Original Article

A Survey of Patterns of Practice and Perception of Minimal Hepatic Encephalopathy: A Nationwide Survey in India

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ABSTRACT

Background/Aim: Minimal hepatic encephalopathy (MHE) leads to overt hepatic encephalopathy (HE) and impairs quality of life in patients with cirrhosis. Awareness of MHE and its management among physicians is not known. Patients and Methods: We conducted a survey among 673 physicians in India from academic and nonacademic institutes to understand the clinical burden, perceived severity, management patterns, and the barriers to providing care for this condition. Results: Overall awareness of MHE in this survey was 75% (n = 504). Awareness of MHE was significantly higher in physicians working in teaching hospitals compared with those in nonteaching hospitals (79% vs 71%, P = 0.02). Similarly, gastroenterologists were more aware of MHE compared with nongastroenterologists (91% vs 66%, P = 0.001). Only 6.3% physicians screened all of their patients for MHE, whereas frequency of testing for MHE, either being nil or less than 10% of their patients was 64.7%. The most common test was paper and pencil test (86%) and the reason for nonscreening was nonavailability of time to test and also equipment or method (81%). A majority of physicians (88%) think that MHE affects quality of life. Physicians (61%) had an opinion that there should be some registry of MHE regardless of the cost and effort involved. Lactulose was used in 93% of cases, followed by rifaximin (82%) in the management of MHE. Conclusion: The overall awareness of MHE was 75% and it was significantly more in physicians of academic institutes. Despite awareness of its effect on quality of life, a majority of physicians did not test for MHE in their day-to-day practice.

Key Words: Minimal hepatic encephalopathy, physicians, survey

Minimal hepatic encephalopathy (MHE) is a condition in which patients with cirrhosis demonstrating normal mental and neurological status on standard clinical examination exhibit a number of neuropsychiatric and neurophysiological defects.[1] Prevalence of MHE varies from 25% to 80% in cirrhotic patients without overt HE.[2-4] Although named "minimal," MHE can have a far-reaching impact on quality of life, ability to function in daily life, and progression to HE.[5,6] In spite of evidence indicating that the diagnosis of MHE may be important, many physicians (post graduates) do not assess this in their day to day clinical practice due to many reasons.[7] We performed a survey among a large population of physicians in India in various practice settings in order to gain better insights into the perception of MHE in real-life practice. We also sought to understand how patients with MHE are perceived and managed by specialists with nonacademic interest in MHE.

MATERIAL AND METHODS

A questionnaire was sent electronically to physicians of various societies and it was collected online. A printed performa of the same questionnaire was also sent to physicians who did not respond online or were not in the list of previously sent electronic questionnaire and their response was collected. All the physicians included had done their post graduate course in internal medicine (Master in Medicine) and Gastroenterologists had done another 3 years of superspecialty training in Gastroenterology after their Internal medicine training. The questionnaire was divided into five sections: (1) participant information (place of practice and speciality, number of patients with cirrhosis, which were seen in a month); (2) awareness about MHE,

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its effects on quality of life, driving and overt HE; (3) how commonly they screen patients for MHE, most common method of screening, most common reason for not screening; (4) ways of increasing MHE awareness among physicians; and (5) therapeutic management of MHE in their day to day Hepatology practice.

Statistical analysis
Data were expressed as frequency and percentages. For a comparison of categorical variables, Chi square and Fisher's exact tests were used, and for continuous variables, a Mann–Whitney test for unpaired data and a Wilcoxon rank sum test for paired data were used as appropriate.

RESULTS

Study participants
The response rate of the electronic questionnaire was 32%, with 159 out of 500 physicians returning the electronic questionnaire. A total of 514 printed questionnaire responses were collected making it a total of 673 responses. The characteristics of the surveyed physicians are listed in Table 1. Of the 673 physicians (M:F 596:77, age 46 ± 9 years), 435 were general physicians (internal medicine) with no formal gastroenterology training and 238 were trained gastroenterologists. All the physicians belonged to India and had their training in India. Of the total physicians enrolled, 40% were from academic institutes and 60% were from nonteaching hospitals.

Awareness and assessment of MHE
Overall awareness of MHE in this survey was 504 (75%). Of these 504 physicians, 55 (11%) physicians had only heard of MHE with no definite knowledge and 169 (25%) had no knowledge and never heard of MHE. Awareness of MHE was significantly higher in physicians working in teaching hospitals compared with those in non-teaching hospitals (79% vs 71%, $P = 0.02$). Similarly, gastroenterologists were more aware of MHE compared with nongastroenterologists (91% vs 66%, $P = 0.001$) [Figure 1]. Of the physicians who responded (n = 504) to the question whether MHE should be screened, 88% believed that MHE should be screened in patients with cirrhosis, 4% were not in favor of screening for MHE, and 8% were not sure.

Of the 443 responses regarding the frequency of testing for MHE, only 6.3% physicians screened all of their patients for MHE, whereas frequency of testing for MHE, being either nil or only less than 10% of their patients was 63%. When we categorise physicians into Gastroenterologists versus nongastroenterologists, screening their patients (never or less than 10% of time) was significantly higher in nongastroenterologists group, that is, 70% versus 53% ($P = 0.001$). Classifying them into

those working in academic and nonacademic institutes, significantly more physicians working in academic institutes screen their patients >10% of the time (48% vs 24%, $P = 0.001$) [Figure 1].

Paper and pencil test was the most common method of screening in these patients (86%), whereas critical flicker frequency (5.7%), inhibitory control test (3.3%), and others (mostly addition and subtraction, reverse counting) were done in 5% of the patients. The most common reason for nonscreening was lack of time to test (53%) and nonavailability of equipment or method (28%). Nine percent of physicians did not know the method despite their willingness to screen the patients for MHE.

To further increase awareness about MHE among physicians, 51% believed organizing continued medical education (CME) was needed, 13% wanted small booklets or posters or some written material, and 10% expressed that a combination of these two were the best method of increasing awareness among practicing doctors. Only 6% favored some form of video clip about MHE to increase the awareness.

We got 646 response to our question on the need for registry and future trials. Physicians (61%) had an opinion that there should be some registry of MHE regardless of the cost and effort involved as it will help in data generation and give us a true picture of this identity. Thirty-four percent believed it would be difficult and not cost effective in an Indian setting. Only 5% did not believe in maintaining such a registry. Both gastroenterologists and nongastroenterologists did not differ on this question ($P = 0.18$). Future large trials are still needed and 89% physicians were in favor of conducting these trials in India.

MHE and quality of life in Indian patients
Of the total response (n = 504), 88% (n = 445) think that MHE affects quality of life in patients with cirrhosis, whereas 7% were not sure about it and 5% did not think that it affects quality of life. Ninety-one percent believed

Table 1: Baseline characteristics of physicians and their practice patterns	
Parameters	N (percentage)
General physicians	435 (64.6)
Gastroenterologists	238 (35.4)
Place of work	
Teaching hospital	270 (40%)
Nonteaching hospital	403 (60%)
Number of cirrhosis patients seen in a month	
None	36 (5.8)
1-10	259 (38.5)
11-25	242 (36.0)
>25	136 (20.2)

that MHE leads to overt HE, whereas 7% were not sure of it and remaining 2% did not believe that MHE leads to overt HE. Similarly, 87% of the physicians who responded believe that patients with MHE are not fit to drive a car, 3% felt MHE did not affect driving capabilities, and 10% were not sure. No difference was noted between gastroenterologists' and nongastroenterologists' opinion regarding the effect of MHE on quality of life and development of HE. However, significantly more gastroenterologists believed that MHE affects driving capabilities compared with nongastroenterologists (94% vs 83% $P = 0.001$) [Table 2].

Treatment used for MHE

Different therapies are practiced in India for the treatment of MHE. The physicians who responded (n = 482) used disaccharides (lactulose) 93% of the time, followed by rifaximin 82%, combination of therapy (lactulose plus rifaximin) 78%, l-ornithine and l-aspartate (LOLA) 17%, and probiotics only 3%. Gastroenterologists and nongastroenterologists did not have any difference with regard to practice of lactulose (94% vs 91%, $P = 0.16$), combination therapy (81% vs 74%, $P = 0.09$), and LOLA (20% vs 15%, $P = 0.17$); however, rifaximin was preferred by gastroenterologists (89% vs 77%, $P = 0.001$). Probiotics was not the preferred treatment for MHE by either group [Figure 2].

DISCUSSION

This survey highlights the important aspects of patterns of practice and medical recognition of MHE in India. Seventy-five percent of the physicians were aware of

MHE, and as expected there was a significant difference in the awareness of MHE between gastroenterologists and nongastroenterologists and physicians working in academic institutes and those in nonacademic institutes. This finding emphasizes that awareness has to be increased among general physicians who also treat patients with cirrhosis in countries such as India.

Although there was a general awareness about MHE, we were surprised that a majority (63%) of them either did not test or tested only <10% of their patients for MHE. Here also general physicians outnumbered gastroenterologists in not testing for MHE. Same was the experience of Bajaj *et al.*[7] in a survey among AASLD (American association for the study of liver disease) members where a minority was able to test for it >50% of the time and 52 (38%) respondents had never tested for it. The most common reason for nonscreening was shortage of time and unavailability of any method. Hence the need for some tests that can be done easily and quickly and made available to physicians at a minimal cost. To increase awareness about MHE, the preferred response would be by doing short CME with demonstration of these tests. These kinds of activities should be done on a routine basis for physicians mainly those in nonacademic setting to make them aware of MHE.

Most of the physicians believe in the need for more large multicenter trials and maintenance of some sort of registry to monitor patients with cirrhosis and MHE. This will give them a better understanding of the disease and its natural course. Because there is no established therapy for MHE, a large variety of practices were considered.[8-10] Lactulose followed by rifaximin still remains the main stay of treatment for MHE by gastroenterologists and nongastroenterologists. To our
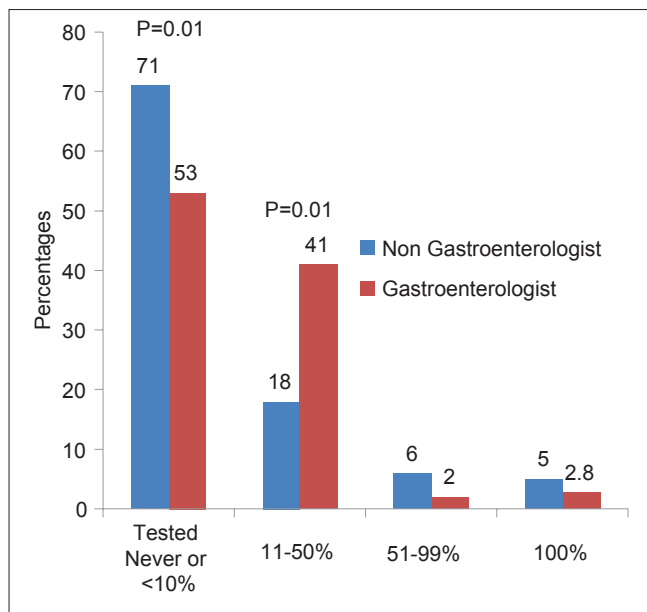

Figure 1: Frequency of testing minimal hepatic encephalopathy in patients with cirrhosis by gastroenterologists and nongastroenterologists
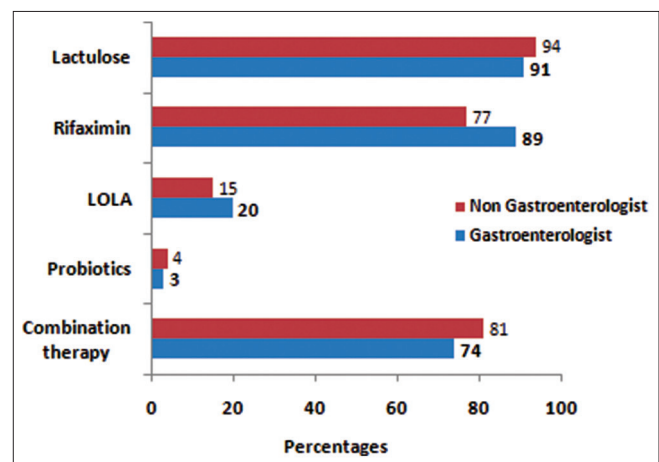

Figure 2: Treatment used by gastroenterologists and nongastroenterologists in the management of minimal hepatic encephalopathy. 'Rifaximin use between gastroenterologists and nongastroenterologists is significant ($P = 0.001$)'

Table 2: Testing for minimal hepatic encephalopathy by gastroenterologist (*n*=238) and nongastroenterologist (*n*=435)

Question asked (*n*=response received)	Overall *N* (%)	Gastroenterologist	Nongastroenterologist	*P*
Awareness about MHE (*n*=673)	504 (75)	216	288	0.001
Should MHE be tested (*n*=504)	443 (88)	183	260	0.07
How frequently you assess MHE (*n*=443)	279 (63)	97	182	0.001
Never or <10% of time				
Quality of life parameters (*n*=504)				
Does it affect quality of life	445 (88)	184	261	0.14
Does it leads to overt HE	455 (91)	195	260	0.16
Does it affect driving capabilities	441 (87)	203	238	0.01
Most common method for screening				
MHE (*n*=331)	284 (86)	134		0.06
Paper and pencil method				
Most common reason for not assessing				
MHE (*n*=504)	408 (81)	179		0.08
Not enough time and no method available				
Need for future large trials in India (*n*=646)	573 (89)	216	357	0.08
Need for some registry for patients with cirrhosis (*n*=646)	392 (61)	145	247	0.8
Treatment options as firstline therapy (*n*=482)				
Lactulose	446 (93)	182	264	0.16
Rifaximin	394 (82)	156	238	0.001
l-ornithine and l-aspartate	82 (17)	40	42	0.20
Probiotics	19 (3)	8	11	0.80
Combination therapy (mainly lactulose+rifaximin)	376 (78)	149	227	0.09

HE: Hepatic encephalopathy, MHE: Minimal hepatic encephalopathy

surprise, we found most physicians prefer a combination of treatment, mostly lactulose and rifaximin for the treatment of MHE. Since there is insufficient data for combination treatment of MHE, the causes for preferring combination therapy by physicians must be looked into in future studies on MHE.

The strength of this study was inclusion of a large number of physicians working in both academic and nonacademic institutes. This gives us a clear picture of perception and practices in real-life world. A limitation of this study was that only 32% of the physicians initially returned the electronic questionnaire, which could potentially bias the results, as nonresponders might hold divergent views on some aspects of the disease and its management or have lower levels of overall interest in it. Other questions based on issues such as political or social facets, such as asking about presence of laws or regulations, idea about need to do street testing or withdrawal of licence, or any efforts to teach patients about it, could have made this survey more futuristic for future guidelines on this issue. However, the primary aim of this survey was to know the perception and diagnostic barrier among physicians in diagnosing MHE in a developing country such as India. In conclusion, this study provides a snapshot of the current perception of MHE among physicians from various professional practices in a large Eastern country.

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