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Research Article

Impact of the underlying cause and co-morbid conditions on the outcome of hepatic encephalopathy

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ABSTRACT

Background: Hepatic encephalopathy (HE) is a serious neuropsychiatric complication of acute and chronic liver diseases. This study aimed at identifying liver diseases and co-morbidity conditions associated with hepatic encephalopathy (HE) and their impact on patient`s mortality (the outcome).
Methods: A hospital-based, prospective study enrolled 76 patients admitted with HE conducted at Ibn Sina specialized gastroenterology hospital, Sudan, from January 2010 to May 2011. Personal data, clinical presentation, underlying liver disease, precipitants, co-morbid conditions and the outcome of HE were obtained from the inpatients' hospital records.
Results: A total of 76 patients were included, 62 males (81.5%) and 14 females (18.5%) aged between 13 and 84 years old. Hepatitis B virus (HBV) was the most common cause of the liver disease (36.8%), followed by HCV (11.8%). Clinically, 53 patients (69%) had impaired level of consciousness. Infection was the most common risk factor for HE (54%) followed by electrolyte disturbance (42%). Overall mortality within one to three weeks following the admission was (50%). The higher percentage of mortality was seen inpatients with late stage autoimmune hepatitis, followed by HCC and in co-morbid conditions like renal impairment (58.8%).
Conclusion: HE is associated with a high mortality despite proper management in specialized hospitals. The mortality tends to increase in the presence of comorbid condition.

Keyword: Hepatic encephalopathy, Viral hepatitis, Chronic liver disease

INTRODUCTION

Hepatic encephalopathy (HE) is a serious neuropsychiatric complication of acute and chronic liver diseases.[1-3] It is classified according to the clinical severity into five grades (0-4) ranging from confusion in grade I up to deep coma in grade IV.[4] Other symptoms such as change in sleep pattern, loss of coordination and disorientation also can be found.[5,6] The pathophysiology of the condition is attributed to increased blood levels of ammonia and other neurotoxins, associated with inflammatory response in form of astrocyte swelling and cerebral edema.[7,8] The different grades of HE can be diagnosed by many types of investigations, including neuropsychometric tests (such as the psychometric hepatic encephalopathy score), brain imaging and clinical scales (such as the West Haven criteria.[9,10] Management of HE depends on exclusion of other possible causes of encephalopathy as well as identifying the precipitating factors.[11-13] Patients with HE should be admitted to the ICU with empirical administration of pharmacological agents such as Rifaximin and Lactulose to reduce production and absorption of ammonia in the gut in addition to protein diet restriction and treating the precipitating cause like infections.[14,15]

METHODS

A hospital-based, prospective and observational study, conducted at Ibn Sina specialized gastroenterology

hospital, KSA. Personal data, the underlying causes of liver disease, co-morbid conditions, precipitating factors and the outcome of HE were obtained from the hospital inpatients' records. Descriptive data analysis was done using SPSS software version 16.The study was ethically approved by the Ethical Clearance Committee in the Sudan medical specialization board. The study conducted in Sudan, from January 2010 to May 2011. It enrolled 76 patients admitted to the medical ward with HE due to chronic liver disease. The clinical diagnosis of HE was made by expert consultants of gastroenterology at Ibn Sina hospital, KSA.

RESULTS

A total of 76 patients were included, 62 were male patients (81.5%) and 14 were females (18.5%) aged between 13 and 84 years old. The underlying causes of the liver leading to HE included Hepatitis B virus in 28patients (36.8%); HCV in 9 patients (11.8%); alcoholic liver cirrhosis in 5 patients (6.6%); HCC in4 patients (5.3%); AIH in 3 patients (3.9%); Wilson disease in 2 patients (2.6%) as well as in Budd Chiari syndrome; alcohol plus HBV in one patient (1.3%) and in 22 patients (28.9 %) the cause was undetermined. Apart from AIH and undetermined categories, male gender was more affected (Figure 1).

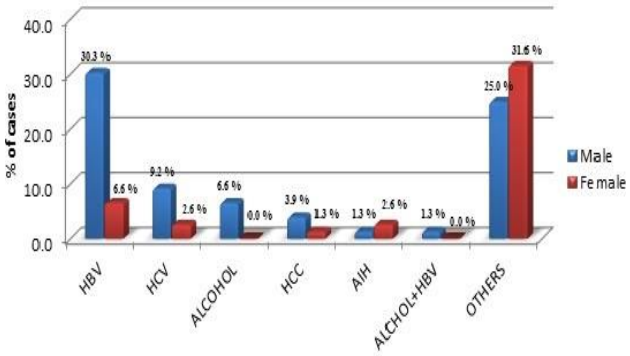

Figure 1: Underlying causes of liver disease.

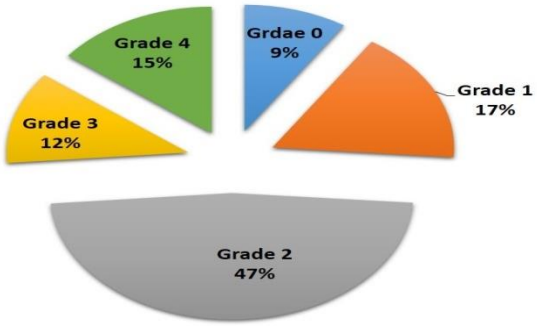

Figure 2: HE severity grade.

Almost half of the patients presented with grade II HE (Figure 2). At the time of admission, 53 patients (69%) had impaired level of consciousness; 74 patients (97.4%) were jaundiced; 62 patients (81%) had flapping termer and ascites in 46 patients (60%). Infection was the most common precipitating factor for HE (54%) followed by electrolyte disturbance (42%) and upper GIT bleeding in 27 patients (35.5%). Overall mortality within one to three weeks following the admission was (50%). The higher percentage of mortality was seen in patients with late stage autoimmune hepatitis, followed by HCC and in co-morbid conditions like renal impairment (58.8%) Table 1.

Table 1: Outcome of the patients with HE according to the causes of liver disease.

Causes	Improved	Dead
HBV	18 (65%)	10 (35%)
HCV	4 (45%)	5 (55%)
Alcoholic liver diseases	3 (60%)	2 (40%)
HCC	1 (25%)	3 (75%)
AIH	0 (0%)	3 (100%)
Alcohol+HBV	1 (100%)	0 (0%)
Wilsion disease	2 (100%)	0 (0%)
Budd chiari	1 (50%)	1 (50%)
Undetermined	8 (37%)	14 (63%)

DISCUSSION

The present prospective study was conducted in a specialized hospital for more than one year duration which strengthens the results and help in setting the suitable protocols for management of patients with HE.

In our study, HBV was the most common cause of liver disease complicated by HE followed by HCV as a second cause. This result is supported with a previous study done on the prevalence of HBV in Sudan and in line with another study investigating the causes of chronic liver disease in Pakistan.[17,18]

Undetermined causes of liver disease in this study are mainly due to death of patients before complete work up has taken place. Nevertheless, other rare conductions like: non-alcoholic steato hepatitis, hemochromatosis, storage liver disease, alfa-1 antitrypsin deficiency, both primary and secondary biliary cirrhosis and cryptogenic liver cirrhosis should all be considered. Many published studies done in Spain, UK, Sweden, and Sudan showed the unknown causes of liver disease ranging between11% up to 38%.[19]

In this study, sex distribution according to the underlying cause of liver disease have revealed that males are higher than female with the exception of AIH; this is consist with study about etiology of liver disease in western Sudan.[16]Alcoholic liver disease is very rare in Sudanese females because of social and religious considerations. All patients with AIH were females which are consistent with the fact that autoimmune diseases are commoner in female.[20] Clinically most of the patients presented with impaired level of consciousness and near half of them

were grade II HE. Jaundice and flapping tremor were present in more than 80% of the cases justifying the diagnosis of the HE grade one and above. However, mild degree of HE is usually diagnosed using neuropsychometric test.[21]

Infection was found to be the most common precipitating factor for HE followed by electrolyte disturbance and upper GIT bleeding. A similar result was obtained by a Pakistani study on the spectrum of precipitating factors of HE in liver cirrhosis.[22]

Patients with co-morbid condition were likely to die more than patients without co-morbidity. This finding is in concordance with a Danish nationwide population-based cohort study in co-morbid patients with liver cirrhosis.[23] Moreover, the high overall mortality seen in our study is comparable to recent studies done by Garg H et al, Onyekwere CA et al.[24,25]

CONCLUSION

HE is associated with a high mortality despite proper management in specialized hospitals. The mortality tends to increase in the presence of comorbid conditions such as renal failure, infection and upper GIT bleeding.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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