

Clinical and symptomatological investigation of patients affected by covid-19 between 2020 and 2021 in Ceará

Investigação clínica e sintomatológica de pacientes acometidos pela covid-19 entre 2020 e 2021 no Ceará

Investigación clínica y sintomalógica de pacientes afectados por covid-19 entre 2020 y 2021 en Ceará

RESUMO

Objetivo: descrever o comportamento clínico e sintomatológico de pacientes acometidos pela COVID-19 no Ceará. Métodos: Estudo descritivo, retrospectivo, de análise documental com abordagem quantitativa, realizado em 3 hospitais de referência para tratamento da COVID-19 no Ceará. Incluídos 965 pacientes divididos entre primeira e segunda onda, conforme data de internação. Os dados foram obtidos através da plataforma "ResCOVID". Resultados: O perfil descreve de forma respectiva 1ª e 2ª onda, apresentando idade entre 50 a 59 anos 26 (16,9%) e 140 (17%), sexo masculino 89 (57,8%) e 454 (56%). Hipertensão 75 (48,7%) e 364 (44,9); diabetes 38 (26,7%) e 222 (27,4) foram as comorbidades mais frequentes. Os sintomas mais reportados foram dispneia 112 (72,7%) e 610 (75,2%); tosse 108 (70%) e 491 (55,7%); febre 104 (67,5%) e 443 (50,2%). Conclusão: Foi possível realizar a caracterização da população, evidenciando variações no perfil clínico e sintomatológico e diminuição em número de óbitos na segunda onda.

DESCRIPTORES: Infecções por coronavírus; Pandemias; Organização Mundial de Saúde; Epidemiologia; Avaliação de Sintomas.

ABSTRACT

Objective: to describe the clinical and symptomatological behavior of patients affected by COVID-19 in Ceará. Methods: Descriptive, retrospective study of document analysis with a quantitative approach, carried out in 3 reference hospitals for the treatment of COVID-19 in Ceará. 965 patients were included, divided between the first and second wave, according to the date of admission. Data were obtained through the "ResCOVID" platform. Results: The profile describes the 1st and 2nd wave respectively, aged between 50 and 59 years old, 26 (16.9%) and 140 (17%), male 89 (57.8%) and 454 (56%). Hypertension 75 (48.7%) and 364 (44.9); diabetes 38 (26.7%) and 222 (27.4) were the most frequent comorbidities. The most reported symptoms were dyspnea 112 (72.7%) and 610 (75.2%); cough 108 (70%) and 491 (55.7%); fever 104 (67.5%) and 443 (50.2%). Conclusion: It was possible to characterize the population, showing variations in the clinical and symptomatological profile and a decrease in the number of deaths in the second wave.

DESCRIPTORS: Coronavirus Infections; Pandemics; World Health Organization; Epidemiology; Symptom Assessment.

RESUMEN

OBJETIVO: describir el comportamiento clínico y sintomatológico de pacientes afectados por COVID-19 en Ceará. Métodos: Estudio descriptivo, retrospectivo de análisis de documentos con abordaje cuantitativo, realizado en 3 hospitales de referencia para el tratamiento de COVID-19 en Ceará. Se incluyeron 965 pacientes, divididos entre la primera y la segunda oleada, según la fecha de ingreso. Los datos se obtuvieron a través de la plataforma "ResCOVID". Resultados: El perfil describe la 1ª y 2ª oleada respectivamente, con edades comprendidas entre 50 y 59 años, 26 (16,9%) y 140 (17%), hombres 89 (57,8%) y 454 (56%). Hipertensión 75 (48,7%) y 364 (44,9); La diabetes 38 (26,7%) y 222 (27,4) fueron las comorbilidades más frecuentes. Los síntomas más reportados fueron disnea 112 (72,7%) y 610 (75,2%); tos 108 (70%) y 491 (55,7%); fiebre 104 (67,5%) y 443 (50,2%). Conclusión: Fue posible caracterizar la población, mostrando variaciones en el perfil clínico y sintomatológico y una disminución en el número de muertes en la segunda ola.

DESCRIPTORES: Infecciones por Coronavirus; Pandemias; Organización Mundial de la Salud; Epidemiología; Evaluación de síntomas.

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INTRODUCTION

After the release, in december 2019, of the new coronavirus arising, responsible by the infection recognized as COVID-19, its association occurs with diverse symptoms and large complication spectrum. The prevalent forms of symptoms are: dyspnea, dry cough, fever and headache. The cases do not always

perform its typical clinic manifestations, may the individuals present non-symptomatic forms of the disease, representing a possible obstacle at the disease's identification and interacting directly at the increasing of the transmission's curve. (1)

Even after a year of pandemic, the infection by Coronavirus is yet characterized as an emergency in Public Health. According to the recent OMS data, was registered in

12 february 2021 a total of 107.423.526 cases and 2.360.280 deaths all around the globe.(2)

The period from the initial manifestation of the symptoms till the death may variate from 6 to 41 days, featuring a median of 14 days, this information indicates that the precece detection of suspects cases represent an important action window. Brazil present a testing role inferior of what

was hopped, when compared to the other countries who view the control of the pandemic, which bounded to the inefficient detection execution, the flexibility of social distancing measures for economic and political pressure gathered at the instability at setorial coordination at public health field has weaken the combat to this worsening. (3)

Regional, socioeconomic, epidemiologic and climatic differences present at Brazil mean expressive differences at the SARS-CoV-2 (4) infection's incidence and prevalence relation. It is worth to highlight that at the capitals of the states and regions North and Northeast, as Rio Branco (Acre), Natal (Rio Grande do Norte), Belém (Pará) and Fortaleza (Ceará), more than 90% of the hospital intensive therapy units (UTIs) were already occupied by the middle of may.(5)

In developing countries, as is the case of Brazil, the mass testing process wasn't effective, prioritizing the patients in common symptoms or in hospitalization. The sub-notification of the cases has worsened the acknowledgement about the real epidemiologic situation at the country. (6)

The Brazil's continental dimension and its great demand for supplies and professionals needed for the disease control and disponibility of tests for a higher population cover transform the COVID-19 facing into an even bigger challenge. With that, it is worth reinforcing the idea of recognizing signals and clinical symptoms shown by the infected population, contributing this way for establishing attendance flow and prioritization of confirmatory exams achievement. (7) Beyond the report at the present study, it was aiming to describe the clinical and symptomatological behavior of patients affected by COVID-19 at Ceará.

METHOD

The present study is about a descriptive, retrospective, of documental analysis with quantitative approach study, made in 3 COVID-19 treatment reference hospitals at Ceará, distributed at the health regions: central hinterland (Sertão), Cariri and Nor-

In developing countries, as is the case of Brazil, the mass testing process wasn't effective, prioritizing the patients in common symptoms or in hospitalization. The sub-notification of the cases has worsened the acknowledgement about the real epidemiologic situation at the country

th Region. The research is inserted at a project developed by the Public Health School of the Estate of Ceará - ESP, gathered at Ceará's Public Health Secretariat - SESA, titled "ResCOVID: Develop of a electronic clinical register system for COVID-19 hospitalized patients at Ceará/Brazil".

For the present study, it included patients with hospitalization by COVID-19, who had an RT-PCR diagnostic test detectable. It excluded transferred patients, a justified measure for the need of accompanying the patient till its outcome at hospitalization for the disease. This way, the universe of patients collected at this hospital was formed by 1657. After the inclusion and exclusion criteria application, the patient's sample was counted with 965 participants. The information collection has occurred in electronic charts disponible at the institution's headquarter, containing the period between may 2020 to october 2021. The sample covers the collect division in two moments, having patients with hospitalization dates at the first wave (mars to may 2020), and second wave (january to april 2021).

Considering the development of a descriptive study, the data were presented according to the descriptive statistic with use of percentage and absolute frequency. The following varieties were described: age (represented by age group), colour, schooling, professional activity, personal habits (tabagism, alcool consome), comorbidities and initial symptoms. Profiling this way a hospitalized patient profile, beyond the description of the used supports for oxygen therapy and outcomes.

The collected information was stored in an exclusive platform titled "ResCOVID". This tool eases the job of the searchers, making the collection model more agile and more safer the storage form, as the access to information for the appointments.

The research accomplished all of the ethical principles at treating the patient's data, respecting the anonymity and data safety. The work follows the determinations of the Resolution 466 of 12 december 2012, being approved by the Ethical committee in Research at Public

Health School of Ceará, according to CAAE 30423920.0.0000.5037.

RESULTS

The 965 patient's sociodemographic characteristics gathered as in the table 1 point for the division between the 1^a and the 2^a COVID-19 contamination wave in Brazil. At the table it is possible to identify the prevalence of the patients at the age group of >60 years, 88 (57,1%) and 416 (51%), respectively according to the waves, followed by patients between 50 and 59 years, 26 (16,9) and 140 (17%). We have a predominance of individuals of masculine sex, presenting 89 (57,8%) and 454 (56%), according to the wave.

In what concerns the skin tone, brown people were dominating in both waves, counting with 74 (48%) and 382 (47%). In what concerns schooling level, most of the patients had basic schooling incomplete, 47 (30,5%) and 167 (20,6%). In what concerns the professionals' activities we have that at the first wave a total of 37 (24%) relates to non paid activity, while at the second wave we have the predominance of 387 (47%) of patients declaring paid activities. Considering personal habits, 9 (5,8%) and 52 (6,4%) were smokers; 15 (9,7%) and 163 (20%) patients were ex-smokers, while 10 (6,5%) and 24 (2,6%) were alcoholic, at the first wave there wasn't relates about ex-smoking practices, while at the second one 14 (1,7%) declared themselves as ex-smokers.

The patient's clinical characteristics are synthesized at table 2. Among the comorbidities related at the study there was a predomine of patients at both waves, hypertension 75 (48,7%) and 364 (44,9%), followed of patients with diabetes 38 (36,7%) and 222 (27,4%); heart disease appears at the first wave presenting 129 (15,9%); obesity presents at the first wave as the fourth with most cases counting with 19 (12,3%), at the second wave they present 56 (6,9%).

The initial related symptoms with bigger frequency considering the distribution between first and second wave were respectively: dyspnea with 112 (72,7%)

Table 1: Patient's affected by COVID-19 sociodemographic characteristics at Ceará, Brazil. 2021.

Sociodemographic Characteristics of the studied population (N=965)				
Wave Period	1 ^a Wave (154)		2 ^a Wave (811)	
Varieties	N	%	N	%
Age (years)				
<20	5	3,2	14	1,7
20-29	5	3,2	39	4,8
30-39	9	5,8	91	11,2
40-49	21	13,6	111	13,7
50-59	26	16,9	140	17
≥60	88	57,1	416	51
Sex				
M	89	57,8	454	56
F	65	42,2	357	44
Colour				
Brown	74	48	382	47
White	23	14,9	113	14
Black	4	2,6	20	2,3
Not registered	53	34,4	296	36,7
Schooling				
No schooling	33	21,4	128	15,8
Basic Schooling Incomplete	47	30,5	167	20,6
Basic Schooling complete	10	6,5	56	7
High Schooling Incomplete	3	1,9	14	1,7
High Schooling complete	3	1,9	110	13,6
Higher Schooling Incomplete	1	0,6	11	1,3
Higher Schooling complete	9	5,7	44	5,4
Not registered	48	31	281	34,6
Professional activity				
Paid	25	16,2	387	47
Not paid	37	24	167	20,1
Not registered	92	59,7	257	32,9
Personal Habits				
Smoker	9	5,8	52	6,4
Ex-smoker	15	9,7	163	20
Alcoholic	10	6,5	24	2,6
Ex-alcoholic	0	-	14	1,7

Subtitle: N (Absolute value); % (Percentage rate); 1^a wave (period who correspond mars to may 2020); 2^a wave (period who correspond january to april 2021).
Source: Made by the authors.

and 610 (75,2%); cough 108 (70%) and (50,2%); mialgie 18 (11,7%) and 157 491 (55,7%); fever 104(67,5%) and 443 (19,3%); headache 15 (9,7%) and 116

(14,3%). Other symptoms also were reported with lower frequency, as throat ache 10 (6,55%) and 77 (9,5%); runny nose 13 (8,4%) and 55 (6,8%) and asthenie 8 (5,2%) and 79 (9,7%), and others.

The respiratory supports are synthesized at table 3. The use of respiratory support most used at the first wave was the Invasive Mechanical Ventilation with 58 (37,7%), The same support had at the second wave the incidence of 295 (36,8%). The Non-re-breather mask Has represented 45 (29,2%) at the first wave, being bigger at the second one with 401 cases (49,4%); followed by the use of Nasal catheter (low flow) with respectively 39 (25,3%) and 201 (24,8%). The non-invasive mechanical ventilation had a great variety, being only 2 (1,3%) of cases at the first wave, being 272 272 (33,5%) of cases at the second one.

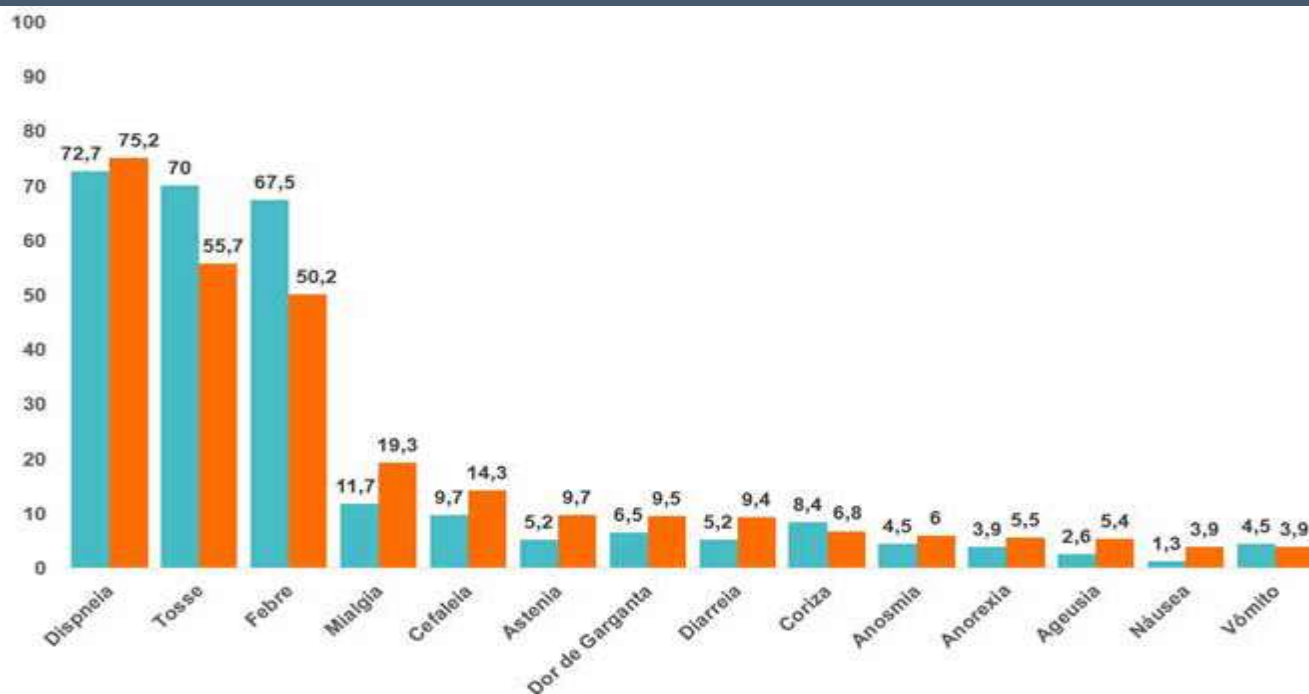
Considering the outcome relation, the patients presented during the first wave a 16 (10,4%) number of deaths and increase

Table 2: Comorbidities and initial symptoms of COVID-19 patients at Ceará, Fortaleza-CE, Brazil, 2021.

Clinic characteristics of the studied population (N=965)				
Period	1ª Wave (154)		2ª Wave (811)	
	N	%	N	%
Varieties				
Comorbidities				
Hypertension	75	48,7	364	44,9
Diabetes	38	26,7	222	27,4
Heart Disease	19	12,3	56	6,9
Obesity	12	7,8	129	15,9
DPOC	12	7,8	36	4,4
Neurological Disease	9	5,8	50	6,2
Asthma	8	5,2	15	1,9
Chronic Kidney Disease	5	3,2	17	2
Rheumatologic Disease	2	1,3	11	1,4
Autoimmune Disease	2	1,3	10	1,2
Chronic Liver Disease	2	1,3	8	0,9

Subtitle: N (Absolute value); % (Percentage rate); 1ª wave (period who correspond mars to may 2020); 2ª wave (period who correspond january to april 2021). DPOC (Chronic Obstructive Pulmonary Disease).
Source: Made by the authors.

Chart 1: Percentage distribution of symptoms of patients with COVID-19 at Ceará, organized by wave, Fortaleza, CE, 2021.



Source: Made by the authors.

of 138 (89,6%), while the second one had

42 (5,2%) deaths for 769 (94,8%) discharges, a relative reduction of 50% at the num-

ber of deaths.

DISCUSSION

In correspondence to the exposed data at the present article, the patient's profile more accomited by COVID-19 at the first or at the second wave have presenting ages above 60 years, corroborating with other researches, (7,3) which demonstrate that this is the age group more accomited by severe or critical cases, being associate to the presence of a bigger number of symptoms and severe symptoms.

It is worth to mention yet, that during the second wave, a growth at the accomitment of the other age groups, emphasizing the group of people with 30 to 39 years, evidenciating the increasing infection and number of deaths among young people due to the presence of new variations of the disease and the delay of the immunization process, not getting to contemplate the younger age groups at the second wave beginning.

The disease kept prevalent at the masculine sex, corroborating with the described profile at most researches, as in the one made at the state of Paraíba, (8) which present major infection prevalence between men with 50 and 70 years; and even at the researches in which the prevalence were among the women, it was observed bigger severnness at the cases with death outcomes among men. (9)

Corroborating with the discovery at the present article, other authors also refer to the bigger prevalence of brown skin tone in patients committed by COVID-19. In a study made about the contamination epidemiological characteristics at the state of Bahia (10) the authors noticed that 50,6% of the patients were brown skin tone, 12,2% white and 8,2% are black. Beyond the committed patients, brown skin tone was prevalent at the number of deaths, representing 55,1% of the cases.

Concerning the schooling level influence, studies point to the need of considering the direct relation of that aspect with familiar income and the trouble in accessing the health services. It was evidenced that persons with superior schooling level with several cases of COVID-19 had clinical

Table 3: Respiratory support of patients with COVID-19 at Ceará, Fortaleza-CE, Brazil. 2021.

Respiratory support used during hospitalization of the studied population (n= 965)				
Period	1ª Wave (154)		2ª Wave (811)	
	N	%	N	%
Invasive Mechanical Ventilation	58	37,7	295	36,8
Non-rebreather mask	45	29,2	401	49,4
Nasal catheter (low flow)	39	25,3	201	24,8
Non-Invasive Mechanical Ventilation	2	1,3	272	33,5

Subtitle: N (Absolute value); % (Percentage rate); 1ª wave (period who correspond mars to may 2020); 2ª wave (period who correspond january to april 2021).

improvement and, consequently, a lower number of deaths (22,5%), compared with low schooling people (71,3%). It is observed yet that schooling associated with skin tone increases the outcome of those patients, where black and brown people with low schooling present a number of deaths four times bigger if compared with white people with higher schooling (80,35% against 19,65%). (11)

Another risk factor for the contamination rate as well as for the more severe cases of the disease is tabagism, due to the practice itself of the act of smoking (taking the product to the mouth without adequate hand higienization, and in some cases sharing electronic cigarettes and hookahs) and worsening of the pulmonary involvement, for preliminary alterations physiologically installed by the chronic use of tobacco, respectively.(12)

The pandemic represented changings in other social fields as work, where the execution of laboral activities was modified, most of the times there was a migration to remote activities,(13) other changings, for the population's essential characteristics (at health, feeding, transport fields and others), There was a bigger intensification at work journeys, above it all of the health professionals.(13,14)

Concerning the difference of infection between the workers class at the first and second waves, some factors of which it may associate its condition would be the decreasing of the fear of infection and its consequences with the vaccines arriving and the illusory ideal of immunity gua-

rantee at the first infection, decreasing, at the and of 2020, of the infected cases and to the economic plans advance for coming back with job activities. What may justify the major infection among the population who return to job environment, but before that, during the first wave, could make remote activities, differently of the automne workers class, without paid activity.(15)

The associated comorbidities also determine a bigger predisposition to infections and aggravations of COVID-19. As well as the prevalence at the present study, hypertension leads as a comorbidity with higher incidence of the disease worsening. (11) It was mentioned at the present study the high incidence of obesity at the second wave of the pandemic if compared to the first one. It is worth to mention that obesity is considered a agravant factor for respiratory diseases and promotes adverses complications, as low saturation for the lack of pulmonary ventilation, abnormal adipokine and cytokine secretion production, adipose tissue accumulation that must act as human adenovirus reservatory, beyond high risk of thrombotic events and other chronic diseases development, increasing that way the death chances.(16)

The signs and symptoms work most of the time as a sensitive system for prediction of medical and hospitalar care needs, as well as complementary exams needed to decision making for intervention.(7)

Of the most recurrent symptoms at both waves of COVID-19 at Ceará it must mention dispnea, cough and fever, while for all symptoms presented there was an in-

crease of frequency at the second wave, for which it majorly points to a referred symptoms growth as mialgie, headache, astenea, throat ache (odynophagia) and diarréia.

Mostly, the symptoms most commonly reported by the patients infected by COVID-19 are dyspnea, cough, fever and mialgie, corroborating to the results showed at this study. Gastrointestinal symptoms, as diarréia, anorexia and vomit, may do part of the clinical board from 3% to 79% of the patients, being most frequent, above it all, at the severe cases or among the pediatric and teenage populations, must call attention for the risks associated to sub nutrition and sarcopenia.(17)

At the made investigation with patients positive for COVID-19 at China, 98% shows fever, 76% cough, 55% dyspnea and 44% mialgie/fatigue, being those the last common symptoms as anosmia/hyposmia and ageusia, at the absence of previous respiratory allergic diseases, the most suggestive symptoms of the disease, namely, of more sensitive to the disease suspect cases, before the laboratory diagnosis. The bigger attention given to some symptoms, specially the flou ones in general, was result of trying to orientate in the matter of social isolation needs e, by consequence, the viral transmission decrease.(7)

In a made study about the symptoms, it was observed that some factors were related to bigger chances of presenting all of the symptoms and higher prevalence of them, those characteristics were from individuals of: feminine sex, with high schooling level, older age, and that were from north and northwest regions.(18) The two first must be associated to higher facility and detailing in describing the symptoms presented and the two last ones related to bigger organic or socioeconomic vulnerability for the infection, respectively.

Some patients may evolve for the severe form of the disease characterized as Severe Acute Respiratory Syndrome (SRAG), that is determined by the persistent dyspnea evolution, low oxygen saturation (lower than 95%) without oxygen support or central areas with blue colour (lips and face).(19)

At the cases with hospitalization need the oxygen supplementation is among the most conditionants factors of its decision. Between the therapeutic possibilities the Mechanic Ventilation (VM) is essential to the cases of respiratory insufficiency that require a adequate oxygen level and respiratory muscles rest. It is deliberate about the use of Non-Invasive Ventilation (VNI) the clinical acknowledgement and health

the second wave, as a result of helmet interface system's use for continuous positive pressure application.(23, 24)

Related at those new VNI devices use, the pronation protocols implementation (to avoid the beginning or the prolonging of invasive measures) and the beginning gathered at the vaccination increasing may be concatenated to the decreasing of deaths showed at the second wave analysed, in which even with the application of only one dose of the vaccine there are already the critical symptoms and deaths decrease between the partially immunized.(22,25)

The bigger attention given to some symptoms, specially the flou ones in general, was result of trying to orientate in the matter of social isolation needs e, by consequence, the viral transmission decrease

CONCLUSIONS

The analyzed and presented data at this study allows to show the descriptive profile of the patients infected by COVID-19 at Ceará, describing population characteristics as well as observing clinic and symptomatologic factors. The sample analyzed agrees with the literature under the clinic and symptomatologic factors, evidencing typical symptoms with variations between first and second wave.

An important discovery indispensable for pointing is the significative decrease of the general deaths proportion, may be related with the new varieties characteristics presents at the new wave, like the possibility of testing made faster, as well as the symptoms acknowledgement in a clear form. This way, the study sinalizes for the need of investigation continuity, above it all thinking at verifying the severeness of the symptoms and its relation with the outcome.

professional's, at determining the cases that are really eligible at its use, at researches exposure which found high rates of failure in its administration, arriving to 70%.(20,21)

The VNI presentation with different parameters and its precece utilization was correlated with the low need of orotracheal intubation, majorly those made through helmet, since most of the studies has demonstrated high death rates between the patients who needed the use of VM.(22) That fundamentals the higher use of VNI at

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