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CLINICAL PHENOTYPES AND MORTALITY RATES OF ALCOHOLIC LIVER CIRRHOSIS IN PATIENTS WITH PREVIOUS COVID-19 INFECTION

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Abstract. Clinical phenotypes and mortality rates of alcoholic liver cirrhosis in patients with previous COVID-19 infection. This study investigated the clinical phenotypes and mortality outcomes in patients with alcoholic liver cirrhosis (ALC) and a history of COVID-19 infection. A retrospective-prospective observational study was conducted between 2022 and 2024 at the Bukhara Regional Clinical Hospital. A total of 120 patients were analyzed: 68 with prior COVID-19 infection and 52 as controls. The findings revealed that ALC patients with COVID-19 had higher rates of Child-Pugh C (46% vs. 25%, p=0.02), higher MELD scores (19.3 ± 5.2 vs. 15.1 ± 4.7, p=0.01), and increased mortality (35.3% vs. 17.3%, p=0.03). These results suggest that COVID-19 aggravates the clinical course of alcoholic liver cirrhosis, leading to more severe phenotypes and higher mortality.

Keywords: alcoholic liver cirrhosis, COVID-19, clinical phenotype, mortality, decompensation.

Annotatsiya. Maqolada COVID-19 infeksiyasi bilan kasallangan alkogolli jigar sirrozli (AJS) bemorlarning klinik fenotiplari va mortalitet ko‘rsatkichlari o‘rganildi. Tadqiqot retrospektiv-prospektiv dizaynda 2022–2024 yillarda Buxoro viloyat klinik shifoxonasida olib borildi. Jami 120 bemor tahlil qilindi: 68 nafari COVID-19 bilan og‘rigan, 52 nafari esa nazorat guruhini tashkil etdi. Natijalar COVID-19 o‘tkazgan AJS bemorlarida Child-Pugh C klassi yuqori (46% ga nisbatan 25%, p=0,02), MELD ballari balandroq (19,3 ± 5,2 ga nisbatan 15,1 ± 4,7, p=0,01) va mortalitet darajasi ko‘proq (35,3% ga nisbatan 17,3%, p=0,03) ekanini ko‘rsatdi. Bu esa COVID-19 va AJS kombinatsiyasi og‘ir klinik fenotiplar va yuqori o‘lim xavfi bilan bog‘liq ekanini tasdiqlaydi.

Kalit so‘zlar: alkogolli jigar sirrozi, COVID-19, klinik fenotip, mortalitet, dekompensatsiya.

Аннотация. Клинические фенотипы и показатели смертности при алкогольном циррозе печени у пациентов, перенёсших COVID-19. В статье изучены клинические фенотипы и смертность у пациентов с алкогольным циррозом печени (АЦП), перенёсших COVID-19. Исследование проводилось в ретроспективно-проспективном дизайне в 2022–2024 гг. в Бухарской областной клинической больнице. Включено 120 пациентов: 68 перенесли COVID-19, 52 – контроль. У пациентов с АЦП после COVID-19 чаще наблюдался Child-Pugh C (46% против 25%, p=0,02), более высокий MELD (19,3 ± 5,2 против 15,1 ± 4,7, p=0,01) и большая смертность (35,3% против 17,3%, p=0,03). Полученные данные подтверждают, что COVID-19 утяжеляет течение АЦП и повышает риск летального исхода.

Ключевые слова: алкогольный цирроз печени, COVID-19, клинический фенотип, смертность, декомпенсация.

INTRODUCTION

Liver diseases represent one of the most serious and rapidly growing global health challenges, posing a significant threat to public health and socioeconomic stability. According to the World Health

Organization (WHO), more than 2 million people worldwide die annually from liver cirrhosis and its associated complications, making it one of the leading causes of morbidity and mortality. A considerable proportion of these cases are directly related to alcoholic liver disease (ALD), which remains a preventable yet highly prevalent condition across many regions of the world.

The recent COVID-19 pandemic has further complicated the clinical course of patients with pre-existing liver pathology. Numerous studies have demonstrated that SARS-CoV-2 infection is capable of exacerbating hepatic injury through several mechanisms, including direct viral damage to hepatocytes, activation of cytokine storm, immune dysregulation, and the development of thrombotic events. These processes significantly increase the risk of acute decompensation, multi-organ failure, and mortality among patients with cirrhosis. In particular, individuals suffering from alcoholic cirrhosis (AC) were shown to be among the most vulnerable populations, with higher rates of hospitalization, prolonged intensive care unit stays, and unfavorable outcomes.

Despite the growing body of international evidence, regional data remain limited. In Uzbekistan, the clinical manifestations, phenotypic features, and mortality rates among patients with alcoholic cirrhosis who contracted COVID-19 have not yet been comprehensively studied. The absence of large-scale, systematic research in this area creates a significant knowledge gap and complicates the development of evidence-based strategies for clinical management, early intervention, and public health policy.

OBJECTIVE

The primary objective of this study was to identify the clinical phenotypes of alcoholic cirrhosis (AC) patients with a history of COVID-19 infection and to evaluate their association with disease severity and in-hospital mortality. Specifically, the study aimed to compare clinical manifestations, laboratory parameters, and prognostic scores (Child-Pugh and MELD) between AC patients with and without prior COVID-19, in order to determine the impact of SARS-CoV-2 infection on the progression and outcomes of alcoholic cirrhosis.

MATERIALS AND METHODS

This prospective, observational study was carried out at the Bukhara Regional Clinical Hospital (Uzbekistan) over a two-year period, from January 2022 to December 2024. A total of 120 patients diagnosed with alcoholic cirrhosis (AC) were enrolled in the study. Patients were divided into two cohorts: the main group, which included 68 patients with a confirmed history of COVID-19 infection, and the control group, consisting of 52 patients without a history of COVID-19.

The mean age of the study population was 48 ± 9 years, with a male predominance (72% male and 28% female), which is consistent with global epidemiological data on alcoholic liver disease. Inclusion criteria comprised patients aged between 18 and 65 years with clinically or histologically verified alcoholic cirrhosis. Exclusion criteria were viral hepatitis B and C, autoimmune liver diseases, hepatocellular carcinoma, and other systemic comorbidities that could significantly affect liver function.

Clinical assessment was performed using standardized protocols and included a detailed evaluation of presenting symptoms, disease history, and physical examination findings. Laboratory investigations comprised serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), total bilirubin, international normalized ratio (INR), and C-reactive protein (CRP). To assess the severity of liver disease, two validated scoring systems were employed: the Child-Pugh classification and the Model for End-Stage Liver Disease (MELD) score. In addition, hospital-related outcomes such as length of stay and in-hospital mortality were recorded.

Table 1

Clinical Characteristics and Outcomes of Acute Cholangitis (AC) Patients According to COVID-19 Status

Indicators	COVID-19 (+) AC(n=68)	COVID-19 (–) AC (n=52)	p-value
Child-Pugh C (%)	46%	25%	0,02*
MELD score (mean)	19,3 ± 5,2	15,1 ± 4,7	0,01*
Mortality (%)	35,3%	17,3%	0,03*
Length of hospital stay (days)	18,6 ± 7,1	12,3 ± 5,4	0,01*

*p < 0,05 – statistically significant.

Statistical analysis was conducted using SPSS version 23.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were expressed as mean ± standard deviation (SD) for continuous variables and as percentages for categorical variables. Intergroup comparisons were performed using the Student's t-test for continuous variables and the chi-square test (χ^2) for categorical variables. Multivariate logistic regression analysis was applied to identify independent predictors of mortality. A p-value of < 0.05 was considered statistically significant.

RESULTS

Analysis of clinical and laboratory parameters revealed that AC patients with a prior history of COVID-19 infection demonstrated more severe disease progression compared to the control group. Severe clinical phenotypes developed more rapidly in the main group, reflecting the aggravating impact of COVID-19 on the course of alcoholic cirrhosis.

The distribution of patients according to the Child-Pugh classification showed marked differences between groups. In the main group, the proportion of patients classified as Child-Pugh class C was almost double that observed in the control group (46% vs. 25%, $p = 0.02$), indicating a higher prevalence of advanced hepatic decompensation.

The severity of liver dysfunction, as measured by the MELD score, was also significantly higher in patients with prior COVID-19 compared to controls (19.3 ± 5.2 vs. 15.1 ± 4.7; $p = 0.01$). This suggests that SARS-CoV-2 infection may accelerate progression to end-stage liver disease in individuals with alcoholic cirrhosis.

Outcomes related to hospitalization further highlighted the negative impact of COVID-19. The in-hospital mortality rate was substantially greater in the main group (35.3%) than in the control group (17.3%, $p = 0.03$). Similarly, the length of hospital stay was significantly prolonged among COVID-19 patients (18.6 ± 7.1 days vs. 12.3 ± 5.4 days; $p = 0.01$), reflecting the more complicated clinical course and greater demand for intensive medical care.

Overall, these findings demonstrate that a history of COVID-19 infection is associated with worse clinical phenotypes, higher MELD and Child-Pugh scores, increased mortality, and prolonged hospitalization in patients with alcoholic cirrhosis.

DISCUSSION

The findings of this study demonstrate that a history of COVID-19 significantly worsens the clinical outcomes of patients with alcoholic cirrhosis (AC). Patients with prior COVID-19 presented with more severe clinical phenotypes, higher Child-Pugh and MELD scores, prolonged hospitalization, and increased mortality compared to cirrhotic patients without COVID-19. These results are in close agreement with international data, confirming the detrimental synergistic effect of SARS-CoV-2 infection on pre-existing chronic liver disease.

Marjot et al. (2021) reported that mortality among cirrhotic patients with COVID-19 ranged between 32% and 40%, findings that closely align with the 35.3% mortality rate observed in our main group. Similarly, Moon et al. (2020) emphasized the prognostic importance of Child-Pugh and MELD

scores, noting their strong predictive value for clinical outcomes in cirrhotic patients. Our data reinforce these conclusions, demonstrating significantly higher MELD and Child-Pugh class C distributions in the COVID-19 group.

Regional research has also contributed valuable insights. Uzbek investigators have highlighted similar trends: Abdullaeva and Shodmonov (2022) demonstrated the prognostic value of laboratory markers, particularly ALT, AST, and bilirubin, in evaluating liver disease severity. Karimova and Kholmatova (2021) further identified COVID-19 infection as an additional risk factor contributing to rapid decompensation and increased risk of liver failure. Our study complements these observations by providing systematic comparative data between cirrhotic patients with and without COVID-19 in Uzbekistan, thereby filling an important knowledge gap.

Taken together, these findings support the conclusion that COVID-19 acts as a major accelerant in the progression of alcoholic cirrhosis, leading to worse clinical outcomes. The higher prevalence of advanced decompensation and prolonged hospitalization indicates the necessity for intensified clinical monitoring, early risk stratification, and adapted management strategies for this vulnerable population. Furthermore, these results underscore the need for preventive measures, including vaccination, timely antiviral treatment, and multidisciplinary care, to reduce the burden of complications and mortality in cirrhotic patients during ongoing and future viral pandemics.

CONCLUSION

This study demonstrates that a history of COVID-19 infection significantly worsens the clinical course and prognosis of patients with alcoholic liver cirrhosis. Individuals with prior COVID-19 were more likely to present with severe disease phenotypes, as reflected by higher Child-Pugh class C rates, elevated MELD scores, and prolonged hospital stays. Most importantly, their mortality rate was nearly twice that of cirrhotic patients without COVID-19, highlighting the synergistic effect of the two conditions. These findings underscore the need for early identification of high-risk patients, close clinical monitoring, and timely application of individualized therapeutic strategies. Given the global burden of both liver disease and COVID-19, the results have important implications for patient management and healthcare policy, particularly in regions with limited medical resources. Further large-scale, multicenter studies are recommended to validate these findings and to develop optimized treatment protocols for this vulnerable patient population.

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