

Hypokalemia as a responsible factor of hepatic encephalopathy and its relation with the severity of encephalopathy: A wide multinational study

Abdulmajeed Alwada'i*, Himayat Ullah¹, Hossam Shabana¹, Ghulam Mustafa¹, Mohamed Abdel-Samiee²

¹ Department of Medicine, College of Medicine, Shaqra University, KSA

² Department of Hepatology and Gastroenterology, National Liver Institute, Menoufia University, Shebin El-Kom, Egypt

* Presenting Author

Introduction:

Several precipitating factors of hepatic encephalopathy have been recognized and studied. Hepatic encephalopathy which is a frequent and grave complication of liver failure is associated with multiple biochemical changes like high serum ammonia, mercaptan, and phenol levels, low albumin levels, and derangements in electrolytes. It is characterized by a range of neuronal and psychological aberrations mainly due to the inability of the liver to metabolize different neurotoxic chemicals produced in the body. Hypokalemia is one of the most important findings in hepatic encephalopathy and is postulated as a precipitating factor of the condition. We aimed to know the frequency of hypokalemia and its relation to the severity of hepatic encephalopathy.

Methods:

After taking approval from the hospital's ethical review committee, a total of five thousand (5000) patients with hepatic encephalopathy were recruited by consecutive sampling. They were interviewed, examined, and investigated for serum potassium levels and other precipitating factors of hepatic encephalopathy.

Conclusion:

Hypokalemia is one of the most prevalent findings in patients with hepatic encephalopathy and seems to be directly related to its severity as shown by this and several other studies. So, prompt measures should be taken to avoid and treat this abnormality in order to improve morbidity and mortality in patients with chronic liver disease and liver failure.

References:

- Schenker S, Bay MK. Portal systemic encephalopathy. Clin Liver Dis. 1997;1(1):157-xiii.
- Riggio O, Efrati C, Catalano C, et al. High prevalence of spontaneous portal-systemic shunts in persistent hepatic encephalopathy: a case-control study. Hepatology. 2005;42(5):1158-1165.

Result:

A total of 5000 patients including 3070 (61.4%) males and 1930 (38.6%) females, aged 13 years and above were studied. The frequency of hypokalemia was 78% (3900 patients). Relating the serum potassium level with the severity of hepatic encephalopathy, 1200 (60%) out of 2000 patients with serum potassium below 2.5 mEq/l were in grade 4 (40%) and 800 out of 2000 were in grade 3 encephalopathy. On the other hand, only 700 patients (6.4%) out of 1100 with serum potassium above 3.4mEq/l were in grade 4 encephalopathy.

Table 1: Frequency of hypokalemia and normokalemia with age and gender distribution in patients with hepatic encephalopathy (n = 5000).

Age (years)	Hypokalemic				Normokalemic				Total			
	Male		Female		Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%	No.	%		
13 - 40	280	5.6	160	3.2	110	2.2	70	1.4	390	7.8	230	4.6
41- 60	880	17.6	740	14.8	410	8.2	230	4.6	1290	25.8	970	19.4
> 60	1240	24.8	600	12.0	150	3.0	130	2.6	1390	27.8	730	14.6
Total	2400	48.0	1500	30.0	670	13.4	430	8.6	3070	61.4	1930	38.6

Table 2: Distribution of patients on the basis of severity of hepatic encephalopathy (west haven criteria) (n = 5000)

Hepatic encephalopathy grade	No. of Patients	Percentage (%)
Grade 1	480	9.6 %
Grade 2	1870	37.4 %
Grade 3	2230	44.6 %
Grade 4	420	8.4 %
Total	5000	100 %

Our study has clearly shown a high frequency of hypokalemia in patients with hepatic encephalopathy and its deleterious effect on the severity of hepatic encephalopathy. This study may help clinicians to take prompt actions to manage hypokalemia in order to avoid this serious complication of liver failure.

