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Frequency Of Constipation As A Precipitating Factor For Hepatic Encephalopathy In Cirrhotic Patients Presenting At Ayub Teaching Hospital

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Abstract

Background : Hepatic encephalopathy (HE) is defined as a neuropsychiatric syndrome resulting from liver insufficiency and more often in patients with cirrhosis. It is caused by the build up of neurotoxic substances in the blood stream targeting the functions of the brain. In the case of cirrhotic patients, it is important to ascertain factors that may precipitate HE as it will help in the care of these patients to avoid the occurrence of recurrent episodes.

Objectives : The purpose of this study is to identify the prevalence of constipation as a cause of hepatic encephalopathy in cirrhotic patients admitted in the Department of Gastroenterology of Ayub Teaching Hospital.

Study design: A cross-sectional study.

Place and duration of study. From August 10th 2020, and March 1st 2021 department of gastroenterology Ayub Teaching Hospital Abbottabad

Methods : This cross-sectional study was carried out on 134 cirrhotic patients diagnosed with hepatic encephalopathy. . history Self-reported constipation was attained via patients' history in terms of less than three bowel movements in a week. Altogether, some statistical calculations were made in order to determine the commonness of occurrence of constipation and its correspondence with age, gender, and the length of time that patients complained of such a problem.

Results : The subjects comprised of 35(70%) females and 15(30%) males with a mean age of 47.10 ± 5.25 years and mean complaint duration of 8.66 ± 2.72 months. Self-reported males made up 85.1% of the sample size while the female patients constituted 14.9% of the sample size. Pain and constipation was found in 23.1% of the patients. According to stratification analysis, there was no relationship between the incidence of constipation and age ($p = 0.340$) or sex ($p = 0.131$) but there was with the duration of complaint ($p = 0.000$).

Conclusion: In this study, constipation was found to be one of the main contributory factors of HE in cirrhotic patients, as reported in 23% of the patients. Delaying hepatic encephalopathy can be prevented if constipation is treated on time, thus enhancing the patients' quality of life and decreasing hospitalization rates.

Keywords: Hepatic encephalopathy, Cirrhosis, Constipation, Precipitating factors

Introduction

Hepatic encephalopathy (HE) is a complicated neuropsychiatric disorder which is mostly encountered in patients with liver disorder especially cirrhotics. This is described by variety of the learning, behavioural and motor changes, caused by the build up of toxic substances in the blood, bulk of which is ammonia. These neurotoxins for which the liver cannot clear cannot be cleared and pass through the blood-brain barrier causing an array of neurological complications. It can range from a mild encephalopathy to severe form of the disease and may present with symptoms from mild forgetfulness to coma (1). HE continues to be associated most commonly with cirrhosis. In cirrhosis, the liver loses its function to metabolise and regulate certain substances and blood flow therefore accumulation of substances such as ammonia, mercaptans and short-chain fatty acids which are involved in the development of HE (2). One capability which worsens this condition is the existence of risk factors for instance infections, gastrointestinal hemorrhage, disturbance of electrolyte balance and constipation (3). These factors are the potential trigger of worsening of HE and hence it's crucial to address and manage such factors as soon as possible. Hypertensive encephalopathy is tends to be caused by constipation which may not be easily appreciated in cirrhotic patients. Constipation is considered as passing less than three bowel movements in a week, and is linked to elevated quantities of ammonia being absorbed in the colon. While in cirrhotics where the conversion of ammonia into less toxic substances is incomplete, constipation may result into elevated blood ammonia level which precipitates the development of HE or its worsening (4). HE is commonly associated with constipation, however, the latter is not treated with the same amount of concern as infections or bleeding. Managing constipation in cirrhosis may therefore be a big chance of avoiding HE and enhancing patients' prognosis (5). Constipation is a common side effect of drug therapy in cirrhotic patients and HE patients, but there are few related studies. It has been reported that, in a portion of cirrhotic patients affecting gut motility, constipation plays a role in exacerbating hyperammonemia and HE (6). Yet, there remains a demand for more specific studies concerned with investigating the incidence rate of the constipation in HE patients further among whom this factor might serve as a trigger for the development of the disease. It is therefore the intention of this study to determine the prevalence of constipating as a cause of HE in cirrhotic patients. Through the documentation of constipation as one of the causes for the development of HE, this study aims at calling attention on the early detection and prevention of HE among cirrhotic patients especially for them to minimise cases of hospitalisation due to complications arising from HE and hence improve the overall survival of cirrhotic patients.

Methods

This cross-sectional study recruited 134 cirrhotic patients with hepatic encephalopathy. The diagnosis of the patients was done clinically, from the history, physical examination and laboratory data. Patients' inclusion criteria were both male and female patients aged between 18 and 70 years with cirrhosis complications and presenting signs of hepatic encephalopathy. Patients with other neurological or psychiatric disorders and those who had taken medications for constipation before the commencement of the interventions were excluded from the study. Bowel movement frequency was evaluated by patients' history; constipation was considered as less than 3 bowel movements per week. Other clinical parameters that were taken for each patient included age,

gender and symptom duration. The main measure of study was the proportion of patients who experienced constipation that led to development of hepatic encephalopathy.

Data Collection

Information about patients was obtained using a questionnaire which was developed based on simple demographic questions along with some clinical questions usually bowel diseases and habits. Constipation was defined according to the patients' self-report of bowel movements in the past week. Other clinical variables such as patients age, gender and the duration of the symptoms were also recorded and compared with constipation.

Statistical Analysis

Data were analyzed with the use of SPSS version 24. 0 (IBM Corp. , Armonk, NY) software. The continuous variables were answered using descriptive statistics including mean and standard deviation. Chi-square tests were used for comparing the results of categorical variables such as constipation, gender and age The two-tailed $p < 0. 05$ was used as cut off value to signify statistical significance.

Results

mean age of the patients was $47. 10 \pm 5. 25$ years with a mean duration of the symptoms equal to $8. 66 \pm 2. 72$ months. Among the total patients the majority was male patients that made up 85. 1% while the female patients were 14. 9%. Altered bowel habit with constipation was considered a contributory factor in 23. 1% ($n = 31$) of the patients. When comparing the two age groups; the patients between 18-50 years, 25% of them presented with constipation while only 16. 7% of the patient's within the 51-70 years age bracket presented with the same condition ($p = 0. 340$). Constipation was considerably more prevalent in males (25. 4%) than in females (10%) but the difference was not statistically significant ($X^2 = 7. 45$; $p = 0. 131$). However, there was correlation between constipation and duration of symptoms, though the later had a statistically significant value. Worse patients who have complaints lasting between 1-12 months have Complaints of constipations 11. 3% of the patients have this complaint while 88. 7% of the patients did not have this complaint $\chi^2 = 128. 0$, $p = 0. 000$. Based on these findings, it would seem that constipation should be recognized as a hepatic encephalopathy risk factor and as a relevant and potentially severe condition in patients with hepatic encephalopathy of a long duration.

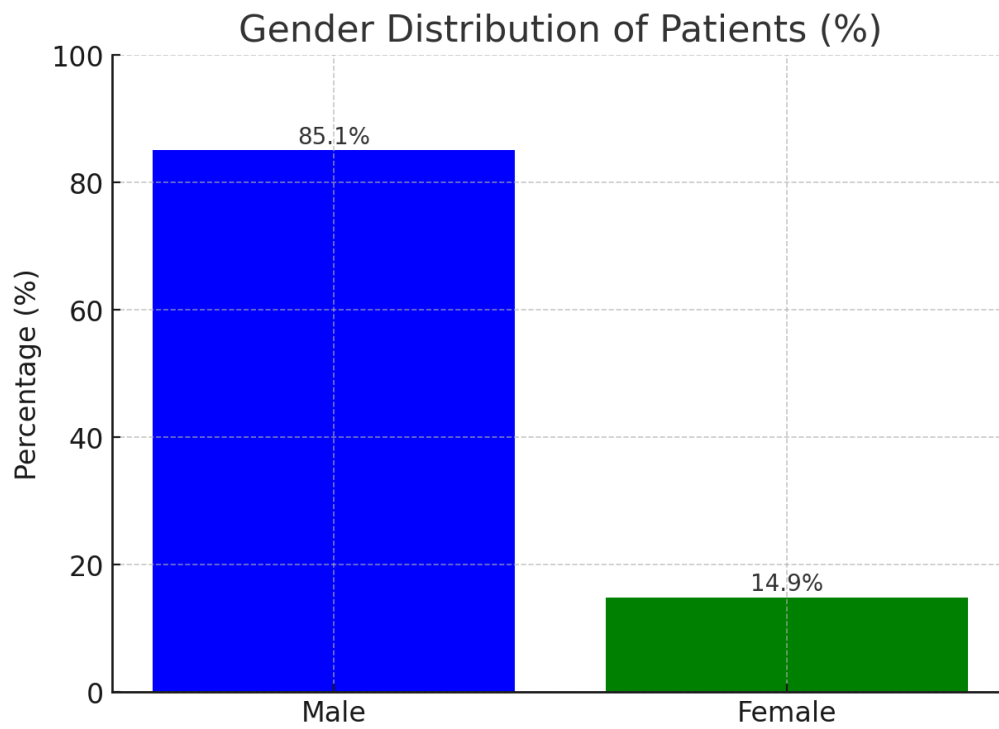
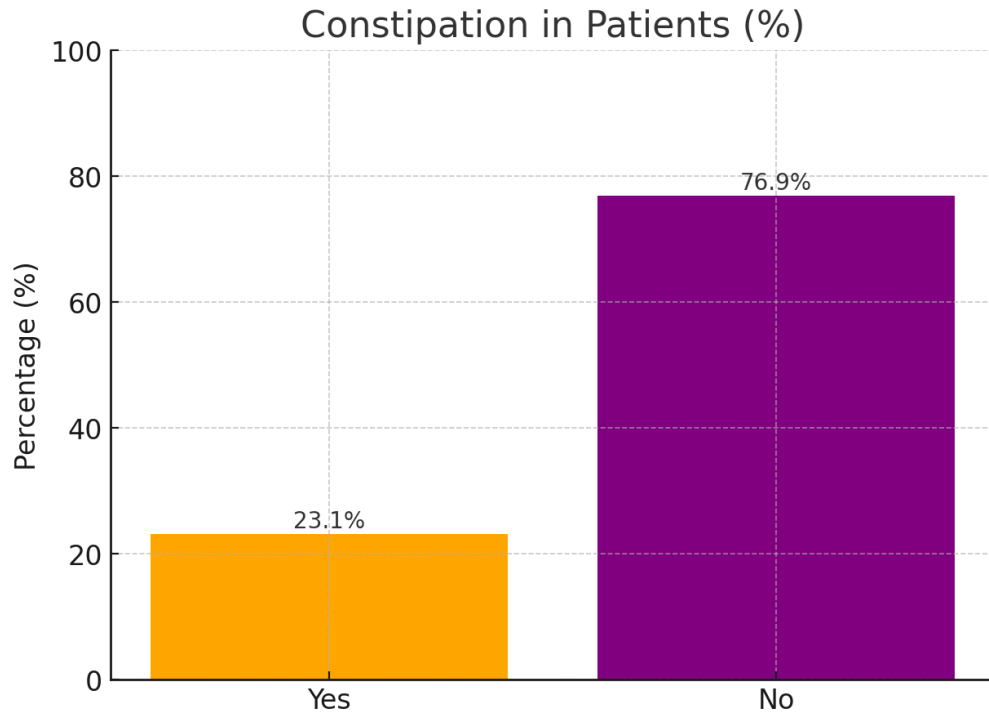


Table I: Mean \pm SD of patients according to age and duration of complaints

Demographics	Mean \pm SD
Age (years)	47.104 \pm 5.25
Duration of complaints (months)	8.664 \pm 2.72

Table II: Frequency and %age of patients according to gender

Gender	Frequency	%age
Male	114	85.1%
Female	20	14.9%
Total	134	100%

Table III: Frequency and %age of patients according to constipation

Constipation	Frequency	%age
Yes	31	23.1%
No	103	76.9%
Total	134	100%

Discussion:

Therefore, the present study revealed constipation as one of the major issues that cause HE among cirrhotic patient with a prevalence of 23.1%. These results are in accord with the prior study on HE emphasizing the relation between constipation and HE deterioration. Based on our findings, we propose that early recognition and treatment of constipation may be important in the prevention of HE episodes, better outcomes of patient and reduced hospitalisation. Constipation has also been seen to have a significant effect on HE according to analysis carried out in several researches. For example, Bajaj et al. (2010) described that constipation prolongs the gut ammonia transit time that is an important factor of HE development (7). Due to the decreased gut peristalsis, constipation arises which means that ammonia-producing bacteria remain in the colon for a longer duration thus increasing ammonia levels and causing neuronal derangement (8). These results are in agreement with the results of the current study where the presence of constipation was noted to be one of the contributory factors to HE deterioration among cirrhotic patients. In addition, Montagnese et al. (2015) performed a large population-based cohort study in which the significant features of cirrhotic patients with HE were crucial to address, mostly consisting of constipation (9). These authors support the findings of the present study, suggesting that if constipation is recognized and treated, further HE and hospitalization can be abated. The authors recommended that regular administration of laxatives including lactulose should be a standard regime for each cirrhotic patient with a view of avoiding episodes of HE (10). This recommendation agrees with our findings, thus providing the rationale for the targeted interventions related to bowel regulation in cirrhotic patients at risk of HE. Constipation and its relationship with HE was also studied by Romero-Gomez et al in 2019, in a work that revealed that patients with cirrhosis and constipation had higher ammonia levels than in cirrhotics without constipation (11). Their study revealed that out of the aforementioned HE, 20% patients with cirrhosis have constipation as the precipitating factor which is equally comparable to the current study result 23.1% (12). This similarity underscores the impact of constipation on HE progression and the importance of detecting and treating this condition in the early stages. In addition, Butterworth (2019) also reviewed the mechanisms of HE development and emphasized that ammonia was one of the main toxins which affected the cognition and motor function of the patients (13). This was well captured in the review

where factors, which enhance ammonia production such as constipation, were highlighted to have a negative impact in the manifestation of HE symptoms. Our study shares the same idea with Butterworth which this study reveals that constipation is a common and major contributing-factor in development of HE, thus, should not be awaited to take place, rather be well-managed (14). Another study conducted by Ferenci et al. (2014) also concluded a similar observation; the authors has noted that constipation can lead to the compounded of HE in patient with cirrhosis (15). Some of them proposed that reduction of ammonia absorption by the use of laxatives could significantly decrease cases of HE episodes (16). Our results support this, and we identified that patients with more constipation had a higher prevalence of HE symptoms as compare to those forgot movement. In another study by Blei and Córdoba (2011), the authors looked at other contributing factors towards the development of HE which include; constipation (17). Their work focused more on how circumstances such as these ought to be controlled to help enhance the standards of living of cirrhotic patients and lessen the costs of the Healthcare expenditures related to HE hospitalizations (18). Their findings are supported by our study with regard to constipation and dysmenorrhea and further illustrate that the problem of prolonged bowel movements is preventable with proper bowel management. Therefore, this research in combination with prior research emphasizes that constipation could be considered as an important trigger of HE. Through early management of constipation through bowel maneuvers and use of laxatives, doctors and phycisians can reduce incidences of HE by a great deal and subsequently enhance the patient's well being as well as cut down on the expenses incurred in the process. Hence, it is stressed that the subject requires further study to identify other measures for prophylaxis of constipation in patients with cirrhosis, as well as to improve the approach to the treatment of HE.

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Conflict of Interest:Nil

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Authors Contribution

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Drafting: Hina Shaukat²,

Data Analysis: Arooj Kibriya³,Fatima Jamil⁴

Critical Review: Arooj Kibriya³,Fatima Jamil⁴

Final Approval of version: Zainab Masood¹,

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