Management of Covid-19 infection in a context of countries with limited resources: case of the University Hospital Center of Renaissance (UHCR) in N'Djamena, Chad.

ABSTRACT

Introduction: The aim of this study was to describe the clinical characteristics of patients admitted for Covid-19 in the department of Covid-19 of the University Hospital Center of Renaissance (UHCR) of N'Djamena in Chad. The pandemic of the sickness of Covid-19 constitutes a real public health problem in the world since its appearance in December 2019.

Material and methods: This was an observational, transversal and descriptive study carried out from 19 March 2020 to 19 November 2021. All patients diagnosed with Covid-19, confirmed at least either by RT-PCR or chest computed tomography (CT) were included. The healing was defined through the disappearance of clinical signs and two negative RT-PCRs at 72 hours intervals.

Results: Our study included 825 patients of which 613 (74.34%) men (sex ratio 2.9). Age Medium for patients was 50 ± 4 years with extreme ranging from 19 to 84 years old. Six hundred and thirty-three (76.70%) patients came directly from their residences. Respectively 82 and 71 were transferred from the provincial hospital of Farcha (9.9%) and from a private health structure (8.7%). Three hundred and thirteen patients had at least a comorbidity especially arterial hypertension (n = 173; 21 %); the diabetes (n = 156; 19.7%); chronic renal failure (n = 28; 3.5%); heart disease (n =27; 3.3%) and obesity (n= 14; 1.6%), HIV infection (n = 9; 1.09%). five hundred and seventy-two (61.12%) patients performed the CT and all the RT-PCR. Four hundred and ninety-two patients (59.60%) presented severe forms of the disease, 160 (19.40%) were critical and 124 (15.10%) were moderates. The hospital lethality was 16.24% (n = 134). The treatment consisted in the administration of Hydroxychloroquine-Azythromycin in 99.4% of cases (n = 813) and by covid-organics in 0.6% of cases (n = 5).

Conclusion: The infected patients with Covid-19 were admitted with the advance

stage of the disease. Lethality was associate with the presence of comorbidities. The sensitization of the population on the importance of vaccination, barrier measures and recourse to care are necessary.

Keywords: Covid-19, patients, comorbidities, treatment, Renaissance university hospital center, N'Djamena, Chad

1. INTRODUCTION

Covid-19 disease pandemic has been a real public health problem in the world since its appearance in December 2019. Till December 12, 2021, according to WHO, there are 271 million confirmed cases of Covid-19, and 5.31 million deaths [1]. Apart from confirmed cases, there are also probably cases of Covid-19 which will be discovered with time and the spread of the epidemic. In addition, the criteria varies from country to country. Africa recorded as of 12 December 2021, 8944097 confirmed cases and 224920 deaths [2]. Chad recorded its first case on March 19, 2020 and so far, has 5,701 confirmed cases for 181 (3.17%) deaths [3]. No effective antiviral treatment is currently available. The UHCR is a care center for serious cases of Covid-19 at the national level. Simple cases are treated in the Farcha

Provincial Hospital. In view of this context, we carried out this study, the main objective of this was to describe the management of patients infected with Covid-19 hospitalized at the UHCR in N'Djamena.

2. MATERIAL AND METHODS

This was a cross-sectional, descriptive and observational study carried out from March 19, 2020 to November 19, 2021 in the covid-19 unit of the Renaissance university hospital center. Adult patients hospitalized in the Covid-19 unit with a clinical diagnosis of Covid-19 confirmed by one of the 2 following examinations, reverse transcriptase polymerase Chain reaction RT-PCR or chest computed tomography (CT) were included in the study. Patients who refused to sign the required information were excluded from the study. The RT-PCR technique was carried out by a team from the Ministry of Public Health. After nasal sampling, the samples were sent to the mobile laboratory of the Ministry of Health for technical examination. From all patients, the following variables were collected on admission (age, sex, history, current treatment, clinical severity of the disease, clinical location), CT aspects, outcome. Data was collected on a form prepared for this purpose. A data entry mask developed in Excel made it possible to enter the data collected; these data were checked, codified and then analyzed on EPIINFO 3.5.1. We received the agreement of the National Bioethics Committee of Chad (N0 45/22) to carry out this study. A written consent agreement was obtained from the patient or his representative.

3. RESULTS

We included 825 patients including 613 (74.34%) men (sex ratio 2.9). The mean age of the patients was 50 ± 4 years with extremes ranging from 19 to 84 years. All patients had taken a nasal swab for RT-PCR. Five hundred and sixty-two (61.12%) patients had performed chest computed tomography.Table1 shows the characteristics of the patients included.

Table 1: characteristics of the 825 patients included

Variables	Characteristics
Mean age ± standard deviation	50 ± 4 years
Sex ratio	2.9
Origine of patients	
Residence	76.7% (n = 643)
Farcha main Hospital	9% (n = 82)
Private Health	8.9% (n = 73)
Comorbidities	
Arterial Hypertension	21% (n = 173)
Diabetes	19.7% (n= 156)
Chronic renal faillure	3.5% (n = 28)
Heart disease	3.3% (n =27)
Obesity (IMC >30)	1.6% (n =14)
Severity of the disease	
Severe form	59.6% (n =492)
Critical form	19.4% (n =160)
Moderate form	15.1% (n =124)
Mild form	5.9% (n=49)
Therapy received	
Oxygen therapy	
No	14.29% (n=49)
Telescope	52.18% (n=179)
High oncentration mask	31.77% (n=109)
Orotracheal intubation and assisted ventilation	1.75% (n=6)
Hydroxychloroquin and azythromycin	99.4% (n = 820)
Vitamin C	100% (n= 825)
Covid-organics	0.6% (n =5)
Hospital lethality	16.24% (n = 134)

4 Discussion:

The average age of our patients was 56 years old. In the three studies conducted in China, the median age of hospitalized patients was between 47 and 56 years with narrow interquartile ranges (43 to 60 years in the study by Wu and al. 35 to 58 years in the study of Guan and al, aged 46 to 67 in the study by Zhou and al.). There was a clear male predominance; 63.7% of patients were males in the study by Wu and al., 58.1% and 62% in the studies by Guan and al., and Zhou and al., respectively

[4, 5, 6]. This difference is explained by the higher frequency of risk factors for the severity of the disease in the male population. The main comorbidities found in the hospitalized population were arterial hypertension (AHT) (15 to 30%), diabetes (7.4-19%) and vascular pathologies (2.5-8%) [4, 5, 6]. Smokers accounted for 6 to 12.6% of hospitalized patients [4, 5]. In a retrospective study of 1591 consecutive cases hospitalized in intensive care in Lombardy (Italy), 82% of patients were male, 49% of patients had chronic arterial hypertension, and 21% were followed for cardiovascular disease, 17% for diabetes, and only 8% for neoplasia, 4% for chronic obstructive pulmonary disease, 3% for chronic renal failure [7]. Age over 50 appeared to be strongly associated with the occurrence of ARDS and age over 65 was associated with mortality [6]. In France, 89% of deceased patients were over 65 years of age and 90% had a comorbidity, the main ones of which were diabetes, cardiac disease, hypertension, pulmonary disease or morbid obesity [8]. In the studies by Zhou et al. and Wu et al., hypertension and diabetes were significantly associated with the occurrence of ARDS in multivariate analysis and mortality in uni-variate analysis [4, 5]. In contrast, the existence of chronic obstructive pulmonary disease (COPD), prior immunosuppression, cancer disease or chronic renal failure did not appear to increase the risk of mortality [4, 5, 6]. In the Italian study by Grasseli and al., mortality in intensive care was 38% for 502 hypertensive patients, against 22% for the 526 non-hypertensive patients included [7]. The cases of fatality rate in patients admitted to intensive care was 26%. It should be noted that these data probably depend on the demographic characteristics of the affected populations: indeed, compared to Chinese or Italian observations, the first American case admitted to intensive care seemed to be more affected by heart failure and chronic renal failure [9, 10]. Finally, a high body mass index was reported in 24 patients admitted to intensive care in Washington (mean BMI 32.3, standard deviation 7.2), suggesting that overweight and obesity could be a risk factor for severe Covid-19 infection [10].

5. CONCLUSION

Our results showed that patients infected with Covid-19 were admitted at the advanced stage of the disease. Lethality was associated with the presence of

comorbidities. Factors like body mass index, ARDS and smoking will be considered during future studies. This study could be used to raise public awareness of the importance of vaccination, barrier measures and the use of healthcare.

The limitations of this study lie in the fact that it was not possible to make an in-depth analysis of the data concerning the factors associated with death, the severity of the disease, the evaluation of the treatment and the comparison with patients who presented the asymptomatic forms.

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CONSENT

Mutual agreement and understanding of patients and the researchers.

ETHICAL APPROVAL

In accordance with the National Bioethics Committee of Chad (N^{O} 45/22)