Alcohol-associated hepatitis (AH) represents one of the most relevant types of alcohol-related liver disease.\textsuperscript{1} It has a wide clinical spectrum ranging from nonsevere forms, which often improve rapidly with alcohol abstinence and do not require specific treatment, to severe forms associated with high mortality that require aggressive intervention.

In the past decades, advances in the treatment of severe AH have been scarce. Recommendations of international guidelines have not changed and are still based on corticosteroid therapy if no contraindications are present.\textsuperscript{2} This treatment is not without adverse events, and importantly, it is not associated with a significant benefit on midterm or long-term survival. The most remarkable advance in the treatment of AH has come from the surgical perspective, with early liver transplant being currently considered an effective therapy for severe AH. This new indication has stimulated the development of programs of transplant for selected patients with AH and poor short-term prognosis that have dramatically changed the natural history of the disease and prognosis in a selected subset of patients.\textsuperscript{3} However, liver transplant is not available everywhere and applies to only a small proportion of patients. Although there are many recent and ongoing studies applying new therapeutic approaches, such as fecal microbiota transplant, immunologic treatments, and liver support systems,\textsuperscript{4-6} some of them with promising results, most patients currently remain without an effective treatment to improve their long-term prognosis and to modify the poor natural history of the disease. There is still therefore a vast field for investigation on the pathogenesis of AH to guide new forms of therapy.

Prognostic scores are of vital importance in this scenario because their first function is to classify patients into these 2 large clinical groups of nonsevere or severe AH, which require different management and have markedly different prognosis. These scores are required to decide which patients are candidates for interventions, such as corticosteroids or liver transplant, and which patients do not require these therapies. Moreover, clinical scores for AH have the objective of providing a refined prediction of prognosis of patients, which is of great usefulness to guide clinical decisions and investigational studies.

Since the appearance of the Maddrey Discriminant Function for classification of severity of AH and selection of candidates to corticosteroid therapy in 1978,\textsuperscript{7} different clinical scores used for classification of severity of liver cirrhosis in general or specifically for AH have been proposed. These scores include the Model for End-Stage Liver Disease (MELD); the age, serum bilirubin, international normalized ratio, and serum creatinine (ABIC) score; and the Glasgow Alcoholic Hepatitis Score (GAHS). They are based on the combination of clinical and laboratory variables, mainly related to liver or kidney function. Despite the development of these new scores, small progress has been made in terms of improving the classification of prognosis of patients with AH, and to date it seems that only the MELD score has slightly improved the prognostic accuracy of the Maddrey Discriminant Function, which was reported more than 4 decades ago.\textsuperscript{8,9} Currently, the development of accurate scores for classification of patients with AH remains an unmet need for a better understanding of the disease, a more adequate criterion for indication of medical or surgical treatment, and a better prognostication.
In this setting, the study by Kezer et al\textsuperscript{10} proposes a new clinical score, the Mortality Index for Alcohol-Associated Hepatitis (MIAAH), for classification of severity of AH. The MIAAH showed better accuracy compared with the MELD score in the derivation cohort, which is a significant milestone. In fact, the MIAAH score showed a remarkably high accuracy with a C statistic of 0.86, which is an excellent value for a clinical score. However, when the MIAAH score was tested in the validation cohort, the advantage compared with the MELD score was lost and its accuracy was reduced. This could be related to different characteristics between the derivation and validation cohorts and heterogeneity of patients included in both cohorts, some inherent limitations of the score.\textsuperscript{10}

The MIAAH score is composed of 5 variables—age, bilirubin, international normalized ratio, blood urea nitrogen (BUN), and albumin—which are important biomarkers of chronologic age and liver and kidney functional status. Other existing scores of AH also include age and biomarkers of liver and kidney function. However, there are 2 important variables included in the MIAAH score that are not present in other scores: BUN and albumin. This difference may account, at least in part, for the better predictive accuracy of MIAAH compared with other scores in the derivation cohort. The assessment of kidney function in patients with liver diseases in clinical practice is generally made with serum creatinine concentration. Moreover, serum creatinine concentration is included in major prognostic scores of cirrhosis, such as the MELD score, and is the biomarker used for diagnosis of acute kidney injury.\textsuperscript{11} For this reason, such scoring systems incorporate the serum creatinine concentration rather than other biomarkers of kidney function, such as BUN level. Interestingly, however, some reports that have analyzed both BUN level and serum creatinine concentration for prognostic assessment in patients with cirrhosis have shown that BUN level has better prognostic accuracy than serum creatinine concentration.\textsuperscript{12-14} The results of the study by Kezer et al suggest that this appears to be true also for patients with AH. Of note, an increase in BUN level of only 1 mg/dL was associated with an increased risk of death of 2.3%, indicating the existence of a strong association between BUN levels and prognosis.

The second variable unique to the MIAAH score is serum albumin. Serum albumin is an excellent biomarker of liver function in liver diseases. Albumin is exclusively synthesized in the hepatocytes, and therefore serum albumin levels represent a good sensor of hepatocyte function. In spite of this, incorporation of albumin level in prognostic scores in liver diseases is rare, barring the important exception of the Child-Pugh score.\textsuperscript{11} It should be cautioned, however, that serum albumin levels can be markedly influenced by the administration of albumin infusions, which is common in patients hospitalized for complications of liver diseases, including those with AH. Therefore, considering that in the study of Kezer et al\textsuperscript{10} a rise in serum albumin concentration of 1 g/L decreased the risk of death by 7.0%, the increase in serum albumin concentration related to albumin administration may result in a marked interference with the prognostic accuracy of the newly developed score. Accordingly, use of the MIAAH score in clinical practice should be restricted to prognostic evaluation of patients with AH at the time of hospital admission, before patients have received albumin infusions, whereas caution should be taken in interpreting the results of this score in patients during hospitalization, specifically in those who have received albumin.

Another important aspect of this study that deserves a comment is the methodology used to develop this new clinical score. Variables were combined by using multivariate logistic regression, which is the most frequently used procedure for this type of study to date. However, machine learning processes, which combine multiple variables following mathematical formulas to optimize the predictive capacity of a specific model, appear to be a promising tool for development of future clinical scores in clinical hepatology and specifically for AH.

In summary, the new MIAAH score shows a modest but not negligible
improvement of the prognostic accuracy compared with existing clinical scores for classification of patients with AH, and it represents a further step forward in the field. Advances like this are needed for better understanding of AH, better selection and classification of patients, more adequate distribution of treatments and resources, and finally, better management of patients with AH. Future clinical scores should consider the inclusion of a new generation of variables or biomarkers and use of new tools such as machine learning to improve AH prognostication and patient classification.

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