strategy units (ESFs) was 69.36%, the city has 17 ESFs and 3 Basic Health Units (UBSs).[11]

The city of Rio Grande do Sul is of significant importance in terms of international trade thanks to its similar distance from the capitals of Rio Grande do Sul/BR, Argentina, Uruguay and Paraguay. The city's GDP is represented by 73.86% of the trade sector, followed by agriculture with 17.53% and industry with 8.61%[19], sectors that have been shaken and weakened during the pandemic.

The data was collected from secondary sources, more specifically through spreadsheets filled out by health professionals during consultations at the three flu syndrome and COVID-19 screening centers in 2021, services organized especially for the purpose of combating the pandemic. The research was authorized by the Municipal Health Department, which provided access to the database. The data comprised a systematized and retrospective spreadsheet of official data archived by the health department, with access being granted to specific information of interest and any information relating to the identification of the people treated (name, SUS card, documents) being withheld from the researchers beforehand.

Participants

Participants were recruited through a convenience sample, which included all the people seen by the city's screening centers between January 1 and December 31, 2021. Based on the number of tests registered in the city (85,428) in this period, identified and monitored by analyzing the bulletins issued weekly by the city hall, it was estimated that 30% of the cases evaluated in 2021 had been seen at screening centers, resulting in an expected minimum sample of 10,000 visits.

Variables

The data of interest from the care database included demographic information, symptoms and main complaint, and the result of the RT-PCR carried out by the Municipal Laboratory with the support of LACEN-RS.

Such as: a) demographic information: skin color (white, black, brown, yellow and unknown), age in complete years and date of birth, gender (female, male); b) dichotomous information (yes/no) on symptoms and main complaint: fever, runny nose, chest pain, arthralgia, dizziness, chills, anosmia, nasal congestion, myalgia, odynophagia, ageusia, sneezing, headache, diarrhea, wheezing, cough, dyspnea, fatigue; asymptomatic cases. The nominal variable referring to the result of the RT-PCR test for detecting SARS-CoV-2

was also analyzed, with the response categories: detectable/positive; not detectable; and inconclusive.

Data processing and analysis

The spreadsheets were reviewed by two previously trained students in order to check the quality of completion. As criteria, cases with at least 80% of the information of interest filled in remained in the sample. The data was then analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 24.

A patient who presented exclusively with cough, dyspnea and fever was considered to have respiratory symptoms for TB investigation. Exclusion criteria for the analysis of presumed TB were: cases with positive RT-PCR for COVID-19; patients with complaints exclusively of the upper respiratory tract (coryza and/or nasal congestion and/or anosmia) or other complaints.

The prevalence of respiratory symptomatic patients with presumed TB diagnosis was calculated among the visits made to the screening centers for COVID-19 evaluation. A proportion of up to 1% of the total sample of people seen with a presumed diagnosis of TB was considered adequate case management by the health services. Data completeness of more than 80% was considered a second indicator of the quality of health services.

Ethical considerations

The research respected all ethical precepts in line with Resolution 466 of 2012 and Resolution 510 of 2016 of the National Research Ethics Council (CONEP). The study was approved by the Research Ethics Committee (CEP) of the Federal University of Pampa under opinion no. 3.991.855. Furthermore, all information containing data identifying the participants was kept restricted and confidential, in accordance with item IV of article 17, section II, chapter III of the aforementioned. Also due to the context of high mortality resulting from COVID-19, it was likely that many of the cases seen were deaths, hospitalizations or non-autochthonous cases, making it impossible to ask those seen to sign the Informed Consent Form.

RESULTS

A total of 11,830 patient files were analyzed. Among these, the following data was obtained regarding the profile of the patients: 73% (n=8,634) were male, 45.4% (n=5,372) had white skin color, 1.6% (n=187) had yellow skin color, 2.6% (n=310) had brown skin color, 1% (n=122) had black skin color and in 49.2% (n=5,817) of the visits this information was not filled in or was ignored. As for age, there was a minimum of 1 year and a maximum of 99 years, with a mean age of 43 years (SD ±15.74).

With regard to the results of the RT-PCR test, of the cases with available results (n=10,399), 21.6% (n=2242) were positive for COVID-19, 78.3% (n=8145) were negative and 0.10% (n=12) had inconclusive or indeterminate results.

With regard to symptoms, 24.1% (n=2,846) of those treated had a cough, 15.5% (n=1,834) had a fever and 5% (n=590) were dyspneic. Furthermore, 60.8% (n=7,192) of the people who sought screening were asymptomatic. According to Table 1, 79.5% (n=5,719) of the asymptomatic patients were negative.

Table 1 - Symptomatology presented at the time of attendance at the Flu Syndrome and COVID Screening Service in Uruguaiana, RS, Brazil, 2021, (n=11,830).

Symptom	General Sample N=11830		PCR not detectable*	
	n	%	n	%
Coughing	2846	24,1	1375	52,1
Fever	1834	15,5	809	47,6
Dyspnea	590	5,0	273	51,0
Symptoms Upper Respiratory Tract	1625	13,7	982	65,4
Asymptomatic	7192	60,8	5719	79,5

*Ignored answers excluded, n=8

The prevalence of cases classified as presumed TB was 2.75% (n=224). Among the 224 possible TB cases, 52.4% (n=118) were female and 67.0% (n=150) self-declared white, while 22.8% (n=51) did not have their skin color recorded.

DISCUSSION

In view of the pandemic scenario, several countries and cities have shown high mortality and contamination by the SARS-CoV-2 virus in males[12-13], this study showed a high demand from males for RT-PCR testing in the city of Rio Grande do Sul, suggesting that social behavior, neglecting social distancing and the use of PPE and the fact that they work long hours, lead to greater exposure to the virus.

However, it is worth considering the border context of the study site in relation to the age group, the predominance of males and the high rate of asymptomatic individuals assessed by RT-PCR, as well as the high rate of negative tests. During the period analyzed, the border with Argentina required proof of a negative RT-PCR in the last 48 hours for drivers to enter the neighboring country. Uruguaiana has the largest dry port in Latin America, with a total area of 167,000 square meters and a capacity to receive 720 trucks a day, and in 2021 it will receive more than a thousand trucks a day, registering a volume of 11,148 vehicles in October 2021, a historical result driven by the decrease in containers in the world and an increase in road turnover, which may be a determining factor in the search for emergency care and access to tests even without symptoms.

It should also be noted that the length of time symptoms have been present and the test used can influence the positivity results. The gold standard, i.e. the reference for diagnosing COVID-19, is reverse transcription polymerase chain reaction (RT-PCR), as it detects the nucleic acid of the SARS-CoV-2 virus in respiratory tract samples in the first seven days of infection.[14]

In terms of the cases confirmed by the test, in the first few months of the pandemic, those most affected by the virus were elderly people over the age of 65. Gradually, this factor was replaced by the average age of 40, probably because they were more susceptible to exposure to the virus due to the reduction in quarantine measures.[15] Vaccination in the country prioritized the elderly, which may have reduced cases in this age group and increased infection among young adults, since they were waiting for the schedule of doses according to the initial protocols of the Ministry of Health.

In keeping with the purpose of this study, respiratory symptomatic cases not confirmed for COVID-19 deserve attention and referral to the presumption of TB, mainly because the clinical definition and proper referral of the patient to early TB treatment is of paramount importance for mitigating new cases. However, the possibility of TB and COVID co-infection cannot be ignored[16], given the tendency for co-infected patients to have moderate to severe symptoms, and the higher hospitalization rate in this population.[17]

Despite its ancient context, TB continues to be neglected in the context of direct care for people with respiratory clinical signs in general. The emergence of COVID-19 resulted in a redirection of care focus in 2020, consequently producing an increase in TB deaths for the first time in more than a decade. In addition, fewer people have been diagnosed with TB, fewer treatments have been initiated and preventive treatments and general funding for the disease have been redirected to COVID-19 emergencies.[18]

It is noteworthy that the gender profile has been reversed, with females predominating in the analysis of possible TB cases. In contrast, the majority of TB-COVID co-infected patients were male in the literature evaluated.[19-20] The first international cohort to follow up cases of COVID-19 in patients with TB or who had recently finished treatment for the disease found that 89.6% of the patients evaluated were symptomatic of COVID-19, presenting (in different combinations) fever (81.2%), dry cough (56.2%) and dyspnea (35.4%)[20]. In this study, the combination of the three symptoms was considered a presumption of TB, excluding upper respiratory tract symptoms, resulting in 2.75% of possible cases.

According to the National Tuberculosis Control Program (PNCT), 1% of the population is expected to be respiratory symptomatic for TB. This study, based on the proposed analysis, found 224 possible cases of TB, of which 4% (n=8.96) are expected to be positive. Considering these results, approximately 9 people would have the disease. Thus, according to the estimates for the TB transmission chain, one person without diagnosis and treatment can transmit the disease to 15 people/year, totaling 135 possible new infections. Therefore, it is plausible to think of the need to carry out actions to screen for Latent Infection by Mycobacterium Tuberculosis (LTBI) in the context studied and to carry out actions to detect TB cases.

As previously mentioned, the COVID-19 pandemic has made it difficult for patients to access TB diagnosis and treatment. Studies show the difficulty of access and adherence to TB treatment in various regions of Brazil, despite the various advances in policies and methodologies adopted by service managers to expand the dissemination, treatment and improvement of TB care, the centralization of the service remains an obstacle to be overcome.[21-22] This study site presents such an obstacle, since the majority of TB access and follow-up

in the city of Rio Grande do Sul is done at the Specialized Care Service (SAE), located at the Municipal Health Secretariat (SMS) in the city center. Instruments, processes and guidance mechanisms to assess patient access to diagnosis and treatment are of the utmost importance and should be implemented in the primary care network, especially in the ESFs, as they represent the main gateway to the community and the strategy adopted by the SUS to expand care and bring the community closer to health services.

The variable that showed significant incompleteness of information in this study was self-declared skin color, with almost half of the information ignored or missing, so this result should be analyzed with caveats. However, no case evaluated had less than 90% of the information of interest to the study incomplete, thus indicating the quality of the information filled in at the COVID-19 screening centers in this research scenario.

The completeness of care forms helps the service to analyze and understand the real magnitude of a pandemic, endemic, epidemic or outbreak. In Brazil, Epidemiological Surveillance has assumed the fundamental role of analyzing and providing reliable and qualified information to health service managers through epidemiological bulletins, published weekly[23], thus helping to adapt the management of the COVID-19 pandemic and the TB endemic.

CONCLUSION

The prevalence of possible TB cases exceeded the recommended estimate, reaching 2.75% of cases. The possibility of cases among COVID-19 positive patients cannot be ruled out. Thus, we cannot deny the urgency of actions to detect TB cases and alert health professionals to care for respiratory symptomatic patients, emphasizing the possibilities of co-infection and the differential diagnosis for cases with undetectable RT-PCR.

Given the results found, this research shows its importance and applicability ins the health system, retaking the relevance of TB in the public health scenario. Therefore, data collection is needed to map the areas most affected by possible community transmission of TB and thus interrupt it.

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