Clinical Profile of Patients Diagnosed with Covid-19 Admitted to an Intensive Care Unit

Perfil Clínico dos Pacientes Diagnosticados com Covid-19 Internados em uma Unidade de Terapia Intensiva

Perfil clínico de los pacientes con diagnóstico de Covid-19 ingresados en una unidad de cuidados intensivos

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REVISA

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RESUMO

Objetivo: descrever o perfil clínico, principais alterações laboratoriais e hemodinâmicas entre pacientes acometidos por Covid-19 internados na unidade de terapia intensiva de um hospital universitário da região dos Campos Gerais - Paraná. **Método:** Estudo de coorte retrospectivo. A amostra foi constituída por prontuários de pacientes internados na unidade de terapia intensiva cujo resultado do teste Polymerase Chain Reaction foi positivo para Covid-19. O quadro clínico foi analisado durante 10 dias desde a admissão na unidade. A coleta de dados foi obtida por meio do acesso ao prontuário eletrônico. O estudo foi aprovado por um Comitê de Ética em Pesquisa. **Resultados:** Predominaram pacientes do sexo masculino com faixa etária de 48 a 57 anos. Destacam-se o uso de ventilação mecânica, relação PaO2 FiO2 menor que 200, caracterizado como síndrome do desconforto respiratório agudo**. Conclusão:** A caracterização do perfil clínico contribuiu para a compreensão da fisiopatologia da doença e discussão com estudos semelhantes.
Descritores: Unidades de Terapia Intensiva; Enfermagem; COVID-19.

ABSTRACT

Objective: to describe the clinical profile, main laboratory and hemodynamic changes among patients with Covid-19 admitted to the intensive care unit of a university hospital in the region of Campos Gerais - Paraná. **Method:** This is a historical cohort. The sample consisted of medical records of patients admitted to the intensive care unit whose Polymerase Chain Reaction test result was positive for Covid-19. The clinical picture was analyzed for 10 days from admission to the unit. Data collection was obtained through access to the electronic medical record. The study was approved by a Research Ethics Committee. **Results:** There was a predominance of male patients aged from 48 to 57 years. The use of mechanical ventilation stands out, with a PaO2 FiO2 ratio lower than 200, characterized as acute respiratory distress syndrome. **Conclusion:** The characterization of the clinical profile contributed to the understanding of the pathophysiology of the disease and discussion with similar studies.
Descriptors: Intensive Care Units; Nursing; COVID-19.

RESUMEN

Objetivo: describir el perfil clínico, principales cambios analíticos y hemodinámicos de pacientes con Covid-19 ingresados en la unidad de cuidados intensivos de un hospital universitario de la región de Campos Gerais - Paraná. **Método:** Estudio de cohorte retrospectivo. La muestra consistió en registros médicos de pacientes ingresados en la unidad de cuidados intensivos cuyo resultado de la prueba de reacción en cadena de la polimerasa fue positivo para Covid-19. Se analizó el cuadro clínico durante 10 días desde el ingreso a la unidad. La recogida de datos se obtuvo mediante el acceso a la historia clínica electrónica. El estudio fue aprobado por el Comité de Ética en Investigación. **Resultados:** Predominó el sexo masculino de 48 a 57 años. Destaca el uso de ventilación mecánica, con una relación PaO2 FiO2 inferior a 200, padeciendo síndrome de distrés respiratorio agudo. **Conclusión:** La caracterización del perfil clínico contribuyó al conocimiento de la fisiopatología de la enfermedad y la discusión con estudios similares.
Descriptores: Unidades de Cuidados Intensivos; Enfermería; COVID-19.

ORIGINAL

Introduction

In 2019, hospitals in Wuhan (China) received patients diagnosed with unidentified viral pneumonia. As a result of this event, the Chinese Center for Disease Control initiated an epidemiological investigation, identifying the genome of a new coronavirus called SARS-CoV-2, the first record was in 2019 and therefore, the nomenclature was established: "COVID-19."[1-2] Clinical features range from asymptomatic state to acute respiratory distress syndrome and multiple organ dysfunction.[3-8] The results of a previous study demonstrated that severity may be associated with age, biological sex and comorbidities.[3]

Some clinical pictures of COVID-19 have alterations in imaging and laboratory findings. It is considered that the understanding of such changes contributes to the assessment of the clinical severity of the disease.[3-5] Furthermore, about one fifth of patients affected by COVID-19 require intensive care and of these more than half die.[6 -7]

Given the aforementioned context, this study intends to contribute with answers to the following questions: What is the clinical profile of critically ill patients with COVID-19? What are the factors related to the clinical severity of patients affected by COVID-19?

Method

King of study

This is a retrospective cohort study. The medical records of patients admitted to the ICU were evaluated. Thus, the sociodemographic, clinical and laboratory data of the initial 10 days after admission to the ICU were collected from patients admitted to the institution selected for the study.

Study Place

The study was carried out in a hospital unit dedicated to the care of patients, suspected and confirmed, affected by COVID-19. The unit has 54 beds, 30 of which are intensive care beds at the Regional University Hospital of Campos Gerais (HURCG) Paraná.

Eligibility Criteria

Eligibility criteria: the medical records of patients admitted to the Covid-19 Intensive Care Unit from April to July 2020 with a positive Polymerase Chain Reaction (RT-PCR) test for COVID-19 were included. The medical records of patients with an ICU stay of less than 24 hours and/or those under 18 years of age were excluded

Data collection procedures:

Data collection was performed by the SUS health operating system (GSUS). Data were collected using an electronic form (Google Forms®) and later exported to a Microsoft Excel® for Mac 2021 spreadsheet.

Data analysis

To perform the calculation of the SOFA score, the standardized tool on the website was used: < http://www.medicinaintensiva.com.br/sofa.html > public domain.

Data were presented using measures of central tendency and variability. Normal distribution was tested using the Kolmogorov-Smirnov test. Subsequently, to compare means between two groups, Student's t test was calculated, when appropriate. The analysis was performed using the GraphPadPrism 8.0 software. The significance level adopted was 5%.

Ethical aspectsv

The research project was approved by the Ethics Committee of the Regional University Hospital of Campos Gerais, when the waiver of applying the Informed Consent Term was obtained, under opinion N.º 108 and CAAE: 41320620.3.0000.0105.

Results

The number of hospitalized at the HURCG between April and July in the COVID-19 ICU was 275 patients. Of these, 54 (19.6%) of the patients met the eligibility criteria. Among the risk factors, comorbidities stand out. In the present study, it was found that most patients (38; 70.4%) had one or more comorbidities. Sociodemographic data and risk factors are described in Table 1.

Table 1 – Sociodemographic and clinical characteristics of patients admitted to the COVID intensive care ward-19 from April to July 2020. HURCG, 2020.

Variables	n	%
Sociodemographic characteristics		
Genre		
Masculine	36	66,7
Feminine	18	33,3
Age (years)		
18 – 27	1	1,9
28 – 37	1	1,9
38 – 47	6	11,1
48 – 57	18	33,3
58 – 67	15	27,8
68 – 77	11	20,3
78 – 88	2	3,7
Race		
Branca	46	85,2
Negra	3	5,6
Outros	5	9,2
Admission-related characteristics		
Hospitalization Month		
April	3	5,6
May	6	11,1
June	10	18,5
July	35	64,8
Origin		
Tent (direct search)	7	13
Transfer	47	87

	2	3,7
Readmission occurrence		
Patients with comorbidities	38	70,4
Comorbidities		
Systemic arterial hypertension	31	57,4
Diabetes Mellitus	16	29,6
Heart disease	8	14,9
Obesity	7	13
Dyslipidemia	6	11,1
Chronic kidney disease	4	7,4
Neoplasms	1	1,9
Smoking	1	1,9

Table 2 describes the patients' clinical information. During the ten days of hospitalization in the ICU of patients diagnosed with COVID-19. It was observed that 39 (72.2%) required orotracheal intubation, 35 (64.8%) had a PaO2/FiO2 ratio lower than 200, with 21 (39.8%) undergoing prone position during the period and, Regarding the use of vasoactive drugs, in the present study, most patients (28; 51.9%) patients required this intervention. Regarding laboratory tests, the most evident alteration was leukocytosis, affecting 37 (68.5%) of the individuals.

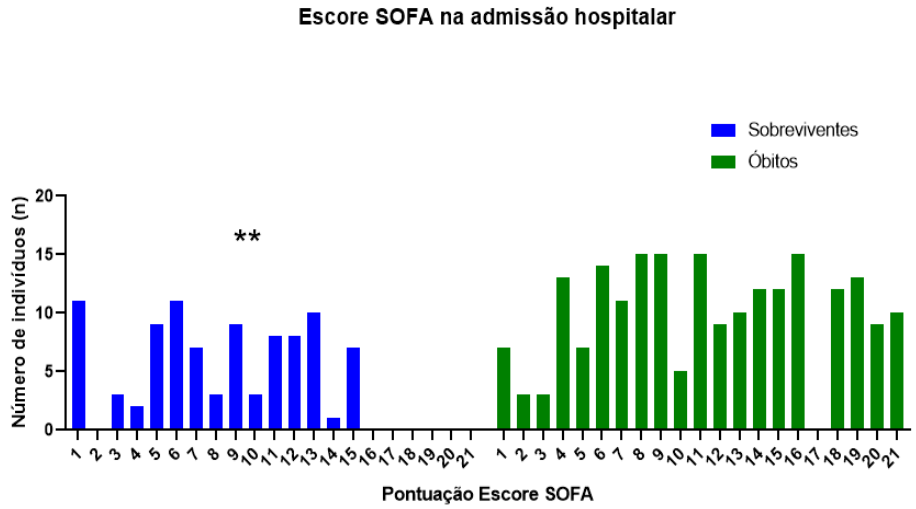
Table 2 – Clinical and laboratory characteristics of the first 10 days of hospitalization of patients affected by COVID-19. HURCG, 2020

Clinical and laboratory characteristics	n	%
ECG ≤ 8	38	70,4
RASS -5	34	63,0
Use of mechanical ventilation	39	72,2
PaO2 FiO2 < 200	35	64,8
Pronation	21	38,9
Leukocytosis	37	68,5
Hypernatremia	20	37,0
Hyperkalemia	15	27,8
Uremia	7	13,0
Coagulation disorders	10	18,5
Respiratory acidosis	7	13,0
Metabolic acidosis	6	11,1
Need for hemodialysis	6	11,1
Use of neuromuscular blocker	22	40,7
Use of vasoactive drugs	28	51,9
SDRA		
No	15	27,8
Moderate	24	44,4
Light	6	11,1
Serious	9	16,7
Ending		
High improved	32	59,2
Death	22	40,8

A minority (15; 27.8%) of the patients did not have ARDS. However, among the 24 (44.4%) patients developed moderate ARDS and 9 (16.7%) were affected by severe ARDS.

The mean SOFA score at admission was significantly higher among patients who died compared to survivors, 10.0 (±4.4) versus 5.7 (±3.9), respectively (P=0.0045) (Figure 1).

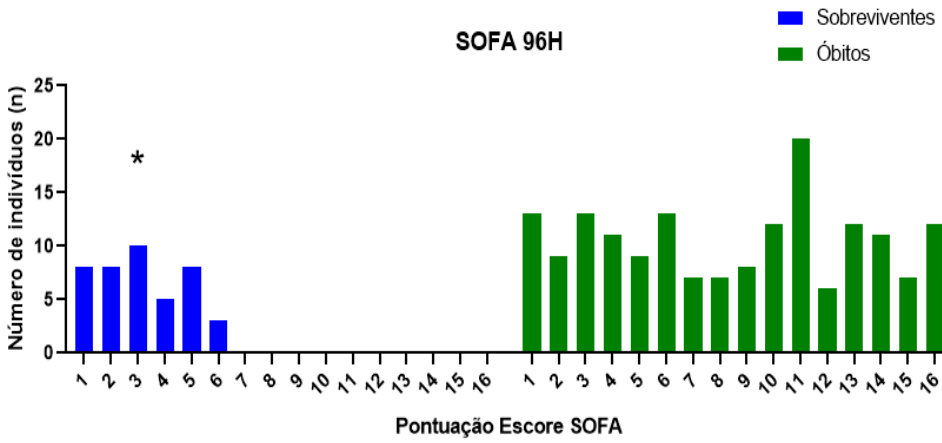
Figure 1 - Results regarding the SOFA score measured on admission to hospital of patients admitted to the COVID ward. HURCG, 2020.



Subtitle: results expressed from the admission SOFA score. Values were obtained from patients with discharge (n=16) and death (n=21) outcomes. Data were analyzed using t-test. Difference between groups was evidenced by (**) p = 0,0045.

Furthermore, the same was observed in relation to the 96-hour SOFA score, that is, the mean score was significantly higher among patients who died compared to those who survived, 10.6 (±3.5) versus 7.0 (±2.53), respectively (P=0.0320) (Figure 2).

Figure 2 - Results regarding the SOFA score measured after 96h of patients admitted to the COVID ward. HURCG, 2020.



Subtitle: results expressed from the 96h SOFA score. Values were obtained from patients with discharge (n=6) and death (n=16) outcomes. Data were analyzed using t-test. Difference between groups was evidenced by (*) p = 0,0320

Discussion

According to the national epidemiological bulletin, most patients affected by COVID-19 are male, older than 60 years and with at least one associated risk factor, especially heart disease and diabetes mellitus. [8]

The severe form of the disease occurs with the development of Respiratory Distress Syndrome (ARDS), acute cardiac injury and thrombotic phenomena. There is strong evidence in the literature that the prone position in patients with acute respiratory failure caused by COVID-19 has a positive outcome, such as reduced hypoxemia and mortality.[9-11] In the present study, the prone position was used with less occurrence than expected , there is currently evidence and protocols established for this practice.

Tools for measuring disease severity, such as the Sequential Organ Failure Assessment (SOFA) are important, in the study by Yang et al.[7] the SOFA on the first day of hospitalization of individuals affected by COVID-19 who progressed to death was an average of 6 points and patients who improved their condition scored 4 points on the scale, showing the predictive potential of mortality. In the present study, it was possible to observe the association between SOFA and the occurrence of death.

The most frequent laboratory alterations in patients with COVID-19 are the increase in C-reactive protein (CRP), a leukocyte alteration, which may have a considerable variation, ranging from leukocytosis to leukopenia. In addition to these findings, in severe cases a reduction in the partial pressure of oxygen (PaO2) and the PaO2/inspired oxygen fraction (FiO2) ratio (FiO2) are detected.

Regarding the epidemiological and clinical profile of critically ill patients affected by COVID-19 admitted to the ICU of the Regional University Hospital of Campos Gerais, there was a predominance of white males, aged 48-57 years. With regard to the clinical picture, during the first ten days of hospitalization analyzed, the use of mechanical ventilation, neuromuscular blockers and vasoactive drugs is highlighted. During this period, the use of the prone position as a conduct was rare, even with a significant percentage of patients with PaO2/FiO2 lower than 200; which characterized the Acute Respiratory Distress Syndrome (ARDS). Among the laboratory alterations, the most significant was leukocytosis.

As limitations, the absence of data in electronic medical records stands out. However, researchers have made efforts to obtain data from other sources, such as logbooks, shift change documents, and other diagnostic support systems.

Conclusion

In view of the pandemic scenario, understanding the clinical profile and the involvement of organic systems affected by CVID-19 is of paramount importance for improving treatment. Furthermore, the results assist in the development of new measures and protocols, as well as improve the care provided to affected patients. Further studies on the subject and assessment of changes in the profile are needed with the exponential increase in severe cases hospitalized in intensive care units.

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