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ORIGINAL ARTICLE

Malnutrition is related to a higher frequency of serious complications in patients with cirrhosis

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KEYWORDS
Cirrhosis;
Malnutrition;
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Decompensation

Abstract
Introduction: Patients with cirrhosis are at risk of malnutrition and this has been recognized as a predictor of morbidity and mortality. The aim of this study was to compare the frequency of serious complications (variceal bleeding, ascites, hepatic encephalopathy and infections) between cirrhotic patients with and without malnutrition.
Subjects and methods: An observational, analytic, cross-sectional study. The nutritional status of cirrhotic patients was evaluated according to Subjective Global Assessment (SGA). Characteristics of cirrhotic patients with and without malnutrition were compared.
Results: 103 cirrhotic patients were included, 58 (56.3%) were women; the media of age was 55 ± 12.2 years. According to SGA, 45 patients (43.7%) were classified as well-nourished, and 58 (56.3%) as malnourished. The development of serious complications was related to nutritional status. Malnourished patients had higher frequency of development of ascites (67.2% vs. 42.2%, $P = 0.01$, OR = 2.8; 95% CI: 1.3–6.3) and infections (21.4% vs. 6.7%, $P = 0.03$, OR = 4.5; 95% CI: 1.2–16.6).
Conclusions: The presence of serious complications, such as, ascites and development of bacterial and fungal infections, was more frequent between cirrhotic patients with malnutrition than in those well-nourished.

Abbreviations: BMI, body mass index; CLD, chronic liver disease; ESPEN, European Society for Clinical Nutrition and Metabolism; HE, hepatic encephalopathy; IMAMC, ideal mid-arm muscle circumference; MAC, mid-arm circumference; SD, standard deviation; SGA, Subjective Global Assessment; TST, triceps skinfold thickness; UTI, urinary tract infection; VB, variceal bleeding; WHO, World Health Organization.

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PALABRAS CLAVE
Cirrosis;
Malnutrición;
Ascitis;
Infecciones;
Complicaciones;
Descompensación

La malnutrición está relacionada a mayor frecuencia de complicaciones serias en pacientes con cirrosis

Resumen
Introducción: Los pacientes con cirrosis están en riesgo de malnutrición, y esta ha sido reconocida como un predictor de morbi-mortalidad. El objetivo de este estudio fue comparar la frecuencia de complicaciones serias (hemorragia variceal, ascitis, encefalopatía hepática e infecciones) entre pacientes cirróticos con y sin malnutrición.
Sujetos y Métodos: Estudio observacional, analítico y transversal. El estado nutricional de los pacientes cirróticos fue evaluado de acuerdo con la Evaluación Global Subjetiva (EGS). Se compararon las características de los pacientes cirróticos con y sin malnutrición.
Resultados: 103 pacientes cirróticos fueron incluidos, 58 (56.3%) fueron mujeres, la media de edad fue de 55 ± 12.2 años. De acuerdo con la EGS, 45 pacientes (43.7%) se clasificaron como bien nutridos, y 58 (56.3%) como malnutridos. El desarrollo de complicaciones serias estuvo relacionado al estado nutricional. Los pacientes malnutridos tuvieron mayor frecuencia en cuanto al desarrollo de ascitis (67.2% vs. 42.2%, $P = 0.01$, RM = 2.8; IC al 95% 1.3 a 6.3) e infecciones (21.4 vs. 6.7%, $P = 0.03$, RM = 4.5; IC al 95% 1.2 a 16.6).
Conclusiones: La presencia de complicaciones serias, como, ascitis y desarrollo de infecciones bacterianas y fúngicas fueron más frecuentes en aquellos pacientes malnutridos en comparación con los pacientes bien nutridos.

Introduction

According to the first-ever World Health Organization (WHO) study of liver disease mortality, total deaths worldwide from cirrhosis and liver cancer rose by 50 million per year over 2 decades; therefore, this is a substantial contributor to global mortality.[1]

Compared with the general population, patients with compensated cirrhosis have a near 5-fold increased risk of death, while those with decompensated cirrhosis have a near 10-fold increased risk of death.[2]

Patients with chronic liver disease (CLD) are susceptible of malnutrition because of the liver plays an important role to regulate the caloric homeostasis.[3] Patients with CLD are at risk of malnutrition for several causes, such as: poor dietary intake, fat malabsorption from reduced bile acid synthesis, increased intestinal protein losses, decreased hepatic protein synthesis and storage capacity, poor substrate utilization and hypermetabolism. Carbohydrate and fat metabolism are altered in cirrhosis, and there is evidence of insulin resistance. Nausea and early satiety, which may be secondary to gastroparesis, ascites, altered gut motility or bacterial overgrowth also can contribute.[4]

The loss of appetite can be related to the up-regulation of inflammation and appetite mediators. Tumor necrosis factor-alpha (TNF-α) and leptin correlate with satiety and energy expenditure, and these mediators are increased in patients with cirrhosis.[5] TNF-α is a cytokine that may affect appetite and metabolism by acting on the central nervous system, altering the release and function of several neurotransmitters. Also, leptin is increased in patients with cirrhosis.[5,6] Furthermore, patients with cirrhosis have abnormal fasting levels of ghrelin, but its relation with anorexia is unclear.

The loss of muscle mass or sarcopenia is a common complication of cirrhosis and it becomes worse with the advance of the disease, which is associated with poor quality of life.[7,8] The prevalence of malnutrition in patients with CLD has been reported with variable frequencies, but as high as 90%.[3,5,6,8] Malnutrition has been recognized as a predictor of morbidity and mortality in patients with CLD.[5]

The aim of this study was to compare the frequency of serious complications: variceal bleeding (VB), ascites, hepatic encephalopathy (HE) and infections, between cirrhotic patients with and without malnutrition.

Subjects and methods

Design of the study

An observational, analytic, cross-sectional study was conducted. The sample size was taken as a convenience sample size, including all those cirrhotic patients who accepted to participate in this study and who were attended between January and June 2014 at Liver Clinic from *Hospital General de Mexico ''Dr. Eduardo Liceaga''*, *Mexico City*. The nutritional status of cirrhotic patients was evaluated according to Subjective Global Assessment (SGA). Characteristics of cirrhotic patients with and without malnutrition were compared. Patients with other chronic comorbidities which could affect the nutritional status, such as diabetes, chronic kidney disease, cardiac disease, neoplasms, acquired immunodeficiency syndrome, and those who did not accept to participate were excluded.