

RESEARCH ARTICLE

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EPIDEMIOLOGICAL PROFILE OF CASES OF SERIOUS RESPIRATORY SYNDROME IN A CAMPAIGN HOSPITAL IN THE STATE OF PERNAMBUCO

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ABSTRACT

The Severe Acute Respiratory Syndrome (SARS) is characterized as a case of Flu Syndrome (SG), where the individual of any age presents the following signs and symptoms: high fever, even if referred, cough, dyspnea, myalgia, sore throat, saturation O₂ <95%, respiratory distress, diarrhea, vomiting, abdominal pain, fatigue and others. This is a cross-sectional study, developed from the SRAG notification forms, referring to the number of cases involving SRAG, obtained through the Epidemiological Surveillance Center of the Provisório do Recife Hospital 2- COVID-19 of the State of Pernambuco, Brazil, from April to September 2020. 1,592 SRAG notification forms and their respective results were analyzed by the Epidemiological Surveillance Nucleus of Hospital Provisório do Recife 2- COVID-19. The average age of reported cases was 30 to 130 years. The highest frequency grouped by age was among the elderly (> 70 years) in 358 (15.1%) cases, followed by 51-60 years in 309 (14.3%) cases, 71-80 years in 296 (13.0 %) cases, 41-50 years in 195 (%) cases, 81-90 years in 189 (%) cases, 31-40 years in 134 (%) cases, 21-30 years in 49 (%) cases, 91- 100 years in 44 cases and 101-130 years in 2 (%) cases. In view of the pandemic scenario experienced in Pernambuco, quick solutions were taken, the COVID -19 field hospital located in the city of Recife with the largest number of beds among the others, was a great example of measures to contain the deficit of hospital beds in Pernambuco.

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INTRODUCTION

Respiratory tract infections represent an important cause of morbidity and mortality worldwide, responsible for more than five million

deaths annually. The agents of respiratory tract infections, responsible for about 80% of these infections are viruses (FALSEY *et al.*, 2014; WHO, 2014a). Severe Acute Respiratory Syndrome (SARS) is characterized as a case of Flu Syndrome (SG), where the individual of any age presents the following signs and symptoms: high fever, even

if referred, cough, dyspnea, myalgia, sore throat, saturation O₂ <95%, respiratory distress, diarrhea, vomiting, abdominal pain, fatigue and others. It usually resolves spontaneously in approximately 7 days, although cough, malaise and fatigue may remain for a few weeks and in some cases, risk factors such as place of residence, exposure to smoke, cold and humidity, malnutrition, among others, they can contribute to the worsening of the case and can quickly evolve to death (BRAZIL, 2020). The influenza virus is one of the main respiratory viruses that lead to the development of SARS. There are three types of Seasonal Influenza: A, B, C. The influenza A and B viruses are of greater clinical importance, due to the estimate that 75% of infections are caused by the type A strain and the others by B, with C rarely occurring. To the development of severe cases, only mild infections. The most common subtype in circulation is Influenza A (H1N1) and A (H3N2), being the H1N1 subtype that was responsible for the pandemic in 2009 (BRESEE, 2018). Influenza viruses undergo frequent mutations and have high transmissibility and global distribution, with easy dissemination that can generate pandemics. In December 2019, the World Health Organization (WHO) was notified of the occurrence of cases of severe pneumonia of unknown etiology in the city of Wuhan (Hubei province), China, which caused Covid-19, a disease that has spread rapidly in various regions of the world, with different impacts.

COVID-19 (Coronavirus Disease 2019) is a respiratory infection caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) (Schuchmann et al., 2020). On March 11, 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic (Schmidt et al., 2020). In this situation, the status of the disease has changed, due to the high rate of transmission of the virus and its spread worldwide. According to the World Health Organization (WHO), there were no strategic plans ready to be applied to a coronavirus pandemic. The World Health Organization, the Ministry of Health of Brazil, Centers for Disease Control and Prevention (CDC, United States) and other national and international organizations have suggested the application of influenza contingency plans and their tools, due to the clinical and epidemiological characteristics among these respiratory viruses. The main mechanism of transmission of both influenza and Coronavirus occurs through particles eliminated from the respiratory tract of the infected individual when coughing, speaking, sneezing and by the hands (WHO, 2018). Eventually, airborne transmission can occur, by inhaling residual particles, which can be carried over distances greater than 1 meter. There is also evidence of transmission through the indirect mode, through contact with the secretions of other patients. (Brazil, 2020). According to the World Health Organization, the occurrence of cases of influenza and Coronavirus can lead to hospitalization and death, occurring mainly among high-risk groups such as the elderly, children and especially among those with comorbidities. On the world stage, it is estimated that respiratory viruses such as influenza and the new Coronavirus can result in about 3 to 5 million new cases of the disease (WHO, 2020). In Brazil, it is mandatory to report cases of SARS, as well as the new Coronavirus through the Influenza Epidemiological Surveillance System, including surveillance of SG in sentinel units, for the monitoring of circulating respiratory viruses, and in addition to allowing the monitoring of demand attendance by SG (Brazil, 2020). In view of the above, the present study aimed to analyze the profile of notified SARS cases and results obtained in a Provisional Hospital in the City of Recife.

METHODOLOGY

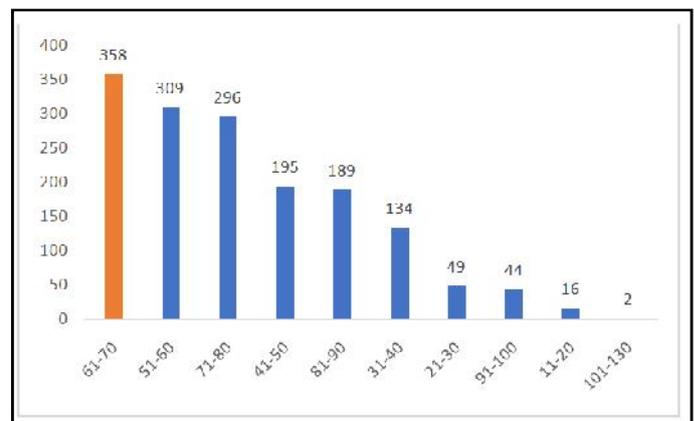
This is a cross-sectional study, developed from the SRAG notification forms, referring to the number of cases involving SRAG, obtained through the Epidemiological Surveillance Center of the Provisório do Recife Hospital 2- COVID-19 of the State of Pernambuco, Brazil, from April to September 2020. The study included patients who had hospitalizations in other services, coming to HPR2 after the first or more recurrences with suspected COVID-19 and excluding all patients who did not have symptomatology for SRAG. Data collection took place in April and September 2020 using the standardized

notification form by the Ministry of Health (INDIVIDUAL REGISTRATION FORM - CASES OF HOSPITALIZED ACUTE RESPIRATORY SYNDROME). The tabulation of the records of the individual record sheet of cases of Severe Acute Respiratory Syndrome (SARS) for the research included the following variables: age, sex, year, signs and symptoms, etiological diagnosis, type of sample collected, final classification. The data for calculating the prevalence and lethality of SRAG cases, according to the municipalities in the state of Pernambuco, were obtained from the MVPEP Online medical record of the Provisório do Recife Hospital 2- COVID-19. For data analysis, calculations of absolute values, frequencies and percentages were performed and the results were organized in tables and graphs using Microsoft Excel® Programs. The project was approved by the research ethics committee (CAAE: 31682720.9.0000.5201).

RESULTS AND DISCUSSION

Responsible for resolving cases of medium and high complexity, the Provisional Hospital of Recife 2- COVID-19 (HPR2), consists of a total of 320 nursing beds and 100 of the Intensive Care Unit (ICU), to serve patients Covid-19. This was the fifth field hospital of the City of Recife and was located in the Coelhos neighborhood, in the center of the capital. At the site, only patients referred by the Regulation Center were treated. "These beds in the municipal network were made available to the State Bed Regulation Center so that there was a unique targeting of patients. The Provisório Recife 2 Hospital was the largest field hospital to face the pandemic in the city of Recife and was erected in 27 days. The 420 beds at the Provisório Hospital in Recife 2 were managed by the Martiniano Fernando Figueira Foundation, linked to the "Professor Fernando Figueira Institute of Integral Medicine" (IMIP), and the unit was structured by the Recife Department of Health (Sesau) in old warehouses "Rua Largo dos Coelhos" and had a built area of more than 8 thousand m². 1,592 SRAG notification forms and their respective results reported by the Epidemiological Surveillance Nucleus of Hospital Provisório do Recife 2- COVID-19. The average age of reported cases was 30 to 130 years. The highest frequency grouped by age was among the elderly (> 70 years) in 358 (15.1%) cases, followed by 51-60 years in 309 (14.3%) cases, 71-80 years in 296 (13.0 %) cases, 41-50 years in 195 (%) cases, 81-90 years in 189 (%) cases, 31-40 years in 134 (%) cases, 21-30 years in 49 (%) cases, 91- 100 years in 44 cases and 101-130 years in 2 (%) cases, seen in **graph 1**.

Graph 1 - Distribution of notified and confirmed cases of Severe Acute Respiratory Syndrome according to age group, in HPR2, in 2020.

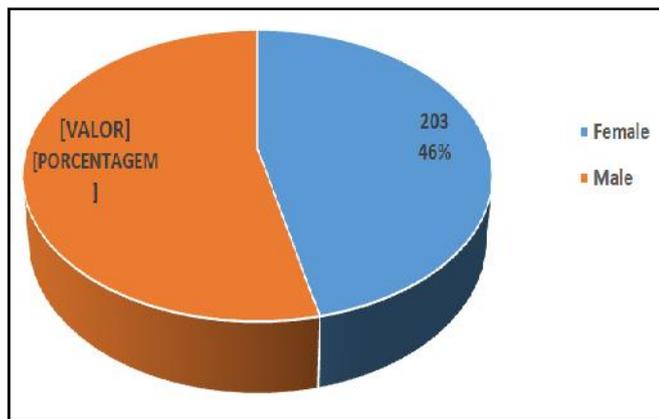


Source: Research data.

Cowling *et al.* (2019) in a study conducted in China, data that corroborate the findings of this study were observed in relation to the predominance of cases in the age group of 60 years, similar to that found in our study. As for the epidemiological profile to be most of the cases with positive results were male, with 853 (54%) accompanied by 739 (46%) female (Graph 2). Corroborating with our study, Ng *et al.* (2016) describes that in relation to sex, the greater positivity of confirmatory tests, are higher among males, the reason

for which is unknown. For the identification of the viral etiology, the Polymerase Chain Reaction - Reverse Transcriptase (RT-PCR) was used in 100% of the biological samples. Most of the biological samples collected for the viral etiological diagnosis were through the secretion of the oropharynx and nasopharynx in 809 (99.4%) cases and the remaining 783 (0.6%) were collected by other health units coming to HPR2 already with positive result. The procedure used to carry out the collected for the diagnosis, be of the secretion of oropharynx and nasopharynx and the diagnostic method used is the Polymerase Chain Reaction - Reverse Transcriptase (RT-PCR) which is considered the sensitive, specific and versatile method for identification of respiratory viruses, are in accordance with methods that the Ministry of Health recommends for viral diagnosis of respiratory viruses (Brazil, 2020).

Graph 2 - Distribution of notified and confirmed cases of Severe Acute Respiratory Syndrome according to sex, in HPR2, in 2020.



Source: Research data.

The most frequent signs and symptoms described in the notification forms were: cough, fever, respiratory distress, dyspnea, saturation <95%, myalgia, sore throat (Table 1). But Mazon et al. (2016) observed relevance in symptoms such as breathing difficulties ($p = 0.005$), myalgia ($p = 0.003$) and tiredness ($p = 0.016$).

Table 1 - Distribution of the percentage of signs and symptoms according to months of notification at a COVID-19 field hospital in the city of Recife, Pernambuco, 2020.

Signs and symptoms	notificationmonth / notificationyear						Total N %
	apr/ 20	mai/ 20	jun/ 20	jul/ 20	aug/ 20	sep/ 20	
Fever	95,2	98,1	97,4	95,8	92,6	80,0	93,2
Cough	96,0	91,4	78,0	70,2	60,4	50,3	74,4
Sore throat	35,0	42,8	34,0	22,7	15,3	12,4	27,1
Dyspnea	98,0	98,9	90,0	89,0	55,6	50,0	80,3
Respiratorydisc omfort	98,0	95,0	90,0	93,0	70,0	68,9	85,9
O2 saturation<95%	81,0	95,3	83,2	70,4	70,0	65,8	77,7
Diarrhea	35,0	42,1	10,0	11,0	8,0	2,0	18,2
Vomiting	14,0	13,0	5,0	3,0	2,0	1,0	6,4
Abdominal pain	23,8	13,0	8,0	5,0	3,0	1,0	9,0
Fatigue	50,0	70,0	20,0	12,0	10,0	4,0	27,7
Lossosfsmell	42,9	65,0	45,0	33,3	25,9	15,0	37,9
Others	38,1	56,5	29,4	14,8	10,9	6,3	26,0

Source: Research data.

The main viral etiologic agents described were the Influenza A / H1N1pdm09 virus in 380 (54.9%) cases, followed by Influenza B in 91 (13.2%), Influenza A / H3N2 in 88 (12.7%), corroborating with studies found. It is interesting to note that in Brazil and other countries, the influenza A / H1N1pdm09 virus has mainly affected adults (40-60 years), the influenza B virus in children, adolescents and young adults and the influenza A / H3N2 virus has a greater impact on seniors. However, all subtypes can cause serious infections and lead to deaths in people of any age group (Allard et al. 2012; Freitas, 2013; Freitas et al., 2013; Nitsch-osuch et al., 2013; Jayasundara et al. 2014). The fact that the positive samples for Influenza A /

H1N1pdm09, Influenza B, Influenza A / H3N2 come from hospital units, suggests an association of these subtypes with more severe conditions of the disease, which can lead patients to death quickly. The results observed indicate the need for longitudinal monitoring to better clarify the dynamics of long-term virus transmission and improve control strategies.

FINAL CONSIDERATIONS

In view of the pandemic scenario experienced in Pernambuco, quick solutions were taken, the COVID-19 field hospital located in the city of Recife with the largest number of beds among the others, was a great example of measures to contain the deficit of hospital beds in Pernambuco. If it were not for these mitigation measures in the spread of SARS-CoV-2, existing hospitals will operate beyond their capabilities, compromising the care mainly of patients with severe symptoms. It is worth remembering that although field hospitals meet an emergency demand, there is still no specific technical standard for this modular construction that is designed and executed based on NBR 15873: 2010, which has similar characteristics for this infrastructure. It is also noteworthy that during the time of the Covid-19 field hospital, there was a huge multidisciplinary team of professionals involved, who had the same objective that was to prevent lives from being decimated by Covid-19.

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