

Discussion A Case Study at Hanoi Medical University Hospital with Further Analysis of Nutritional Status in Patients with Cirrhosis

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ABSTRACT

A study showing 20%-50% patients affected by malnutrition -a liver cirrhosis(Ali et al, 2022). This paper aims to present a DISCUSSION A CASE STUDY AT HANOI MEDICAL UNIVERSITY HOSPITAL WITH FUTHER ANALYSIS OF NUTRITIONAL STATUS IN PATIENTS WITH CIRRHOSIS in 2022. REDCap was used to enter all variables. Stata version 15.0 will be used for data analysis. Research subjects: Diagnosed with cirrhosis of any etiology (alcoholism, hepatitis C, cryptogenic/autoimmune,...); Newly admitted to HMUH; Adults (≥ 18 years old). **Results:** With 109 cirrhotic patients (average age of 54.1 ± 10.8). The average value of the test indicators in the high threshold study subjects was Total Bilirubin ($66.28 \pm 94.02 \mu\text{mol/L}$) and Glucose ($7.15 \pm 3.25 \text{ mmol/L}$), respectively. Only the mean value of Total protein ($70.51 \pm 7.27 \text{ g/L}$) was within the normal range. This result does not have significant difference with the results of Krishna C, et al on 2.017 cirrhotic patients and the average age was 52 ± 11 . Hence, assessment of nutritional status is very important and necessary.

Keywords: Nutritional status, cirrhosis, malnutrition.

I. Introduction

Teiusanu et al (2012) stated that Malnutrition with its presence together with increasing number (short and long term mortality) with ratio from 20% to $> 80\%$ in patients having liver disease (decompensated)

And Charlton (2006) pointed that there is higher malnutrition situation in those (patients) having alcoholic cirrhosis, compared to nonalcoholic ones. Among patients, many people have signals such as vitamin deficiency, and muscle mass loss, etc.

Malnutrition is a burden in patients with cirrhosis, it is associated with the progression of liver failure.

With the increasing number of cases of cirrhosis in Vietnam, assessment of nutritional status is necessary for timely and reasonable nutritional intervention, thereby increasing the number of recoveries and reducing mortality.

So, we conducted this study with objective:

To present a **DISCUSSION A CASE STUDY AT HANOI MEDICAL UNIVERSITY HOSPITAL WITH FUTHER ANALYSIS OF NUTRITIONAL STATUS FOR CIRRHOSIS PATIENTS** in 2022.

Then, Previous studies presented in below figure

Figure 1 – Related studies

Ali et al (2022)

Malnutrition is a liver cirrhosis complication affecting more than 20%-50% of patients. Although the term can refer to either nutrient deficiency or excess, it usually relates to undernutrition in cirrhosis settings. Frailty is defined as limited physical function due to muscle weakness, whereas sarcopenia is defined as muscle mass loss and an advanced malnutrition stage. The pathogenesis of malnutrition in liver cirrhosis is multifactorial, including decreased oral intake, maldigestion/malabsorption, physical inactivity, hyperammonemia, hypermetabolism, altered macronutrient metabolism and gut microbiome dysbiosis. Patients with chronic liver disease with a Body Mass Index of < 18.5 kg/m² and/or decompensated cirrhosis or Child-Pugh class C are at the highest risk of malnutrition. For patients at risk of malnutrition, a detailed nutritional assessment is required, typically including a history and physical examination, laboratory testing, global assessment tools and body composition testing. Malnutrition and sarcopenia are associated with an increased risk of complications and a poor prognosis in patients with liver cirrhosis; thus, it is critical to diagnose these conditions early and initiate the appropriate nutritional therapy.

European Association for study of Liver (2019)

Malnutrition is defined as nutrient imbalance (deficiency or excess) with adverse effects on the body's form, function or outcome. According to the European Association for the Study of Liver Disease (EASL), the term "malnutrition" refers to "undernutrition"

Teiusanu et al (2012)

Malnutrition was correlated with clinical severity of liver disease. The mild-moderate malnourished patients are 88% Child B, over 58% with viral etiology. 22% from these patients are alcoholic and 11% have Child C score (p<0.01). In severely malnourished group, 43% have alcoholic disease and 31% are Child C classification (p<0.01). Triceps skinfold thickness (mm) and mid-arm circumference (cm) decrease significantly according to the Child score, a positive correlation was found between these two parameters and the severity of cirrhosis.

(source: author synthesis)

II. Methodology**Author use:**

Cross-sectional descriptive study

We have:

$$n = \frac{Z^2 \cdot p(1-p)}{d^2}$$

n: quantity to be investigated

Z: 95% confidence level, Z=1.96

P=0.6 (proportion of malnourished cirrhotic patients according to SGA at HMUH in 2020)¹⁰

d=0.1 is the difference between sample and population

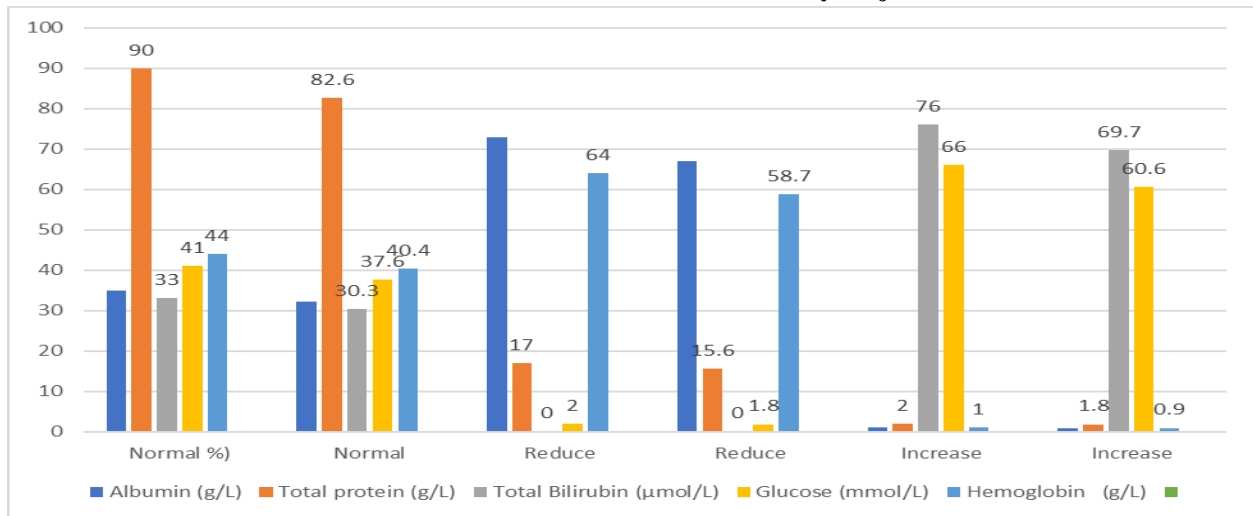
Research variables and indicators

- General information of subjects
- Patient's nutritional status: BMI, SGA, biochemical tests.
- Child-Pugh-Turcotte classification (CPT): A, B or C

III. Main Findings

We see below result charts.

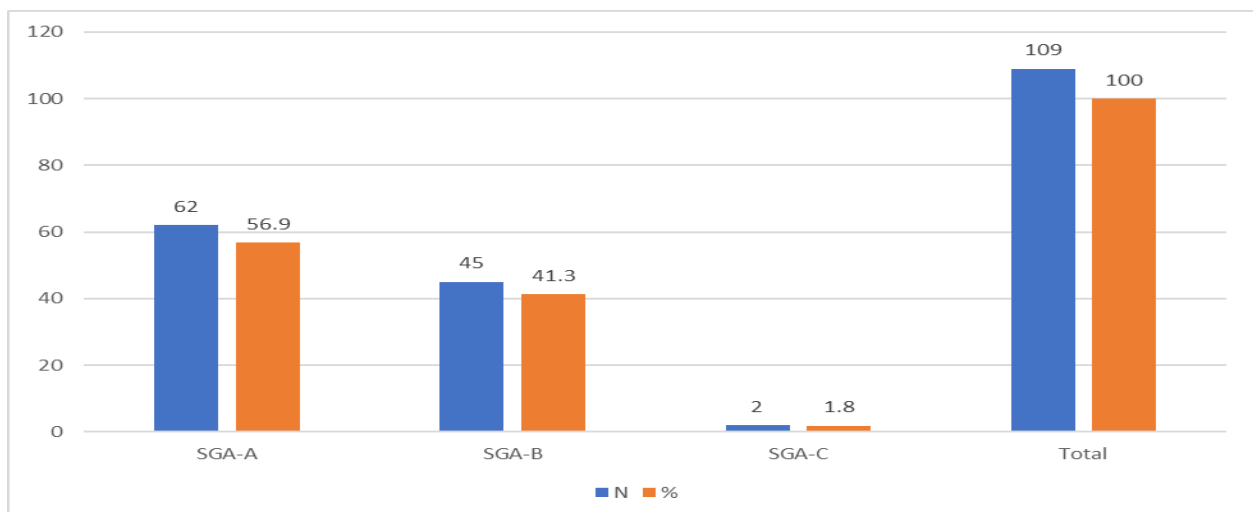
Table 1. Biochemical measurements of the study subjects



Biochemical indexes were all elevated such as: serum Albumin concentration (0.9%), Total protein (1.8%), Total Bilirubin (69.7%), Glucose (60.6%), Hemoglobin (0.9%).

Nutritional status of those with (cirrhosis patients)

Table 2. Classification of nutritional status of study subjects according to SGA



The proportion of patients at risk of malnutrition was 43.1% (including subjects with SGA types B and C).

IV. Discussion And Conclusion

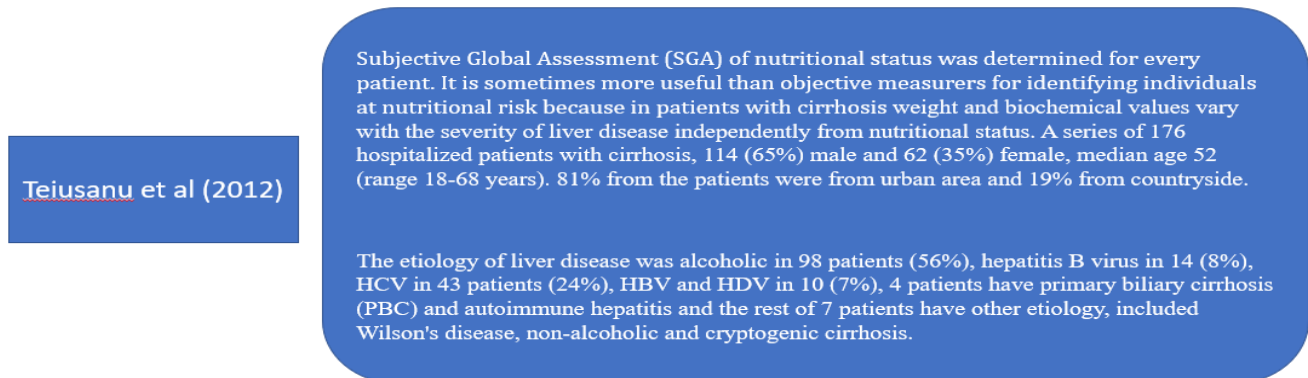
Situation of cirrhosis patients and nutrition at HMUH in 2022

The study results showed that 56.9% of patients had well-nourished (grade A), 41.3% of patients had mild/moderate malnourished (grade B), 1.8% of patients have severe malnourished (grade C). The results of this study differ significantly in SGA A, B, and C ratios with the results of TEIUSANU et al¹⁷ with– SGA A 76%, mild/ moderately malnourished – SGA B 15% and severely malnourished - SGA C 9%. This difference may be partly due to the subjective assessment as well as the different nutrition scheme of the patients each time. Compared with some other authors, we found that the SGA - A group accounted for the majority, the rate gradually decreased in the SGA - B and C groups. This difference may be caused by disease factors, Pain, taste

changes, nausea lead to anorexia, so long-term weight monitoring (for 6 months) is likely to have deviations between methods of assessing nutritional status.

Beside, we look at below figure to see SGA for every patient.

Figure 2 - SGA



(source: author synthesis)

Limitation of study:

The SGA method cannot be denied the importance of assessing and monitoring nutritional status based on ALB for patients with cirrhosis.

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References

- [1] Asrani SK, Devarbhavi H, Eaton J, Kamath PS. Burden of liver diseases in the world. *J Hepatol.* 2019;70(1):151-171. doi:10.1016/j.jhep.2018.09.014
- [2] Ali, S.H et al. (2022). Nutritional assessment in patients with liver cirrhosis, *World J Hepatol.* 2022 Sep 27; 14(9): 1694–1703.
- [3] WHO | Methods and related documentation. WHO. Accessed October 3, 2018. http://www.who.int/healthinfo/global_burden_disease/data_sources_methods/en.
- [4] DTN Huy. (2015). The critical analysis of limited south asian corporate governance standards after financial crisis, *International Journal for Quality Research* 9 (4)
- [5] DTN Huy, TH Le, NT Hang, S Gwoździewicz, ND Trung, P Van Tuan. (2021). Further Researches and Discussion on Machine Learning Meanings-And Methods Of Classifying and Recognizing Users Gender on Internet, *Advances in Mechanics* 9 (3), 1190-1204
- [6] DT Tinh, NT Thuy, DT Ngoc Huy. (2021). Doing Business Research and Teaching Methodology for Undergraduate, Postgraduate and Doctoral Students-Case in Various Markets Including Vietnam, *Elementary Education Online* 20 (1)
- [7] DTN Huy, PN Van, NTT Ha. (2021). Education and computer skill enhancing for Vietnam laborers under industry 4.0 and evfta agreement, *Elementary Education Online* 20 (4)
- [8] EASL Clinical Practice Guidelines on nutrition in chronic liver disease. *J Hepatol.* 2019;70(1):172-193. doi:10.1016/j.jhep.2018.06.024
- [9] European Association for the Study of the Liver. EASL Clinical Practice Guidelines on nutrition in chronic liver disease. *J Hepatol.* 2019;70:172–193.
- [10] F Yong-Yan, J Manafian, SM Zia, DTN Huy, TH Le. (2021). Analytical Treatment of the Generalized Hirota-Satsuma-Ito Equation Arising in Shallow Water Wave, *Advances in Mathematical Physics* 2021
- [11] H Van Thuc, DTT Thao, NN Thach, VT Dung, DTN Huy, NTP Thanh. (2020). Designing Data Transmission System with Infrared Rays, *Psychology and education* 58 (2), 3406-3411

- [12] J Li, J Manafian, NT Hang, DTN Huy, A Davidyants. (2021). Interaction among a lump, periodic waves, and kink solutions to the KP-BBM equation, *International Journal of Nonlinear Sciences and Numerical Simulation*
- [13] Khalil S, Youssef M, Mekki M, Abdelmalek M. Liver Cirrhosis: Assessment of Patients Nutritional Status at Assiut University Hospital. *Assiut Sci Nurs J*. 2015;3:114-125. doi:10.21608/asnj.2015.59806
- [14] Koruk M, Onuk MD, Akçay F, Savas MC. Serum thrombopoietin levels in patients with chronic hepatitis and liver cirrhosis, and its relationship with circulating thrombocyte counts. *Hepatogastroenterology*. 2002;49(48):1645-1648.
- [15] Ladep NG, Akbar SMF, Al Mahtab M. Global Epidemiology of Chronic Liver Disease. In: Wong RJ, Gish RG, eds. *Clinical Epidemiology of Chronic Liver Diseases*. Springer International Publishing; 2019:41-55. doi:10.1007/978-3-319-94355-8_5
- [16] Malnutrition in cirrhosis increases morbidity and mortality - Maharshi - 2015 - Journal of Gastroenterology and Hepatology - Wiley Online Library. Accessed July 13, 2022. <https://onlinelibrary.wiley.com/doi/10.1111/jgh.12999>
- [17] Mokdad AA, Lopez AD, Shahrz S, et al. Liver cirrhosis mortality in 187 countries between 1980 and 2010: a systematic analysis. *BMC Med*. 2014;12:145. doi:10.1186/s12916-014-0145-y
- [18] Linh NT, Chinh PTT, Tam NTM, My HH, Nam NT, Nga TT. Nutritional status and some related factors of cirrhosis patients at Hanoi Medical University Hospital. *Journal of Medical Research*. 2021;146(10):91-103. doi:10.52852/tcnyh.v146i10.341
- [19] Nguyen Thi Diep Anh, Nguyen Trong Hung, Tran Thi Tra Phuong, Le Thi Hang, Dinh Tran Ngoc Huy, Vu Thi Thu Hien, Bui Thi Thuy, Ngo Thi Thu Huyen, Le Thi Tuyet Nhung, Nguyen Thi Luong Hanh, Tu Thi Mai, Truong Tuyet Mai, Nguyen Hong Truong and Le Danh Tuyen. (2021). Determining the Glycemic Index of Nutritional Product for Diabetes Mellitus- Np through Measuring Glycemic Responses to Reference Food (Glucose) and Test Food (Nutritional product -Np), *Journal of Pharmaceutical Research International*, 33(47B)
- [20] Nguyen V. (2018). *Estimates and Projection of Disease Burden and Economic Analysis for Hepatitis B in Viet Nam*
- [21] N Thi Hang, D Thi Tinh, DT Ngoc Huy, PT Hong Nhung. (2021). Educating and training labor force Under Covid 19; Impacts to Meet Market Demand in Vietnam during Globalization and Integration Era, *Journal for Educators, Teachers and Trainers*, 12(1)
- [22] Ndraha S, Simadibrata M. Child Pugh and Male Gender were Related to Nutritional Status of Liver Cirrhosis Patients in Koja Hospital. :3.
- [23] NT Hoa, DTN Huy, T Van Trung. (2021). Implementation of students's scientific research policy at universal education institutions in Vietnam in today situation and solutions, *Review of International Geographical Education Online* 11 (10), 73-80
- [24] N ThiHoa, NT Hang, NT Giang, DTN Huy. (2021). Human resource for schools of politics and for international relation during globalization and EVFTA, *Elementary education Online* 20 (4)
- [25] Nguyen Thi Minh Chinh, Pham Thi Bich Ngoc, Nguyen Minh Loi, Dinh Thi Thu Hang, Dinh Tran Ngoc Huy, Pham Van Tung. (2021). Deepening Analysis on Preventing Fall Risk with Knowledge and Practices of Nurses and Nursing, *Sys Rev Pharm*, 12(3):308-313
- [26] Nishida T. Diagnosis and Clinical Implications of Diabetes in Liver Cirrhosis: A Focus on the Oral Glucose Tolerance Test. *J Endocr Soc*. 2017;1(7):886-896. doi:10.1210/js.2017-00183
- [27] N Van Dat, DTA Nhi, DTN Huy. (2021). Improving Tourism Entrepreneur's Competition during the COVID 19 Pandemic—A Case Study in Tourism Industry in Vietnam, *Revista Geintec-gestao Inovacao E Tecnologias* 11 (3), 112-126
- [28] NTHIQ HUONG, BUIX NHAN, DTN HUY, NTHI TU. (2021). Factors Affecting The Decisions Of Local People To Participate In Community Tourism In The NorthWest of Vietnam, *Journal of Contemporary Issues in Business and Government* Vol 27 (2)
- [29] Pham Thi Bich Ngoc, Dinh Tran Ngoc Huy and Pham Thi Hong Nhung. (2021). Healthcare Policy for Patients with Chronic Heart Failures at Nam Dinh General Hospital in Vietnam, *Journal of Pharmaceutical Research International*, 33(40B)
- [30] PN Tram, DT Ngoc Huy. (2021). Educational, Political and Socio-Economic Development of Vietnam Based on Ho Chi Minh's Ideology, *Elementary Education Online* 20 (1)

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- [31]Pham Thi Bich Ngoc, Dinh Tran Ngoc Huy, Vu Thanh Binh, Pham Thi Hong Nhung and Ngo Huy Hoang. (2021). Extra Analysis of Health Care Policy for Patients with Corona Virus during COVID 19 and with Chronic Heart Failures and Roles of Nurses at Hospitals in Vietnam, *Journal of Pharmaceutical Research International*, 33(47A)
- [32]PM Dat, DTN Huy. (2021). Management Issues in Medical Industry in Vietnam, *Management* 25 (1), 141-154
- [33]PTB Ngoc, NH Hoang, DTT Hang, DTN Huy, NTM Chinh, VT La. (2020). Evaluating fall prevention for patients at Nam Dinh Hospital in Vietnam, *European Journal of Molecular and Clinical Medicine* 7 (10), 3114-3119
- [34]Privitera G, Meli G. An unusual cause of anemia in cirrhosis: spur cell anemia, a case report with review of literature. *Gastroenterol Hepatol Bed Bench*. 2016;9(4):335-339.
- [35]Sharma B, Marwah R, Raina S, Sharma N, Kaushik M, Kaushal SS. A study on the etiology of cirrhosis of liver in adults living in the Hills of Himachal Pradesh, India. *Trop Gastroenterol Off J Dig Dis Found*. 2016;37(1):37-41. doi:10.7869/tg.317
- [36]Sajja KC, Mohan DP, Rockey DC. Age and Ethnicity in Cirrhosis. *J Investig Med Off Publ Am Fed Clin Res*. 2014;62(7):920-926. doi:10.1097/JIM.000000000000106
- [37]TEIUSANU A, ANDREI M, ARBANAS T, NICOLAIE T, DICULESCU M. Nutritional Status in Cirrhotic Patients. *Mædica*. 2012;7(4):284-289.
- [38]TTB Hang, DTH Nhung, DTN Huy, NM Hung, MD Pham. (2020). Where Beta is going—case of VietNam hotel, airlines and tourism company groups after the low inflation period, *Entrepreneurship and Sustainability Issues* 7 (3)
- [39]The Cinhosis Care Clinic at the University of Alberta located in Edmonton, Alberta, Canada. *The Nutrition In Cirrhosis Guide*, 2018.
- [40]TTH Ha, NB Khoa, DTN Huy, VK Nhan, DH Nhung, PT Anh, PK Duy. (2019). Modern corporate governance standards and role of auditing-cases in some Western european countries after financial crisis, corporate scandals and manipulation, *International Journal of Entrepreneurship* 23 (1S)
- [41]Teiusanu, A et al. (2012). Nutritional Status in Cirrhotic Patients, [Maedica \(Bucur\)](#). 2012 Dec; 7(4): 284–289.
- [42]TH Le, DTN Huy, NT Le Thi Thanh Huong, SG Hang. (2021). Recognition of user activity with a combined image and accelerometer wearable sensor, *Design Engineering*, 6407-6421
- [43]Vu Thanh Binh, Dinh Tran Ngoc Huy, Pham Thi Bich Ngoc, Pham Thi Hong Nhung, Dinh Tran Ngoc Hien and Ngo Huy Hoang. (2021).Effective Medicine Treatment for Corona Patients at Home in COVID 19 Pandemic - and Roles of Nurses and Doctors for Heart Failures Treatment, *Journal of Pharmaceutical Research International*, 33(47A)
- [44]VQ Nam, DT Tinh, DTN Huy, TH Le, LTT Huong. (2021). Internet of Things (IoT), Artificial Intelligence (AI) Applications for Various Sectors in Emerging Markets-and Risk Management Information System (RMIS) Issues, *Design Engineering*, 609-618
- [45]VT Binh, DTN Huy. (2021). Further Analysis on Solution Treatment for Diabetes of Patients at Hospitals in Vietnam, *NeuroQuantology* 19 (8), 88-93
- [46]VT Binh, DTN Huy. (2021). Further Analysis on Characteristic of Diabetic Reinopathy-A Case in Thai Binh Province in Vietnam, *NeuroQuantology* 19 (6), 61-67