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ROLE OF BRANCHED CHAIN AMINO ACID IN THE ACHIEVEMENT OF HEPATIC ENCEPHALOPATHY EARLY REVERSAL AMONG ADVANCED LIVER DISEASE PATIENTS

[1]Dr Adeen Ahmed, [2]Dr. Saba Asghar, [3]Dr. Farheen Younis
[1]WMO Adil Hospital Lahore, [2]DHQ Hospital Skp, [3]BHU Deenpur Sharif

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Abstract:

Objectives: *The objective of this research was to compare the occurrence of hepatic encephalopathy early reversal among without BCAA (Branched Chain Amino Acid) liver disease patients.*

Methodology: *This research was carried out at Mayo Hospital, Lahore from August 2017 to July 2018. The research sample included 100 patients who were further divided into groups of fifty each as Group I & II having Grade III or IV Hepatic encephalopathy and Splenomegaly and coarse liver as observed through USG. The patients were selected from both male and female gender having age from 30 to 60 years. Demographic information included address, name, and age which was kept confidential. Data entry and analysis was carried out through SPSS software with documentation of change of hepatic encephalopathy grades.*

Results: *The predominant age group was from 41 to 50 years having a respective representation of 22 patients in Group – I (44%) and 26 patients in Group – II (52%). Mean and SD values for Group I & II were respectively (43.98 ± 3.76) and (44.32 ± 3.02). Group – I had 33 males (66%) and 17 females (34%); whereas, Group – II had 29 males (58%) and 21 females (42%). Hepatic encephalopathy early reversal among advanced liver disease patients with BCAA in Group – I was reported in 32 patients (64%) and in Group – II in 13 patients (26%); whereas, without BCAA in Group – I was in 18 patients (36%) and Group – II in 37 patients (74%) (P-Value = 0.00).*

Conclusion: *The hepatic encephalopathy early reversal occurrence among advanced liver disease patients with BCAA and without BCAA shows that BCAA treated patients achieved hepatic encephalopathy early reversal.*

Keywords: *Early Reversal, Advance Liver Disease, BCAA (Branched Chain Amino Acid), Hepatic Encephalopathy, Grade and Infection.*

Corresponding author:
Dr. Adeen Ahmed,
WMO Adil Hospital, Lahore.

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INTRODUCTION:

HBV & HCV contribute a major disease burden of the globe especially in the setting of under-developed countries; these underdeveloped countries lack better management of healthcare safeties and systems effectively which increases the risk factors; there is a dire need to improve the level of awareness among such countries about the transmission mode and management of HBV & HCV infection [1, 2]. Cirrhosis and CKD cause 35,000 deaths every year in the USA; whereas, Portosystemic encephalopathy is one of the grave complications of CKD [3, 4]. It is a disordered state of the central nervous system which is an outcome of liver failure caused by Porto system shunting and hepatocellular dysfunction [5]. The range of the spectrum varies from night and day and mild cognitive impairment to coma as well [5]. Malnutrition is a crucial complication which an indicator of clinical results such as life quality, prolonged hospitalization, and survival rate among cirrhosis patients [6].

A study shows that BCAA has a vital role in the hepatic encephalopathy early reversal which reduces the burden of extra pumping of resources on health [7]. The research shows that all those who received standard treatment of Group – I the improvement was shown in eleven patients out of forty-four who were in Grade – IV encephalopathy within three days than standard treatment with an addition of BCAA (Group – II) [8]. Hospitalization was also prolonged in Group – I was more than the hospitalization of Group – II that is more than seven days; whereas, only one case remained hospitalized for more than fourteen days.

METHODOLOGY:

This research was carried out at Mayo Hospital, Lahore from August 2017 to July 2018. The research sample included 100 patients who were further divided into groups of fifty each as Group I & II having Grade III or IV Hepatic encephalopathy and Splenomegaly and coarse liver as observed through USG. The patients were selected from both male and female gender having age from 30 to 60 years. We did not include all those patients who had levels of Serum bilirubin (> 5 mg/dl), bleeding of upper GIT, comorbidities such as Diabetes Mellitus, Ischemic heart disease, Hypertension or Chronic kidney disease (CKD). Research commenced after ethical approval of the hospital ethical committee and informed consent of every patient. We also explained the protocols of research with benefits and associated risk of the procedure to all the patients. Demographic information included address, name, and age which was kept confidential. On admission, the hepatic encephalopathy grading was carried out which was repeated after every three days. Non-probability sampling was used to assign groups to patients. Traditional management was extended to Group – I along with a daily dose of 1000 ml BCAA; whereas, Group – II received only conventional hepatic encephalopathy treatment. Data entry and analysis was carried out through SPSS software with documentation of change of hepatic encephalopathy grades.

RESULTS:

According to the distribution of age, the predominant age group was from 41 to 50 years having a respective presentation of 22 patients in Group – I (44%) and 26 patients in Group – II (52%). Mean and SD values for Group I & II were respectively (43.98 ± 3.76) and (44.32 ± 3.02). Group – I had 33 males (66%) and 17 females (34%); whereas, Group – II had 29 males (58%) and 21 females (42%). Hepatic encephalopathy early reversal among advanced liver disease patients with BCAA in Group – I was reported in 32 patients (64%) and in Group – II in 13 patients (26%); whereas, without BCAA in Group – I was in 18 patients (36%) and Group – II in 37 patients (74%) (P-Value = 0.00).

Detailed outcomes of Age Distribution (Table – I), Gender Distribution (Table – II) and Group Wise Early Reversal (Table – III) are as under:

Table – I: Age Distribution

Age	Group – I (50)		Group – II (50)	
	Number	Percentage	Number	Percentage
30 – 40 Years	13	26	11	22
41 – 50 Years	22	44	26	52
51 – 60 Years	15	30	13	26
Total	50	100	50	100
Mean ± SD	43.98 ± 3.76		44.32 ± 3.02	

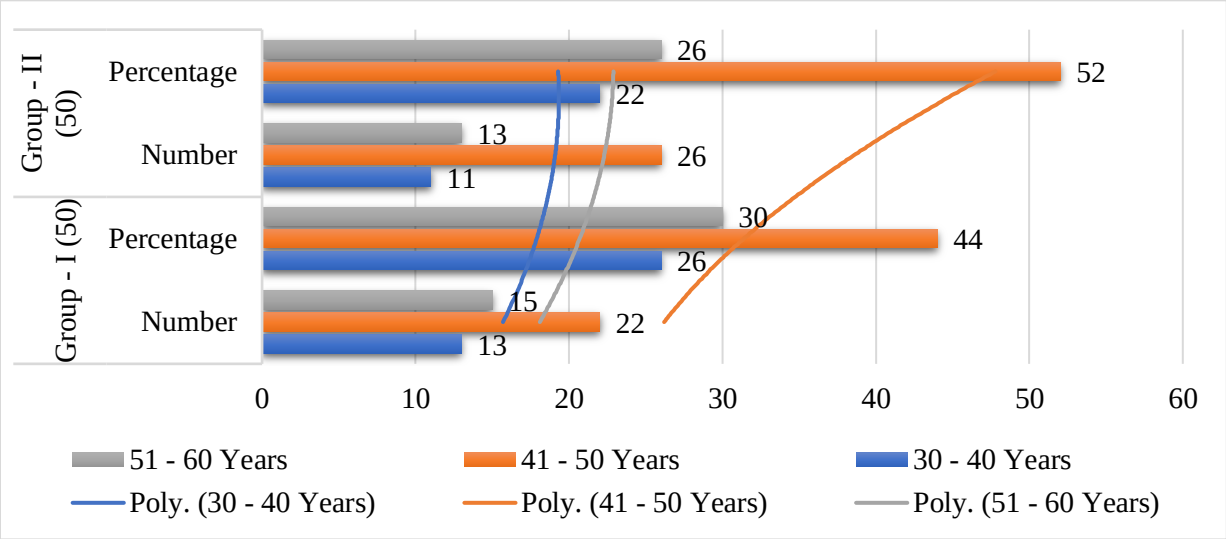


Table – II: Gender Distribution

Gender	Group – I (50)		Group – II (50)	
	Number	Percentage	Number	Percentage
Male	33	66	29	58
Female	17	34	21	42
Total	50	100	50	100

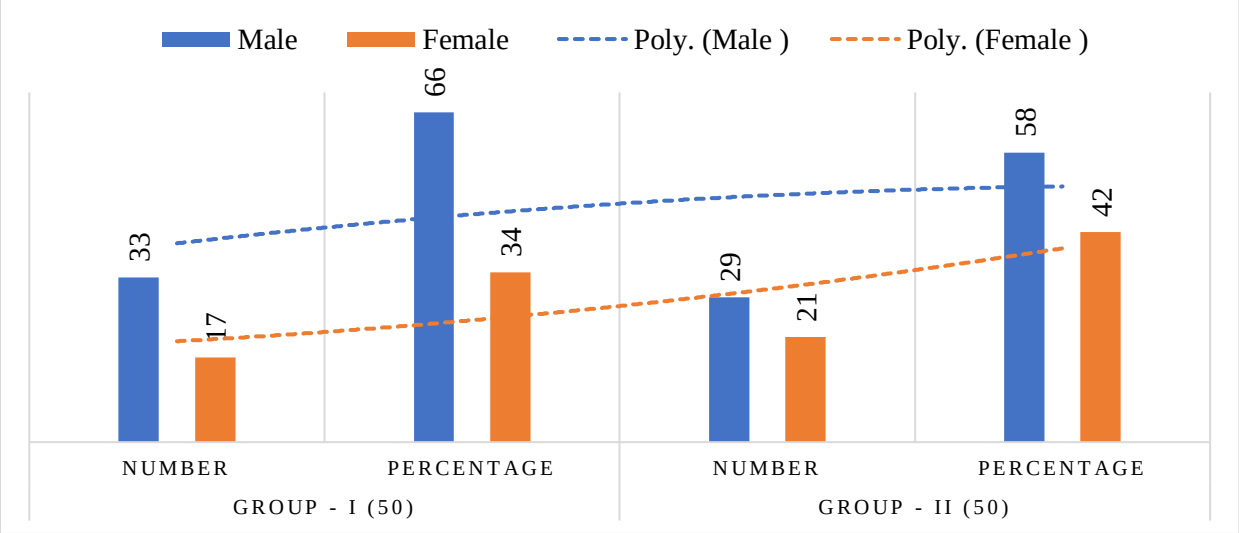
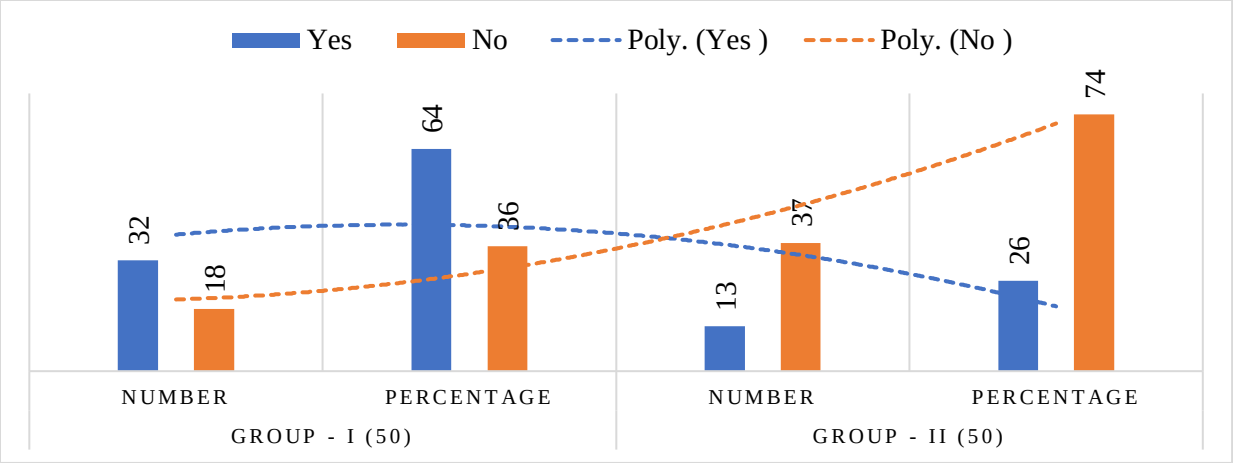


Table – III: Group Wise Early Reversal

Early Reversal	Group – I (50)		Group – II (50)	
	Number	Percentage	Number	Percentage
Yes	32	64	13	26
No	18	36	37	74
Total	50	100	50	100



DISCUSSION:

It is essential to completely understand the disease pathophysiology in order to get to effective treatment options; sometimes only relying on pathophysiology may lead to erroneous treatments. Effective treatment of hepatic encephalopathy is difficult till the proper prognosis. It is also important to note that few treatments were so much effective even when the mechanism of pathophysiological was no known such as treating scurvy with citrus fruit [9]. Past observations in yeast recommend that BCAAs isoleucine, leucine, and valine have potential survival rates [10]. The intensive debate is also going on the effectiveness of BCAA especially in terms of hepatic encephalopathy [11 – 16].

According to Naylor, the BCAA increases the rate of recovery among acute hepatic encephalopathy patients with an uncertain outcome of mortality [11]. According to Conner, little evidence is available about the effectiveness of BCAA for chronic, acute or minimal hepatic encephalopathy patients [12]. Our research and the outcomes of Naylor are the same about the improved outcomes of BCAA for encephalopathy. Due to reduced quality of the approach, the outcomes research conducted by Erikkson reflects biasness [17 – 20]. Presently, the evidence is limited for the onward recommendation of BCAA to treat hepatic encephalopathy. However, this research aims to evaluate the effectiveness of BCAA for the treatment of hepatic encephalopathy along with traditional treatment options to reduce hospitalization and mortality rates. Hepatic encephalopathy early reversal among advanced liver disease patients with BCAA in Group – I was reported in 32 patients (64%) and in Group – II in 13 patients (26%); whereas, without BCAA in Group – I was in 18 patients (36%) and Group – II in 37 patients (74%). Afzaal also reported similar outcomes and demonstrated that 56.6% hepatic failure cases of Grade – IV improved to Grade – I who received BCAA than the patients who received only conventional treatment after three days of treatment [21]. We also found that BCAA plays a vital role in the hepatic encephalopathy early reversal among CKD patients. An author also showed an onset of early reversal through BCAA in the mean duration of 56.80 hours [22].

Multiple research evidence are available about the reduced hospitalization due to use of BCAA [23]. A similar observation is also found in this research about the hospitalization. Andrea Fabbri concludes that we may suggest BCAA to only those patients who present an advanced CKD stage [24]. More research work will ultimately benefit the professionals in order to treat hepatic encephalopathy with the addition of BCAA.

CONCLUSION:

The hepatic encephalopathy early reversal occurrence among advanced liver disease patients with BCAA and without BCAA shows that BCAA treated patients achieved hepatic encephalopathy early reversal.

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