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ORIGINAL ARTICLE

Pandemic Disease (Covid-19) Can Be A Leading Cause Of Deaths In Patients With Acute Liver Disease Cirrhosis

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ABSTRACT

Objective: Aim of this study is to determine the Covid-19 can be a leading cause of death in patients who had acute liver disease cirrhosis.

Study Design: Comparative/retrospective study

Place and Duration: King Salman Armed Forces Hospital Tabuk, Saudia Arabia/ Rashid Latif Medical College, Lahore. December 2020-May 2021

Methodology: People with or without chronic liver illness were involved in this research, which comprised 130 covid-19 individuals of both genders. It became out that there were two different groups of patients. Group A (which included 65 patients with cirrhosis) and Group B (which included 65 individuals without cirrhosis). Comorbidities among both groups were also assessed. Comparing the death rates of the two groups was done. For all of the data analysis, the SPSS 23.0 was employed.

Results: The mean age of the patients in group I was 40.01±1.35 years and in group II mean age were 39.11±6.32 years. Males were the most common patients among both groups 42 (64.6%) in group A and 45 (69.2%) in group B. Alcohol abuse and viral hepatitis were the most common causes among all cases. Diabetes mellitus, hypertension and pulmonary disease were the most common comorbidities. Significantly higher hospital stay was fund in group A 40.1±7.42 days as compared to group B 17.12±2.47 days with p value <0.005. We found mortality rate in cirrhosis group was higher 24 (36.9%) as compared to non-cirrhotic group 8 (12.3%).

Conclusion: We concluded that patients of Covid-19 with liver disease had higher rate of mortality with excess number of comorbidities as compared to the non-cirrhotic Covid-19 patients.

Keywords: Cirrhosis, Covid-19, Adverse Outcomes

INTRODUCTION

Many nations have been overrun by the recent pandemic of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)–related coronavirus disease 2019 (COVID-19), which has resulted in a substantial number of patients being hospitalised to critical care. Currently, there is no authorised therapy for this illness. If you've got liver disease, you're going to become sick and die a lot more often than you would if you weren't. [1-3] Patients with cirrhosis and those who have had a liver transplant have an increased mortality risk. Patients with decompensated cirrhosis have a greater risk of death than those with normal cirrhosis. [5,6] When COVID-19 was implemented, the number of liver transplant procedures decreased significantly, resulting in a higher death rate for patients who were on the waiting list.

Several risk factors for COVID-19 mortality have been found via observational research. Hypertension, diabetes, and chronic liver disease each had a 95 percent confidence interval (CI) of 1.8, 1.5, and 1.6, respectively, in a meta-analysis that included 38 906 participants (CLD). Using data from 51 225 people, another meta-analysis found a pooled odds ratio of 1.09 for obesity (95 percent CI: 0.84 to 1.41), 2.98 for cardiovascular disease, 2.61 for hypertension, 2.12 for diabetes, and 1.80 for CLD (95 percent CI: 1.35 to 2.39). [7]

COVID-19's prognosis has been investigated in several research, although CLD comprises a wide range of individuals with different underlying causes and levels of liver fibrosis/dysfunction. Non-alcoholic fatty liver disease (NAFLD) and obesity/diabetes, both of which are linked to an elevated death rate in COVID-19, have a significant incidence of etiological factors. [8] The last stage of CLD is cirrhosis. Cirrhosis is associated with a bad prognosis when individuals get infected. A death rate of 38% was found in a meta-analysis of studies looking at the clinical outcomes of individuals with cirrhosis and any infection. [9] Cirrhosis-related immunological dysfunction and an altered gut microbiota have been linked to this. [10,11]

In patients with COVID-19, understanding the effect of concurrent cirrhosis is critical for a variety of reasons, including: Decisions on how to allocate resources, the escalation of medical intervention or the state of the patient's life support might be guided by this information from a clinical standpoint. Vaccination prioritisation and shielding, for example, might assist define healthcare policy from a public health standpoint. When there are few resources, this is even more critical. The epidemic has resulted in a dramatic decrease in face-to-face hepatology consults for outpatients. Routine blood and imaging screenings in the hospital may expose patients to COVID-19, but the dangers of postponing these procedures must be considered.

Direct antiviral and immunomodulatory medicines are being tested in randomised clinical studies to combat SARS-CoV-2.[12,13] It is a top clinical goal to figure out whether patients need early or new therapy approaches. In addition, vaccine research for SARS-CoV-2 has advanced at an unprecedented pace, with the top candidates all reporting highly positive safety and effectiveness results from phase III studies. In light of the upcoming, unprecedented worldwide demand for vaccine deployment,

it is critical to identify which patients are more at risk of negative COVID-19 outcomes in order to better guide vaccination programmes on who should be given first priority. [14,15]

Those who suffer from chronic liver disease such as cirrhosis are the focus of this study.

MATERIAL AND METHODS

This comparative/observational study was conducted at King Salman Armed Forces Hospital Tabuk, Saudia Arabia/ Rashid Latif Medical College Lahore and comprised of 130 patients. Demographically details were recorded after taking informed written consent. Our researchers didn't include patients under the age of 18, those with heart or renal illness, or those who refused to participate.

Study participants might be either male or female, 18 to 85 years of age, with or without a history of chronic liver disease. Regardless of the presence or absence of cirrhosis, the reporting doctor defined CLD as the stage of liver disease at which the illness had advanced. Cirrhotic patients with low haemoglobin levels were categorised by the reporting clinician into Child-Pugh classes. For the purposes of this study, the terms "CLD without cirrhosis," cirrhosis, "total CLD cohort," and "persons without liver disease" will be used interchangeably (non-CLD). Obesity was defined as having a body mass index (BMI) more than 30 kg/m2; in the absence of BMI data, obesity was assumed to be nonexistent. Analyzing the data, only White persons (the most common categorization) were considered. This assumption was made in circumstances when the ethnicity of non-CLD group members could not be confirmed.

It became out that there were two different groups of patients. Group A (which included 65 patients with cirrhosis) and Group B (which included 65 individuals without cirrhosis). Comorbidities among both groups were also assessed. Comparing the death rates of the two groups was done. For all of the data analysis, the SPSS 23.0 was employed.

RESULTS

The mean age of the patients in group I was 40.01±1.35 years and in group II mean age were 39.11±6.32 years. Males were the most common patients among both groups 42 (64.6%) in group A and 45 (69.2%) in group B. Alcohol abuse and viral hepatitis were the most common causes among all cases.(table 1)

Table 1: At the time of enrolment, the demographics of the cases

Variables	Cirrhotic	Non-Cirrhotic
Mean age (years)	40.01±1.35	39.11±6.32
Gender		
Male	42 (64.6%)	45 (69.2%)
Female	23 (35.4%)	20 (30.8%)
Cause of Liver Disease		
Alcohol abuse	23 (35.4%)	3 (4.6%)
Hepatitis (A and B)	22 (33.8%)	2 (3.1%)
Fat accumulating	20 (30.8%)	2 (3.1%)

Diabetes mellitus, hypertension and pulmonary disease were the most common comorbidities among both groups.(table 2)

Table 2: Association of comorbidities among both groups

Variables	Cirrhotic	Non-Cirrhotic
Comorbidities		
DM	32 (49.2%)	30 (46.2%)
HTN	25 (38.5%)	20 (30.8%)
PD	8 (12.3%)	15 (23.1%)

Our research found that individuals with cirrhosis stayed in the hospital longer than those without cirrhosis. As part of our research, we found that patients with liver disease had a greater mortality rate than those without it (36.9% vs12.3%), and this difference was shown to be statistically significant (p=0.0003).(table 3)

Table 3: Hospitalization and death rates for both groups are compared.

Variables	Cirrhotic	Non-Cirrhotic
Mean Hospitalization (days)	40.1±7.42	17.12±2.47
Mortality		
Yes	24 (36.9%)	8 (12.3%)
No	41 (63.1%)	57 (86.7)

We found that majority of the cases had severity of covid-19 disease among died patients.(table 3)

Table 3: Comparison of severity of Covid-19 among died cases

Variables	Cirrhotic (24)	Non-Cirrhotic (8)
Covid-19		
Severe	22 (91.7%)	7 (87.5%)
Non-severe	2 (8.3%)	1 (12.5%)
Mortality	24	8

DISCUSSION

The COVID-19 epidemic has changed human behaviour beyond recognition, which is understandable. A patient's liver health may be harmed by certain behaviours, such as alcohol use, dietary and physical activity habits, and contacts with medical professionals. During instances of social isolation, the pandemic has been shown to have a considerable rise in alcohol intake. Alcohol hoarding cost an extra £160 million in the weeks preceding up to Britain's first nationwide 'lockdown,' according to government figures. [16,17] According to UK consumer statistics, there has been a significant rise in the amount of alcohol purchased by everyone except the lowest members of society.[18]

This comparative study comprised of one hundred and thirty patients with coronavirus disease. In our study sixty five patients were cirrhotic and other 65 were non cirrhotic with Covid-19. The mean age of the patients in group I was 40.01±1.35 years and in group II mean age were 39.11±6.32 years. Males were the most common patients among both groups 42 (64.6%) in group A and 45 (69.2%) in group B. Findings of our research showed resemblance to the studies conducted in past.[19,20] Hypertension, diabetes and pulmonary illness accounted for the majority of comorbid conditions in both groups of patients. Hypertension, diabetes, COPD, cardiovascular disease, and cerebrovascular disease were found to be the most significant risk factors for the severity of COVID-19 patients in a meta-analysis by Bolin Wang et al., while liver disease, malignant tumour, and kidney disease had no effect on the severity of the disease [21]. In older patients, high levels of serum LDH, C-reactive protein, the coefficient

of variation in red cell distribution width, blood urea nitrogen, and direct bilirubin were linked to severe COVID-19 infection (AUC 0.912; 95% CI 0.846–0.978); sensitivity was 85.71% and specificity was 87.58%, according to Gong's model [22]. As for Huang, this is also true. [23]

Our research found that individuals with cirrhosis stayed in the hospital longer than those without cirrhosis. As part of our research, we found that patients with liver disease had a greater mortality rate than those without it (36.9% vs12.3%), and this difference was shown to be statistically significant (p=0.0003).Comparable to the previous study.[24] We found that majority of the cases had severity of covid-19 disease among died patients. Patients with early COVID-19 (range 9–39 days) following LT were studied by Waisberg et al. Two of the patients died as a result of their serious illnesses. There were some significant discrepancies between this series and the series by Massoumi et al. More comorbidities, older patients, and COVID-19 diagnosis were all factors that contributed to a higher mortality rate.[25] The outcomes of 3207 patients with concurrent cirrhosis from the French National Hospital Discharge database have been published by Mallet et al in COVID-19 hospitalised by Mallet et al. A mortality OR of 1.73 (1.59–1.88) was found when comparing cirrhotic patients to non-cirrhotic patients, which is consistent with our results. Cirrhosis severity should be taken into account when prognosticating the prognosis of patients with cirrhosis, according to the adjusted OR for 30-day mortality in compensated and decompensated cirrhosis, respectively. [26] Mendizabal et al. have released an updated version of their COVID-19 research, which was previously included in our systematic review. For patients with cirrhosis, an adjusted OR of 3.1 (1.9–4.8) was presented in this update. [27]

CONCLUSION

We concluded that patients of Covid-19 with liver disease had higher rate of mortality with excess number of comorbidities as compared to the non-cirrhotic Covid-19 patients.

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