Child Pugh and Male Gender were Related to Nutritional Status of Liver Cirrhosis Patients in Koja Hospital

Suzanna Ndraha, Marcellus Simadibrata***

*Department of Internal Medicine, Koja Hospital, Jakarta
**Division of Gastroenterology, Department of Internal Medicine, Faculty of Medicine University of Indonesia, Dr. Cipto Mangunkusumo General National Hospital, Jakarta

ABSTRACT

Background: *Malnutrition is found in 65-90% patients with liver cirrhosis. Malnourished patients with cirrhosis have a higher rate of complications. Aim of this study was to evaluate the prevalence and risk of malnutrition in liver cirrhosis patients at Koja hospital, Jakarta.*

Method: *All liver cirrhosis patients visited Koja hospital during January - March 2009 was evaluated. An inclusion criterion was liver cirrhosis. An exclusion criterion was unable to speak Indonesia. The distributions of age, gender, body mass index (BMI), triceps skin-fold thickness (TSF), mid-upper arm circumference (MUAC), mid-arm muscle circumference (MAMC), Child Pugh classification were assessed. The criteria of malnutrition was done according to MAMC and BMI.*

Result: *There were 38 liver cirrhosis patients fit the criteria. Twenty five (65.8%) cases were classified as malnutrition according to MAMC, 21 (55.3%) were classified as malnutrition according to BMI. Four patients (10.5%) were Child Pugh scores A, 15 Child Pugh B (39.5%) and the rest 19 patients (50.0%) were Child Pugh C. There was a trend correlation between malnutrition according to MAMC and Child Pugh criteria but not statistically significant.*

Conclusion*: In our study we found 65.8% of liver cirrhosis patients were malnourished according to MAMC. Malnutrition was higher in male, as well as in Child Pugh score C. MAMC is more accurate than BMI in assessing nutritional status in liver cirrhosis.*

Keywords*: liver cirrhosis, nutritional status, MAMC, BMI, Child Pugh score*

INTRODUCTION

Malnutrition is an increasingly recognized complication of chronic liver disease that has important prognostic implications. Malnutrition is found in 65-90% of patients with advanced liver disease. Malnourished patients with cirrhosis have a higher rate of complications and overall, an increased mortality rate. There is a direct correlation between the progression of the liver disease and the severity of malnutrition. The initiation of nutritional therapy has the potential to reduce the risk of such complications, and to improve the overall mortality rate. The causes of malnutrition in liver cirrhosis are poor oral intake, malabsorbsion, and increased energy expenditure caused by hypermetabolism. Poor oral intake is related to an altered sense of taste, early satiety related to mechanical compression, dietary restrictions, weakness, fatigue, and low-grade encephalopathy. Malabsorption is a result from reduction in the bile-salt pool in patients with advanced liver disease, and bacterial overgrowth resulting from impaired small-bowel motility. The exact cause of hyper-metabolism remains unclear, but certain predisposing factors have been identified such as infection and ascites.[1,2]

Caregaro[3] found that energy malnutrition, was found in 34.0% of the study population, and protein malnutrition was much more frequent (81.0%). Malnutrition was correlated with the clinical severity of the liver disease. Compared with other methods, which have important limitations in liver disease, anthropometry is currently the most reliable method for nutritional assessment in clinical practice and may be valuable for predicting survival in cirrhotic patients.

Correspondence:
Suzanna Ndraha
Department of Internal Medicine
Koja Hospital
Jl. Deli 4 Tanjung Priok Jakarta Indonesia
Phone: +62-21-43938478 Fax: +62-21-4372273
E-mail: susan_ndraha@yahoo.co.id

The aim of this study was to evaluate the prevalence and risk factors of malnutrition in liver cirrhotic patients who visit Koja hospital during January-March 2009.

METHOD

All patients visited Koja hospital during January-March 2009 were evaluated. Data was taken cross-sectionally. Inclusion criteria were all liver cirrhosis. The diagnosis of liver cirrhosis was established histologically or based on the presence of at least two of the following: characteristic imaging features, esophageal or gastric varices, ascites or increased international normalized ratio (INR) that could not be attributed to any other cause. Patients unable to understand Indonesian language as well as those unable to give written informed consent (e.g. owing to severe comorbidities such as dementia and psychosis, or debilitating hepatic encephalopathy) were excluded. The distribution of age, gender, body mass index, triceps skinfold thickness (TSF), mid-upper arm circumference (MUAC), mid-arm muscle circumference (MAMC), Child Pugh classification were collected. Malnutrition was assessed using the MAMC and body mass index (BMI) evaluation. Using the MAMC, patients were considered to be malnourished when the MAMC were below the 5th percentile, and using the BMI, when the BMI was < 20 kg/m^2 patients were classified to be malnourished.

Data are expressed as mean $\pm$ SD or n (%). Student's t-test was performed in order to compare continuous variables. The chi-square test was used for comparisons between categorical variables.

RESULT

There were 38 patients, 24 male, 14 female. There were 28 cases hospitalized and 10 cases non hospitalized patients. Twenty five (65.8%) cases were classified as malnutrition according to MAMC, 21 (55.3%) were classified as malnutrition according to BMI (figure 1 and 2).

According to MAMC, there were 20 malnutrition in male, but only 5 in female. There was significantly difference in malnutrition between male and female (p = 0.003). In malnutrition group, 10 were in age group < 40 years, 12 were in age group 40-60 years, 3 were in age group > 60 years. There was no significantly difference in malnutrition in different age group (p = 0.3)

Among 28 hospitalized patients, 17 were malnutrition (using MAMC criteria), while in 10 non hospitalized patients, 8 were malnutrition. There was no significantly difference in malnutrition in hospitalized and non hospitalized patients (p = 0.27)

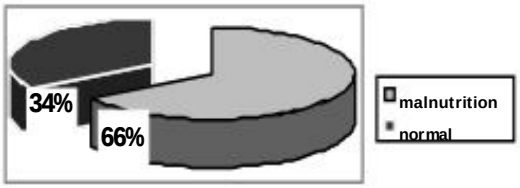

Figure 1. Malnutrition in liver cirrhosis according to MAMC

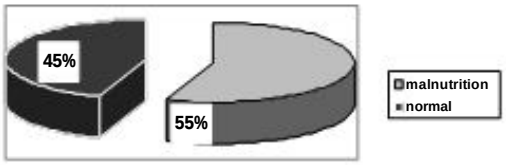

Figure 2. Malnutrition in liver cirrhosis according to BMI BMIMAMC

Tabel 1. Characteristic of liver cirrhosis patients

Characteristic	n	%
Gender		
Male	24	63.3
Female	14	36.7
Age (years)		
< 40	12	31.6
40-60	21	55.3
> 60	5	13.2
MAMC		
Below the 5th percentile	25	65.8
Above the 5^{h} percentile	13	34.2
BMI (kg/m^2)		
BMI < 20	21	55.3
BMI > 20	17	44.7
Child Pugh		
Child A	4	10.5
Child B	15	39.5
Child C	19	50.0
Hospitalization status		
Hospitalized	28	73.7
Non hospitalized	10	26.3

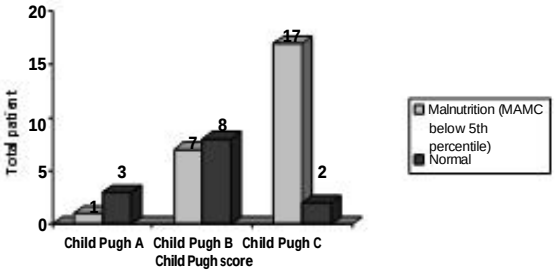

Figure 3. Child Pugh score in malnutrition using MAMC (n = 38)

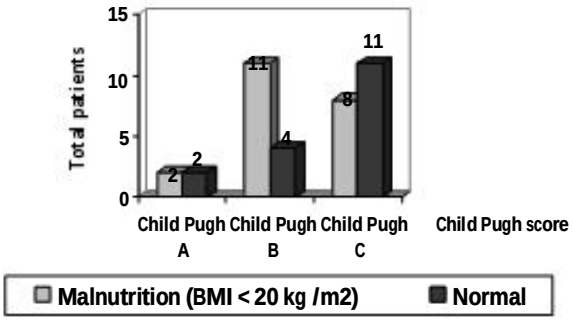

Figure 4. Child Pugh score in malnutrition using BMI

According to MAMC, there were one malnutrition and three normal in Child Pugh A, seven malnutrition eight normal in Child Pugh B, 17 malnutrition two normal in Child Pugh C (figure 3). There was a trend correlation between malnutrition (MAMC) and Child Pugh criteria but not statistically significant (p = 0.06)

According to BMI, there were two malnutrition and two normal in Child Pugh A, eleven malnutrition four normal in Child Pugh B, eight malnutrition eleven normal in Child Pugh C (figure 4). The trend of correlation between BMI and Child Pugh was not seen and also not statistically significant (p = 0.133)

DISCUSSION

We studied 38 cases of liver cirrhosis; we found that liver cirrhosis in our population more frequent in male, and in 40-60 years age group (table 1). This is in accordance with Kalman and Kusumobroto.[4,5]

Anthropometric measurements have been proposed to be the most practical objective indices of nutritional depletion in chronic liver disease and they are widely used in the nutritional evaluation of patients with cirrhosis. It has been demonstrated that triceps skin-fold thickness and mid-arm muscle circumference can be measured fairly accurate in patients with advanced liver disease and that they are only mildly affected by fluid retention. Patients were considered to be malnourished when TSF and/or MAMC were below the 5th percentile, according to standard tables for the Swedish population based on age and sex, and/or if BMI was < 20 kg/m^2 and/or if they had a weight loss ≥ 5-10% in the previous 3-6 months.[6,7,8]

In our study, 65.8% of liver cirrhosis patients was malnourished according to MAMC, similar with other literatures.[2,9,10] By using BMI, malnutrition was lower (55.3%). Using chi square test we found there was no significant difference in nutritional status according to MAMC between BMI < 20 kg/m^2 and BMI >_ 20 kg/m^2. We also found no significant difference in Child Pugh score between those categories of nutritional status, but there was a trend correlation between malnutrition (MAMC) and Child Pugh criteria. This finding support theory that MAMC more accurate in measuring nutritional status in advance liver disease because only mildly affected by fluid retention.[11]

Child Pugh score in our population similar with report of Caregaro et al.[3] There were no significant differences in malnutrition in age group and hospitalizatin status (p = 0.3 and p = 0.27, respectively), but there were significant differences in malnutrition in gender and in Child Pugh score (p = 0.003 and p = 0.06, respectively). Malnutrition was higher in male, as well as in Child Pugh score C.

CONCLUSION

In our study we found 65.8% of liver cirrhosis patients have malnutrition according to MAMC, but only 55.3% according to BMI. Malnutrition was higher in male, as well as in Child Pugh score C. MAMC is more sensitive than BMI in assessing nutritional status in liver cirrhosis.

REFFERENCES

1. Nakaya Y, Harada N, Kakui S, Protein-energy malnutrition in liver cirrhosis. J Gastroenterol 2002;37:578-9.
2. Henkel AS, Buchman AL. Nutritional support in patients with chronic liver disease. Nature Clin Prac Gastroenterol Hepatol 2006;3:202-9.
3. Caregaro L, Alberino F, Amodio P, Merkel C, Bolognesi M, Angeli P, Gatta A. Malnutrition in and virus-related cirrhosis. Am J Clin Nutr l996;63:602-9.
4. Kalman, David R. Nutrition status products survival in cirrhosis. Proquest Medical Library. Nutr Rev 1996;54:217-9.
5. Kusumobroto HO. Sirosis hati. In: Sulaiman A, Akbar N, Lesmana LA, Noer MS, eds. Buku Ajar Ilmu Penyakit Hati. 1st ed. Jayabadi 2007.p.335-45.
6. Kalaitzakis E, Olsson R, Henfridsson P, Hugosson I, Bengtsson M, Jalan R. Malnutrition and diabetes mellitus are related to hepatic encephalopathy in patients with liver cirrhosis. Liver Int 2007;27:1194-201.
7. Howell HW. Anthropometry and body composition analysis. In: Laura EM, Michele MG. Contemporary Nutrition Support Practice. A Clinical Guide. WB Saunders Co 1998.p.33-40.
8. Frisancho AR. New of upper limb fat and muscle areas for assessment of nutritional status. Am J Clin Nutr 1981;34:2540-5.
9. Lautz HU, Selberg U, Korber J, et al. Protein-calorie malnutrition in liver cirrhosis. Clin Investig 1992;70:478-86.
10. Dicecco SR, Wieners EJ, Wiesner RH, et al. Assessment of nutritional status of patients with end-stage liver disease undergoing liver transplantation. Mayo Clin Proc 1989;64:95-102.
11. Matos C, Porayko MK, Ziller FN, DiCecco S. Nutrition and chronic liver disease. J Clin Gastroenterol 2002; 35: 391-7.