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CLINICAL PROFILE AND OUTCOMES OF PATIENTS HOSPITALIZED FOR COVID-19 IN A HOSPITAL IN SOUTHERN BRAZIL

PERFIL E DESFECHOS CLÍNICOS DE PACIENTES INTERNADOS POR COVID-19 EM UM HOSPITAL DO SUL DO BRASIL

PERFIL Y RESULTADOS CLÍNICOS DE PACIENTES INTERNADOS POR COVID-19 EN UN HOSPITAL DEL SUR DE BRASIL

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Objective: to describe the clinical profile and outcomes of patients diagnosed with COVID-19 admitted to a private hospital in southern Brazil. Method: descriptive study, conducted with 110 patients with COVID-19 who required hospitalization between March and May 2020. Sociodemographic data, clinical profile, signs and symptoms, and clinical outcomes were collected. Descriptive analysis was adopted for data interpretation. Results: male predominated (64.5%). Prevalent comorbidity: Systemic Arterial Hypertension (45.5%). Signs and symptoms with greater prominence: cough (53.6%) and dyspnea (48.2%). Clinical outcomes evidenced: chest tomography with ground-glass opacities (98.2%), supplementation with oxygen therapy (86.4%), referral to the Hospitalization Unit (90.9%). Observed complications: cardiac arrhythmias (18.2%) and hypoxemia (18.2%). Predominant outcome was improved discharge (90%). Conclusion: the description of the clinical profile and outcome of patients with COVID-19 will provide the direction of care with care flows and protocols that guarantee quality of care and safety in clinical practice.

Descriptors: COVID-19. Patients. Hospitalization. Pandemics. Nursing.

Objetivo: descrever perfil e desfechos clínicos de pacientes diagnosticados com COVID-19 admitidos em hospital privado na região Sul do Brasil. Método: estudo descritivo, realizado com 110 pacientes com COVID-19 que necessitaram de internação hospitalar entre março e maio de 2020. Foram coletados dados sociodemográficos, perfil

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clínico, sinais e sintomas e desfechos clínicos. Adotou-se análise descritiva para interpretação dos dados. Resultados: predominou sexo masculino (64,5%). Comorbidade prevalente: Hipertensão Arterial Sistêmica (45,5%). Sinais e sintomas com maior destaque: tosse (53,6%) e dispneia (48,2%). Desfechos clínicos evidenciados: tomografia de tórax com opacidades em vidro fosco (98,2%), suplementação com oxigenoterapia (86,4%), encaminhamento para Unidade de Internação (90,9%). Intercorrências observadas: arritmias cardíacas (18,2%) e hipoxemia (18,2%). Desfecho final predominante foi alta melhorada (90%). Conclusão: a descrição de perfil e desfecho clínico de pacientes com COVID-19 proporcionará o direcionamento de cuidados com fluxos e protocolos assistenciais que garantam qualidade da assistência e segurança na prática clínica.

Descritores: COVID-19. Pacientes. Hospitalização. Pandemias. Enfermagem.

Objetivo: describir perfil y resultados clínicos de pacientes diagnosticados con COVID-19 admitidos en hospital privado en la región Sur de Brasil. Método: estudio descriptivo, realizado con 110 pacientes con COVID-19 que necesitaron de internación hospitalaria entre marzo y mayo de 2020. Se recogieron datos sociodemográficos, perfil clínico, signos y síntomas y resultados clínicos. Se adoptó análisis descriptivo para interpretación de los datos. Resultados: predominó sexo masculino (64,5%). Comorbilidad prevalente: Hipertensión Arterial Sistémica (45,5%). Signos y síntomas con mayor destaque: tos (53,6%) y disnea (48,2%). Resultados clínicos evidenciados: tomografía de tórax con opacidades en vidrio esmerilado (98,2%), suplementación con oxigenoterapia (86,4%), encaminamiento para Unidad de Internación (90,9%). Complicaciones observadas: arritmias cardíacas (18,2%) e hipoxemia (18,2%). Resultado final predominante fue alta mejorada (90%). Conclusión: la descripción de perfil y resultado clínico de pacientes con COVID-19 proporcionará la orientación de cuidados con flujos y protocolos asistenciales que garanticen calidad de la asistencia y seguridad en la práctica clínica.

Descriptores: COVID-19. Pacientes. Hospitalización. Pandemias. Enfermería.

Introduction

The first cases identified of a virus of animal origin transmitted to humans occurred in 1937. However, only in 1965 that a virus was described as coronavirus, due to the profile identified in microscopy, similar to a corona[1].

In December 2019, the city of Wuhan, China, was the center of an outbreak of pneumonia of unknown cause. In January 2020, Chinese scientists isolated a new coronavirus, termed severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2), formerly known as 2019-nCoV. Most patients who acquired this virus developed viral pneumonia. Later, it was called coronavirus disease 2019 (COVID-19)[2]. Due to the rapid spread and emerging evolution, on March 11, 2020, the World Health Organization (WHO) declared a global pandemic[3].

The pandemic scenario sets terrifying numbers. As of August 20, 2021, there have been 209,876,613 confirmed cases and 4,400,284 deaths worldwide[3]. In Brazil, the data are alarming. Since the confirmation of the first case, which occurred on February 26, 2020, 20,556,487 cases and 574,209 deaths, with a lethality rate of 2.8%, have been confirmed until August 21, 2021. Until this same date, the state of Rio Grande do Sul (RS) recorded 1,399,810 positive cases and 33,945 deaths[4-5].

The clinical spectrum of SARS-CoV-2 infection appears to be broad, ranging from an asymptomatic upper respiratory tract infection to severe viral pneumonia with respiratory failure that can lead to death. In severe cases, COVID-19 can be complicated by acute respiratory distress syndrome (ARDS), sepsis and septic shock, failure of various organs, including acute kidney injury and heart injury[6]. A study[5]shows that the rates of admission to the intensive care unit (ICU) are approximately 5%. Around 42% of patients admitted to the hospital will need an intensive level of treatment and oxygen therapy, and for severe patients, the option for mechanical ventilation becomes essential, making them susceptible to the consequent deleterious effects of this therapy. In view of this, the performance of the multidisciplinary team stands out, especially nursing, which provides continuous and integral care to patients.

Thus, in January 2020, WHO[3] and the Pan American Health Organization (PAHO)[7] celebrated the international year of nursing professionals, which has been marked by the importance of their actions in combating the pandemic. Thus, the role of nurses, who perform different functions and in diverse contexts, is emphasized. In the current situation, five domains reveal the value of these professionals: the area of health education, prevention and surveillance of hospital infections, preparation and precaution in long-term care, protection of patients with immunological deficits or underlying diseases and provision of qualified care for patients with COVID-19 who are in acute and critical conditions[8].

Given this, it becomes relevant for the nursing area to identify the profile of patients with the disease, as well as their predisposition factors to severity, symptomatology and clinical outcomes, as it provides qualification in the screening process and in the provision of agile and assertive care, with an integral look at the real and potential needs of individuals.

Therefore, knowing the profile of the population that seeks care in health services, especially in the pandemic period, in which patients have different clinical manifestations and outcomes, becomes essential to plan the health actions, reorganization of care flows and protocols, as well as preparation of the multidisciplinary team for care, since effective treatments for the cure of the disease have not yet been evidenced.

In this sense, this study aims to describe the clinical profile and outcomes of patients diagnosed with COVID-19 admitted to a private hospital in the southern region of Brazil.

Method

This is a descriptive study with a quantitative approach, conducted in a large private hospital located in the southern region of Brazil between March and May 2020. It is noteworthy that the period established was due to the increase in the number of cases in the institution.

The study population comprised all patients admitted to the hospital, in the established period, with a positive diagnosis for COVID-19, resulting in the sample size of 110 patients.

The sample included patients aged 18 years or older, positive for COVID-19, who accessed the institution through emergency service and required hospitalization. Patients with inaccurate diagnosis of the disease and records with incomplete data were excluded. This site was chosen for data collection because it is the gateway and evaluation of almost all patients, in addition to allowing the selection of the sample on the first day of hospitalization.

Data collection was performed in the electronic medical record available in the institution's computerized system, from June to August 2020. This process was carried out by the team of researchers, using an instrument designed for this purpose, containing the following variables: sociodemographic characterization – age in full years, sex and race –, clinical profile – body mass index (BMI) and comorbidities –, signs and symptoms at the time of arrival at the emergency service and clinical outcomes – results of chest computed tomography, supplementation with oxygen therapy, hospitalization in the ward and/or ICU, complications during hospitalization, improved discharge or death.

The data were tabulated in spreadsheets of Excel for Windows version 14.0 and later transported to the Statistical Package for the Social Sciences (SPSS) version 21.0, to process and analyze the information.

This study adopted the technique of descriptive analysis for data interpretation. Thus, continuous variables were expressed as mean and standard deviation or median and percentiles (25 – 75) and categorical, as absolute (n) and relative (%) frequencies.

This study complied with the ethical precepts of Resolution n. 466/2012[9] of the National Health Council and obtained the approval of the Research Ethics Committee of the Research Institute of the Moinhos de Vento Hospital, under the number 32160620.5.0000.5330 of the Certificate of Presentation for Ethical Assessment

(CAAE). There was no need for the Informed Consent Form, as this research used only data from electronic medical records, with no direct contact with the patient. Nevertheless, the ethical recommendations of the commitment term for the use of electronic medical records and databases made available by the institution were followed.

Results

The study sample consisted of 110 patients who required hospitalization, 62 with a mean age of over 60 years, and more than half were male, all white, with an average BMI of 27.7 kg/m2, which corresponds to overweight.

Regarding previous diseases, over half had some comorbidity, prevailing Systemic Arterial Hypertension (SAH), pulmonary diseases, Diabetes Mellitus (DM) and dyslipidemia.

The time that patients took from the onset of symptoms to hospital admission was 7 days. The predominant signs and symptoms at the time of risk classification, performed by the nurse, were: cough, dyspnea, tiredness/weakness and with both symptoms, fever and myalgia.

Table 1 – Sociodemographic characteristics, clinical profile and signs and symptoms of patients with COVID-19. Porto Alegre, Rio Grande do Sul, Brazil – 2020. (N=110)

Variables	n(%)
Sociodemographic characteristics	
Age (years)	62.4 ± 14.1 (1)
Sex	
Male	71(64.5)
Female	39(35.5)
White Race	110(100)
Clinical Profile	
Body mass index (kg/m^2)	27.7 ± 4.9 (1)
Comorbidities	76(69.1)
Systemic Arterial Hypertension	50(45.5)
Lung diseases	38(34.5)
Diabetes *Mellitus*	26(23.6)
Dyslipidemia	22(20.0)
Previous heart disease	18(16.4)
Immunosuppression	10(9.1)
Signs and symptoms upon arrival at the emergency department	
Symptom time to service search	7(4 – 9) (2)
Cough	59(53.6)
Dyspnea	53(48.2)
Tiredness/weakness	46(41.8)
Fever	40(36.4)
Myalgia	40(36.4)
Inappetence	16(14.5)
Sore throat	12(10.9)
Runny nose	10(9.1)
Diarrhea	10(9.1)
Nausea/Vomiting	9(8.2)
Asthenia	6(5.5)
Nasal congestion	4(3.6)
Headache	4(3.6)
Chest pain	1(0.9)
Otalgia	1(0.9)

Source: Created by the authors.

(1) Mean and standard deviation.

(2) Median and percentile 25 – 75.

The results of the chest computed tomography imaging showed ground-glass opacity, thickening of bronchial walls and areas of consolidation.

Due to pulmonary involvement, oxygen supplementation was necessary in a large number of cases, since it used some type of non-invasive oxygen therapy and invasive mechanical ventilation (IMV). The average of days in IMV was 21 days.

Table 2 – Results of chest computed tomography scan and oxygen supplementation in patients with COVID-19. Porto Alegre, Rio Grande do Sul, Brazil – 2020. (N=110)

Variables	n(%)
Chest computed tomography results	
Frosted glass opacity	108(98.2)
Thickening of bronchial walls	97(88.2)
Consolidation areas	44(40)
Air bronchogram	2(1.8)
Oxygen therapy	
Use of nasal glasses and/or mask with reservoir	70(63.6)
High Flow Nasal Catheter	6(5.5)
Non-invasive mechanical ventilation	2(1.8)
Invasive mechanical ventilation	17(15.4)

Source: Created by the authors.

Concerning hospitalization, patients were referred from the emergency service to the ICU, with a median length of hospitalization of eight days. In relation to the Hospitalization Unit (HU), almost all patients were directed to this sector, both following the emergency service flow HU and ICU for HU. The median time of hospitalization in the HU was seven days.

Regarding the complications present in patients during the hospitalization process, they had some cardiac arrhythmia and hypoxemia.

In relation to the outcome, most of them were discharged from the hospital and a small number died.

Table 3 – Hospitalization, complications during the hospitalization period and outcome of patients with COVID-19. Porto Alegre, Rio Grande do Sul, Brazil – 2020. (N=110)

Variables	n(%)
Hospitalization	
Intensive Treatment Unit	38(34.5)
Total days in the Intensive Care Unit	8(5 – 29) (1)
Inpatient Unit	100(90.9)
Total days in the Inpatient Unit	7(5 – 9) (1)
Complications during the hospitalization period	
Arrhythmia	20(18.2)
Hypoxemia	20(18.2)
Tracheostomy obstruction	6(5.5)
Cardiorespiratory arrest	5(4.4)
Neurological	3(2.7)
Thrombosis	3(2.7)
Outcome	
Hospital discharge	99(90.0)
Death	11(10.0)

Source: Created by the authors

(1) Median and percentile 25 – 75.

Discussion

The pandemic caused by COVID-19 has reached extensive geographical expansions, causing, in the world population, major concerns and changes in lifestyle, mainly by the uncertainties of the behavior of the virus in the human body and the possible short-, medium- and long-term damages, besides the lack of specific treatments. Due to its originality, easy and fast transmission, spread among the most diverse regions of the world, where each community has specific characteristics, it is relevant to know the profile of the affected population and the clinical outcomes resulting from the pathology, so that health actions can be performed.

Regarding the sociodemographic profile, in this study, there was a predominance of males. This finding corroborates results of pioneering studies[10-11] developed in Wuhan, epicenter of the outbreak. A study[12] focusing on severity and mortality in relation to the sex of patients with the disease found that the susceptibility between men and women to contract the virus did not differ. However, it showed that male patients tended to be more severe and more likely to die when compared to female patients.

Another characteristic of the sample profile is the average age above 60 years. In Wuhan, among the risk factors for severity and mortality in patients hospitalized with COVID-19 was the advanced age (>60 years). The older the age, the more severe the cases[10]. In April 2020, the Brazilian Ministry of Health disclosed the profile of patients who died in the country, and identified that seven out of ten people who died were over 60 years old and were male[4]. In Rio Grande do Sul, data from the State Health Department showed that the proportion for the risk of severe cases increased with age. Thus, in the elderly, when compared to non-elderly people, the relative risk for hospitalization was 3.6%; for ICU hospitalizations, 6.9% and 3.4% for death[13].

Thus, one of the justifications for the increase in the disease in the elderly, who are more likely to develop pneumonia and/or respiratory failure, is related to alveolar damage due to the aging process. Thus, this aspect might have contributed to the progression of the disease and, consequently, death[14].

Associated with advanced age are the underlying comorbidities of patients. Chronic diseases have specificities and some provide infectious disorders, such as the pro-inflammatory state and the attenuation of the immune response[15]. Thus, these particularities led the individuals with the greatest susceptibility to worsening of the disease and/or the development of new pathologies, contributing, in addition, to unfavorable clinical outcomes.

This research observed that, among the comorbidities present, SAH, pulmonary diseases, DM and dyslipidemia were predominant. In a sample of 41 patients with COVID-19 in Wuhan, less than half had any underlying disease, however, the comorbidities manifested were DM, hypertension and cardiovascular diseases[11].

A systematic review with meta-analysis regarding the prevalence of comorbidities and their effects in patients with COVID-19 suggests that SAH, DM, respiratory system diseases, cardiovascular diseases and frailty conditions may be related to the pathogenesis of COVID-19[15]. These aspects demonstrate the need for redoubled attention to the original comorbidities of individuals during the treatment of the disease, because the clinical picture can go beyond pneumonia and cause multiple organ lesions, promoting a worsening of health status, which may result in death due to multiple organ failure, sepsis, shock, ARDS, heart failure, arrhythmias and renal failure[16].

In the context presented, it was possible to understand that male sex, advanced age and at least one underlying disease traced the sociodemographic and clinical profile of patients with COVID-19 admitted to a private hospital in southern Brazil. These results are similar to those of studies conducted in other countries(10-11,14).

The scientific literature has already shown that COVID-19 causes respiratory infection. However, clinical characteristics can range from a simple cold to severe pneumonia[4]. The symptoms

already known are: fever, cough, sore throat, runny nose, headache, fatigue, myalgia, dyspnea and, to a lesser extent, conjunctivitis(4,18).

In this sense, the clinical signs and symptoms, most prominently, presented and reported by the study sample at the time of the risk classification were: cough, dyspnea, tiredness/weakness, fever and myalgia. These findings are in line with the publication by WHO-China Joint Mission on Coronavirus Disease 2019, which was based on a study of 55,924 confirmed cases, which found that typical signs and symptoms were: fever, dry cough, fatigue, sputum production, dyspnea, sore throat, headache, myalgia or arthralgia, chills, nausea or vomiting, nasal congestion, diarrhea, hemoptysis and conjunctival congestion[3]. In addition, signs and symptoms may appear on average five to six days after infection[3]. This datum is similar to that found in this study, since patients took approximately seven days to seek emergency service after the onset of symptoms.

Among the tests performed for diagnostic confirmation is the chest computed tomography, which can assist in the evaluation process of disease extension, differential diagnoses. In some cases, it may also help in tracking possible complications. In patients with COVID-19, the presence of ground-glass opacities in the images are the most early-visualized evidence, as they appear about zero to four days after the onset of symptoms and their characteristics refer to bilateral distribution in the peripheries and subpleural of the lower lobes of the lung[18].

The presence of consolidation in areas of the lung was also identified in the study sample. This is the second manifestation most commonly found in tomographic images of patients with the pathology and may be associated with the presence of ground-glass opacities. They usually appear in later stages of the infectious process, after the tenth day, which corresponds to the filling of the alveolus by inflammatory exudate[18-19]. Bronchial wall thickening was a manifestation present in 88.2% of the patients in this study; however, this manifestation is not frequent in patients with viral pneumonia compatible with COVID-19[19].

Knowing the main findings of the images resulting from the chest computed tomography allows nurses to verify the clinical condition of patients and the risks to their severity, thus enabling the development of an early care plan, agile, safe and assertive.

Thus, the nurse's knowledge before pulmonary involvement allows discussing the case with the multidisciplinary team, concerning supplementation with oxygen therapy, in order to provide tissue oxygenation, correct hypoxemia and decrease cardiorespiratory work overload, to improve respiratory symptoms and bring greater comfort to the patient. Oxygen supply therapy should begin with non-invasive measures. The first choice should be the nasal catheter/glasses or non-reinhalant mask reservoir, with the objective of reaching the target saturation in the blood greater than 94%. However, if patients do not reach this target, the use of non-invasive ventilation (NIV) or high-flow nasal catheter (HFNA) is suggested. If these alternatives are not satisfactory, IMV should be used[20].

Therefore, the findings of this study showed that most patients used some type of non-invasive oxygen therapy, suggestive of having a mild acute respiratory syndrome, which, according to data from the Ministry of Health (MH), corresponded to 80% of confirmed cases of the disease in the country[4].

Nevertheless, to a lesser extent, the need for IMV was inevitable, since hypoxemia could not be corrected by means of non-invasive ventilation. Thus, orotracheal intubation was performed in 15.4% of the study patients. This result shows that cases with very severe acute respiratory syndrome in Brazil varied between 5% and 10% of the recorded occurrences[4] in the first half of 2020.

Thus, patients with respiratory failure requiring mechanical ventilation are referred to the ICU, and the time they may need intensive care varies from two to four weeks[21]. In this study, the time in IMV of the sample was up to 21 days.

Due to the high number of days in IMV, complications related to this clinical condition arise, such as IMV-associated pneumonia,

pulmonary thromboembolism, delirium, among others, which favor increased morbidity and mortality of patients[21]. Given this, the role of the nursing team is highlighted, which should develop assistance based on evidence-based practices, in order to minimize the risks arising from this therapy.

Patients in IMV are considered critical and require rigorous, specific and specialized care, with differentiated attention by the multidisciplinary team. This is responsible for the treatment, and the place with the greatest preparation regarding material and human resources are the ICUs. In this study, 34.5% of the sample were referred to this unit. Among the most prevalent complications, cardiac arrhythmias and hypoxemia stood out. These data are similar to those of a study conducted in Italy, which identified that the main cause of admission to the ICU of patients with COVID-19 was respiratory failure in need of IMV, since this was inevitable in 88% of cases[22].

Cardiac arrhythmia was one of the complications observed in the patients who composed the sample of this study. A study conducted in Wuhan, China, which evaluated the clinical features of patients, showed, among the complications that resulted in transfers of patients to the ICU, the presence of arrhythmias[23]. Another study at the University Hospital of Pennsylvania found that arrhythmias were more likely in patients admitted to the ICU, as well as suggested that these were likely consequences of systemic diseases and not just direct effect of COVID-19[24].

In the state of Rio Grande do Sul, where the study was conducted, the epidemiological bulletin published on September 9, 2020 recorded that, of the total number of confirmed cases hospitalized, 36% required ICU and 23% needed IMV[13].

Faced with this, the severity of the disease in individuals is notorious, which make investments in human and material resources for the care of cases indispensable. Moreover, the reorganization of the health system and institutions for care is essential, with trained, aligned multidisciplinary teams and with organized care flows, so that the fight against COVID-19 improve clinical outcomes and decrease the number of deaths from the pathology.

In this perspective, the number of deaths is fearful, since, until May 20, 2020, 318,789 deaths were recorded in the world; in Brazil, 18,859, and in the state of Rio Grande do Sul, 161(3-4,13). Regarding the data of this study, the number of deaths was relatively low, with only 10%. The number of deaths is currently growing gradually. Nonetheless, the numbers previously presented are in accordance with the period of data collection and analysis, for a better understanding of the death outcome for the time.

High mortality rates may be related to the rapid and increasing number of cases of the disease, which may result from insufficient resources for medical assistance[25], unawareness of the virus and specific forms of treatment for patients' cure.

Therefore, a limitation of this research was its cross-sectional design, which did not allow an evaluation of causality and longitudinality. Another limitation refers to the lack of associations between the variables studied.

This study presents as contributions to the area of knowledge the feasibility of the multidisciplinary team, highlighting the nursing team working on the front line, know the profile of patients with the pathology and their clinical outcomes, which can contribute to the development of safe and quality care, with interventions aimed at the real and potential needs of individuals.

Conclusion

This study allowed describing the clinical profile and outcomes of patients diagnosed with COVID-19 who were admitted to a private hospital in the southern region of Brazil. Male gender, age over 60 years, white race, overweight and hypertension characterized the sociodemographic and clinical profiles of the sample. Cough and dyspnea were the prevalent signs and symptoms on arrival at the emergency service. Most of the patients

presented ground-glass opacities in the chest computed tomography and required some type of oxygen therapy. A small percentage required IMV. In addition, less than half of the patients were referred to the ICU, thus increasing the number of hospitalizations in wards. Cardiac arrhythmias and hypoxemia corresponded to the most prevalent complications among patients. The improved discharge outcome predominated in the study sample, and, in a small number, there was death.

The pandemic still portrays a scenario with great challenges for the health agencies and professionals who work in them, especially the nursing team, which performs direct and constant care. Thus, studies at aimed at identifying the manifestations of the virus and the population that has greater vulnerability will enable directing care with flows and protocols that ensure the quality of care and safety during clinical practice.

Collaborations:

1 – conception and planning of the project: Lucas Henrique de Rosso, Sidiclei Machado Carvalho, Tiago Claro Maurer, Marcio Luiz Ferreira de Camillis and Leonardo Miguel Corrêa Garcia;

2 – analysis and interpretation of data: Lucas Henrique de Rosso, Danusa Rossi and Marcio Luiz Ferreira de Camillis;

3 – writing and/or critical review: Lucas Henrique de Rosso, Sidiclei Machado Carvalho, Tiago Claro Maurer, Danusa Rossi, Marcio Luiz Ferreira de Camillis and Leonardo Miguel Corrêa Garcia;

4 – approval of the final version: Lucas Henrique de Rosso, Sidiclei Machado Carvalho, Tiago Claro Maurer, Danusa Rossi, Marcio Luiz Ferreira de Camillis and Leonardo Miguel Corrêa Garcia.

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