BIOMEDICINSKA ISTRAŽIVANJA
2021;12(2):170–174

UDK: 616.36-004:616-036.8
DOI: 10.5937/BII2102170B

Original article

CLIF-C AD score versus MELD score in predicting mortality in alcoholic liver cirrhosis patients

Goran Bokan[1],
Zoran Mavija[1,2]

[1]University Clinical Center of the Republic of Srpska, Department of Gastroenterology and Hepatology, Banja Luka, The Republic of Srpska, Bosnia and Herzegovina

[2]University of Banja Luka, Faculty of Medicine, Banja Luka, The Republic of Srpska, Bosnia and Herzegovina

Primljen – Received: 30/08/2021
Prihvaćen – Accepted: 13/12/2021

Corresponding author:
Goran Bokan, MD
Stepe Stepanovića 82b,
78 000 Banja Luka
bokan.goran@yahoo.com

Summary

Introduction. Alcoholic liver cirrhosis is an advanced stage of progressive liver failure with an often adverse outcome. Numerous scoring systems are used to predict outcomes. The results of MELD Score (Model For End-Stage Liver Disease) and CLIF Consortium Acute Decompensation score (CLIF-C ADs) were used in this paper to determine which one is more reliable in predicting mortality.

Methods. The value of CLIF-C AD and MELD scores using online calculator at the time of hospitalization was calculated. Follow-up has also started during hospitalization and control examinations in the next 3 months.

Results. This study included 145 patients of both genders, diagnosed with alcoholic liver cirrhosis. During the first 3 months from the moment of the calculation of the score, 39 patients (32 male and 7 female patients) passed away, which represents 82.1% versus 17.9%. The mean age of patients was 59.18 ± 9.19 years. All CLIF-C AD scores of 99 and above had a 100% probability of death in the first 3 months.

Conclusion. The CLIF-C AD score proved to be more reliable than the MELD score in predicting mortality in patients with alcoholic liver cirrhosis in the first 3 months.

Keywords: CLIF-C AD score, MELD score, alcoholic liver cirrhosis

Introduction

Generally, liver cirrhosis is a common disease caused by numerous etiological agents, individually or synergistically [1]. In the Balkans, given the habits of the population, the most common etiological agent is a long-term consumption of alcohol, which inevitably leads to the liver damage and progresses to liver cirrhosis [2]. If supportive measures or liver transplants are not applied, cirrhosis of the liver usually ends fatally [3].

In order to predict the severity of cirrhosis of the liver, the numbers of scoring systems that we use for monitoring were created [4]. MELD and CLIF-C AD scoring systems were used in

this paper. These are online calculators, where the known values were entered into a mathematical formula, calculating the probability of death within 3 months. Clinicians use both of the scores in predicting mortality in everyday practice with very similar confidence [5, 6].

Data on patient dialysis, at least twice in the last 7 days, creatinine, bilirubin, INR and sodium values were used to calculate the MELD score [7]. Age, sodium, creatinine, leukocyte and INR were used for the calculation of CLIF-C ADs [8].

The aim of this study was to determine whether CLIF-C AD score or MELD score were more confident in prediction of mortality within 3 months after the diagnosis of alcoholic liver cirrhosis was confirmed.

Methods

Patients have been hospitalized at the University Clinical Center of the Republic of Srpska for the last 3 years (from January 1, 2018 to January 1, 2021). This study included 145 patients of both genders, diagnosed with alcoholic liver cirrhosis. Medical history data from the clinical information system and discharge letters of patients were analyzed. The value of CLIF-C AD and MELD scores using an online calculator (mathematical formula) at the time of hospitalization was calculated. Follow-up has also started during hospitalization and control examinations for the next 3 months. The obtained results were analyzed in the SPSS program.

Results

In the mentioned period, out of 145 patients, in the first 3 months from the moment of the calculation of the score, 39 patients (32 male and 7 female patients) passed away which represents 82.1% versus 17.9% and 26.89% of mortality. The mean age of patients was 59.18 ± 9.19 years.

The lowest value of MELD score is 11, which represents a 6% probability of death in the first 3 months, while the highest value is 40, and represents 81.30% probability of death in the first 3 months.

The lowest value of CLIF-C AD was 39, which represents a 67% probability of death. The highest value of CLIF-C AD was 127, which represents a 100% probability of death within 3 months (Table 1).

Table 1. Alcoholic liver cirrhosis patients' characteristics

Characteristics	Count (N)	Percent (%)
Number of patients	39	100.00
Mean age	59.18 ± 9.19	
Gender		
Male	32	82.10
Female	7	17.90

SCORE

MELD	Values	probability of dying within 3 months
Minimum	11	6.00%
Maximum	40	81.30%

CLIF-C AD	Values	probability of dying within 3 months
Minimum	67	39.00%
Maximum	127	100.00%

Note, all values of CLIF-C AD score of 99 and above have a 100% probability of death in the first 3 months.

Linear regression analysis of the dependent variable mortality and independent variables of MELD and CLIF-C AD scores showed statistical significance in the prediction of early mortality in favor of the CLIF-C AD score ($p = 0.026$).

Discussion

Alcoholic liver cirrhosis as a dominant etiological agent of progressive liver failure in the Balkans is a special challenge for the health system. Treatment of patients is expensive, and liver transplantation is still very difficult to be achieved [2]. Given the habits of the inhabitants, we are talking about the predominance of male patients. The mean age of deceased patients was 59.18 years. The mean age of the patients in Bhattarai et al. [9] was 54 years, while in Bell et al. [10] was 58 years, and Sugimura et al. [11] was about 60 years. The mentioned authors also noted the predominance of the male in relation to the female patients.

The main goal of the liver cirrhosis treatment, if transplantation is unattainable, is symptomatic-supportive therapy [3]. In order to monitor the success of the therapy and the prognostic significance, corrected if necessary, numerous scoring systems were created. MELD and CLIF-C AD scores were used in this paper [5,6]. The essence is in the fact that these are online scoring systems, calculators, each of them uses 5 parameters, which we entered into a mathematical formula and thanks to it you get a value expressed in numbers, i.e. the percentage that is the probability of death within 3 months.

Retrospective analysis of discharge letters and the remaining necessary documentation in the clinical information system extracted the necessary parameter data at the time of hospitalization and calculated the score value. The mentioned patients were followed for the next 3 months and the reliability of one in relation to the other score was analyzed.

In our study, the statistical significance and much higher reliability of the CLIF-C AD score in relation to the MELD score were noted. Jalan et al. suggested that CLIF-C AD score is more accurate in predicting prognosis for 225 cirrhotic patients in their study [8] and Baldin et al. [12] confirmed the same statement for 266 patients with alcoholic liver cirrhosis reminding that high CLIF-C AD score is associated with higher organ dysfunction and increased short-term mortality. Perdigoto et al. noted that MELD score performed better for 3 months mortality prediction. In their study, 118 patients were enrolled, while 39 patients had higher 28-day and 90-day mortality suggested that CLIF-C AD revealed good accuracy when ACLIF is present, however MELD score performed better for 90-day mortality prediction [13].

Conclusion

The CLIF-C AD score proved to be more reliable than the MELD score in predicting mortality in patients with alcoholic liver cirrhosis in the first 3 months.

Funding source. The authors received no specific funding for this work.

Ethical approval. The Ethics Committee of the University Clinical Center of the Republic of Srpska approved the study and informed consent was obtained from all individual respondents. The research was conducted according to the Declaration of Helsinki.

Conflicts of interest. The authors declare no conflict of interest.

References:

1. Addolorato G, Abenavoli L, Dallio M, Federico A, Federico A, Germani G, et al. Alcohol associated liver disease 2020: A clinical practice guideline by the Italian Association for the Study of the Liver (AISF). Dig Liver Dis 2020;52(4):374–91.
2. Shah ND, Ventura-Cots M, Abraldes JG, Alboraie M, Alfadhli A, Argemi J, et al. Alcohol-Related Liver Disease Is Rarely Detected at Early Stages Compared With Liver Diseases of Other Etiologies Worldwide. Clin Gastroenterol Hepatol 2019;17(11):2320–9.
3. Anantharaju A, Van Thiel DH. Liver transplantation for alcoholic liver disease. Alcohol Res Health 2003; 27 (3):257–68.
4. Lee DH, Son JH, Kim TW. [New scoring systems for severity outcome of liver cirrhosis and hepatocellular carcinoma: current issues concerning the Child-Turcotte-Pugh score and the Model of End-Stage Liver Disease (MELD) score]. Taehan Kan Hakhoe Chi 2003;9(3):167–79.
5. Saab S, Landaverde C, Ibrahim AB, Durazo F, Han S, Yersiz H, et al. The MELD score in advanced liver disease: association with clinical portal hypertension and mortality. Exp Clin Transplant 2006;4(1):395–9.
6. Slyvka N, Virstyuk N, Abdelrahman F. VALIDATION OF CLIF-C-ACLF SCORE FOR ALCOHOLIC LIVER CIRRHOSIS. Georgian Med News 2018;(278):98–103.
7. Kamath PS, Kim WR, Advanced Liver Disease Study Group. The model for end-stage liver disease (MELD). Hepatology 2007;45(3):797–805.
8. Jalan R, Pavesi M, Saliba F, Amorós A, Fernandez J, Holland-Fischer P, et al. CANONIC Study Investigators; EASL-CLIF Consortium. The CLIF Consortium Acute Decompensation score (CLIF-C ADs) for prognosis of hospitalised cirrhotic patients without acute-on-chronic liver failure. J Hepatol 2015;62(4):831–40.
9. Bhattarai S, Gyawali M, Dewan KR, Shrestha G. Demographic and Clinical Profile in Patients with Liver Cirrhosis in a Tertiary Care Hospital in Central Nepal. JNMA J Nepal Med Assoc 2017;56(208):401–6.
10. Bell H, Jahnsen J, Kittang E, Raknerud N, Sandvik L. Long-term prognosis of patients with alcoholic liver cirrhosis: a 15-year follow-up study of 100 Norwegian patients admitted to one unit. Scand J Gastroenterol 2004;39(9):858–63.
11. Sugimura T, Sakai H, Nawata H, Sakamoto M, Akazawa K, Nose Y. Etiology and prognosis of liver cirrhosis in elderly patients. Fukuoka Igaku Zasshi 1995;86(11):411–6.
12. Baldin C, Piedade J, Guimarães L, Victor L, Duarte J, Veiga Z, et al. CLIF-C AD Score Predicts Development of Acute Decompensations and Survival in Hospitalized Cirrhotic Patients. Dig Dis Sci 2021;66(12):4525–35.
13. Perdigoto DN, Figueiredo P, Tomé L. The Role of the CLIF-C OF and the 2016 MELD in Prognosis of Cirrhosis with and without Acute-on-Chronic Liver Failure. Ann Hepatol 2019;18(1):48–57.

CLIF-C AD skor u odnosu na MELD skor u predviđanju mortaliteta kod pacijenata sa alkoholnom cirozom jetre

Goran Bokan[1], Zoran Mavija[1, 2]

[1]Univerzitetski klinički centar Republike Srpske, Odjeljenje za gastroenterologiju i hepatologiju, Banja Luka, Republika Srpska, Bosna i Hercegovina

[2]Univerzitet u Banjoj Luci, Medicinski fakultet, Banja Luka, Republika Srpska, Bosna i Hercegovina

Uvod. Alkoholna ciroza jetre je uznapredovali stadijum progresivne jetrene insuficijencije sa često nepovoljnim ishodom. Za predviđanje ishoda koriste se brojni sistemi bodovanja od kojih su u ovom radu korišćeni rezultati MELD skora (Model For End-Stage Liver Disease) i CLIF Consortium Acute Decompensation skora (CLIF-C ADs) sa ciljem da se utvrdi koji je pouzdaniji u predviđanju ranog mortaliteta.

Metode. Izračunata je vrijednost CLIF-C AD i MELD skora korišćenjem onlajn kalkulatora prilikom prve hospitalizacije. Praćenje je takođe uslijedilo tokom hospitalizacije i kontrolnih pregleda u naredna 3 mjeseca.

Rezultati. Ovim istraživanjem obuhvaćeno je 145 pacijenata, oba pola, sa dijagnozom alkoholne ciroze jetre. Tokom prva 3 mjeseca od momenta izračunavanja inicijalnog skora, preminulo je 39 pacijenata (32 muškog i 7 ženskog pola), što predstavlja 82,1% prema 17,9%. Prosječna starost pacijenata bila je 59,18 ± 9,19 godina. Sve vrijednosti CLIF-C AD skora 99 i više imale su 100% vjerovatnoću smrtnog ishoda u prva 3 mjeseca.

Zaključak. Pokazalo se da je CLIF-C AD skor pouzdaniji od MELD skora u predviđanju mortaliteta kod pacijenata sa alkoholnom cirozom jetre u prva 3 mjeseca.

Ključne riječi: CLIF-C AD skor, MELD skor, alkoholna ciroza jetre