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RATE OF CCURRENCE OF MINIMAL HEPATIC ENCEPALOPATHY IN UNEDUCATED PATIENTS PRESENT WITH COMPENSATED CIRRHOSIS

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Abstract:
Objective: This research work aimed to find out the rate of occurrence of MHE (Minimal Hepatic Encephalopathy) among uneducated patients suffering from compensated cirrhosis.
Methodology: Uneducated patients suffering from compensated cirrhosis present with F4 Score on Shear Wave Elastography, were recruited for this research work after obtaining their verbal consent. One hundred and six was the estimation of sample size. Recruited patients underwent two tests for identification of the MHE, NCT-A (Number Connection Test-A) and BDT (Block Design Test). We labelled the patients as positive for MHE who obtained ≥ thirty seconds.
Result: Among total one hundred and ten recruited patients, 10.90% patients were alcoholics and there was no detection of hepatic viral infection in 8.20% patients. Total 48.20% patients were present with positive HCV whereas there was positive HBV in 13.60% patients. We detected MHE in 65.50% (n: 72) patients. We found the main differences MHE Stage-2 & Stage-3 by 2 methods of tests. Overall, detection of more patients carried out by BDT and it gave high staging in Stage-2 and Stage-3 in comparison with the NCT-A test method.
Conclusion: The detection of MHE is possible in uneducated patients with the utilization of BDT and NCT-A test procedures.
KEY WORDS: MHE, NCT-A, BDT, occurrence, rate, HBV, infection, HCV, staging, consent, utilization, differences, positive, compensated cirrhosis.

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INTRODUCTION:

HE (Hepatic Encephalopathy) is very common complication of cirrhosis [1]. It is still a major complication in the patients suffering from liver diseases regardless of the advances in the administration of the health care facilities for liver diseases. Approximately, 30.0% to 45.0% patients of cirrhosis develop hepatic encephalopathy and its range is from mild symptoms as fatigue & sleep inversion to coma [2]. HE has association with the decreased survival after even the single episode [3]. MHE is an abnormality appearing in patients of cirrhosis because of neuro-cognitive dysfunction [4, 5]. Although named as minimal, it has great impact on QoL (Quality of Life), ability of functional routine life and can develop to explicit hepatic encephalopathy [4]. The rate of occurrence of MHE in HE is from 30.0% to 84.0% [5]. This complication deteriorates the QoL of the patients as well as it impairs the ability of the patients to drive and handle machinery due to deficits in attention [5, 6]. Even the mild MHE is not a treatable HE stage and so, it is sensible to detect the presence of MHE to augment prognosis and treatment [7, 8].

There is no ideal standard test for the determination of MHE. Neuropsychological & neurophysiological procedures were in use for the diagnosis of this very complication [9, 10]. But it have longer effects on QoL of these patients. Many research works have stated its adverse impacts on quality of life of these patients, their ability to perform their duties and intellectual functions [2, 11]. There are some research work reported from India about MHE but there are no research study available on this topic in our regions. The study on this very topic is important to increase the suitable management for improving the QoL of the patients and prevention of development to HE. The main objective of this research work was find out the rate of occurrence of MHE in uneducated population suffering from compensated cirrhosis.

METHODOLOGY:

This research work carried out in Hepatitis Clinic present in General Hospital, Lahore from June 2018 to May 2019. Uneducated patients suffering from compensated cirrhosis present with F4 Score on Shear Wave Elastography were recruited for this research work after obtaining their verbal consent.

We took the patients as illiterate or uneducated who were present with no primary education or less than 5 years of education. We took the patients as literate or educated who were present with complete education of Quran. We excluded the patients present with other serious complications or diseases. The estimation of the sample size carried out by PASS-13 Software utilizing the Wilson Score procedure. We estimated the size of sample as one hundred and six. We recorded the data about demography of these patients. All the recruited patients were subjected to 2 tests for identification of MHE, NCT-A and BDT. Each patient was undertaken these tests for 3 times and we took the best results of these 3 times. All the patients obtaining lower than thirty seconds in every test for completion were labelled as MHE negative. Patients obtaining equal or greater than thirty seconds were labelled as MHE positive.

Further staging of the patients carried out as under;
Less than thirty seconds as absent
Between 31 to 50 seconds as Stage-1
Between 51 to 80 seconds as Stage-2
Between 81 to 120 seconds as Stage-3
Greater than 120 seconds as Stage-4

We reported the average ages and their standard deviations in accordance with gender and we used T-test for their comparison. We reported the predisposing causes of cirrhosis in frequencies. We reported the rate of occurrence of MHE in percentages.

RESULTS:

Recruitment of total one hundred and ten patients carried out in this research work. There were total 57.30% (n: 63) male and 42.70% (n: 47) female patients in this research work. The average age of the male patients was 39.90 ± 9.50 years whereas average age of female patients was 36 ± 10 years. Average age of female patients was low as compared to male patients statistically (P= 0.0460). Out of total one hundred and ten recruited patients, 10.90% patients were alcoholics and there was no detection of hepatic viral infection in 8.20% patients. Total 48.20% patients were HCV positive whereas 13.60% patients were HBV negative. The information about the demography of recruited patients is available in Table-1.

**Table-I: Demographic details of selected patients.**

Characteristics		Gender				Total	
		Male		Female			
		No / Mean	Percent / SD	No / Mean	Percent / SD	No / Mean	Percent / SD
Virus	No Virus	6.0	9.200%	3.0	6.700%	9.0	8.200%
	HCV	33.0	50.800%	20.0	44.400%	53.0	48.200%
	HBV	7.0	10.800%	8.0	17.800%	15.0	13.600%
	HBV + HDV	7.0	10.800%	5.0	11.100%	12.0	10.900%
	HCV + HBV	7.0	10.800%	5.0	11.100%	12.0	10.900%
	HCV + HBV + HDV	5.0	7.700%	4.0	8.900%	9.0	8.200%
Alcoholic		10.0	15.400%	2.0	4.400%	12.0	10.900%
Mean Age (years)		39.90	9.50	36.00	10.20	38.30	10.00
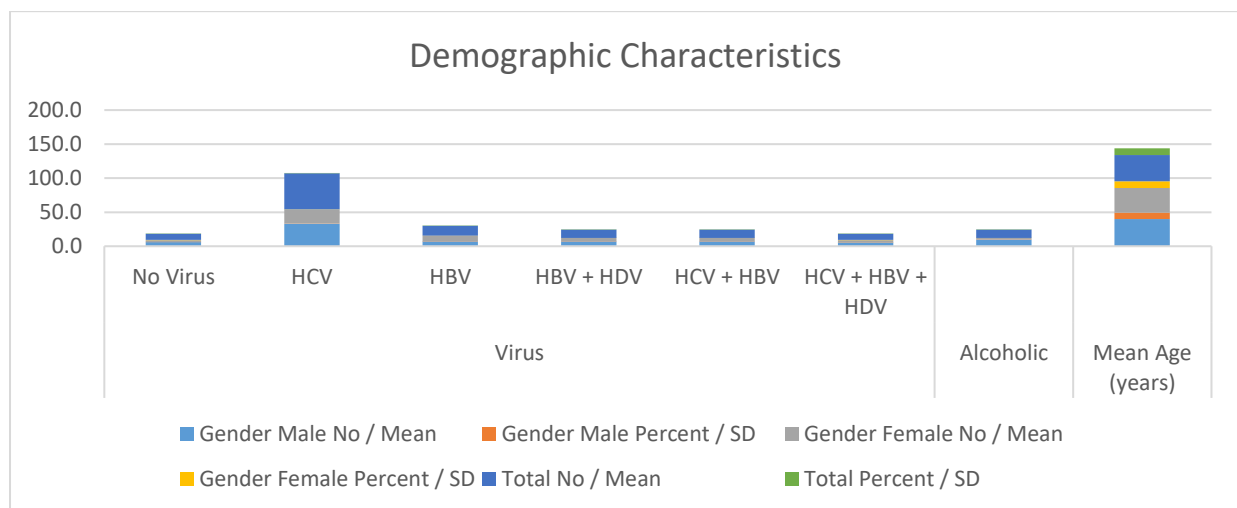
Average time taken for test of NCT-A was 38.60 ± 38.10 seconds whereas average time for BDT test was 47.60 ± 37.20 seconds. The comparison of times taken by both test methods carried out by T test which showed that time taken by BDT was higher than the time taken by test of NCT-A with P= 0.0250 & CI of 95.0% of -16.80 to -1.120. Time taken by both tests displayed poor linear correlation with one another (r2= 0.1540; P < 0.0010), showing significant disparity in time correlations present in these two test methods applied in this research work. The segregation of the patients carried out in 2 groups on the basis of the results of tests of both procedures utilizing cut off of thirty seconds to find out the rate of occurrence of MHE. According to the findings of NCT-A, 71.80% (n: 79) patients were present with MHE whereas BDT identified 70% (n: 77) patients with MHE. Both tests gave positive results in 65.50% (n: 72) patients and we labelled these patients suffering from MHE in accordance with the protocol of the study. Details of these findings are available in Table-2.

**Table-II: MHE frequencies by NCT-A & BDT Tests.**

MHE Frequencies			BDT Status		
			Negative	Positive	Total
NCT-A Status	Negative	No	26.0	5.0	31.0
		Percent	23.600%	4.500%	28.200%
	Positive	No	7.0	72.0	79.0
		Percent	6.400%	65.500%	71.800%
	Total	No	33.0	77.0	110.0
		Percent	30.000%	70.000%	100.000%
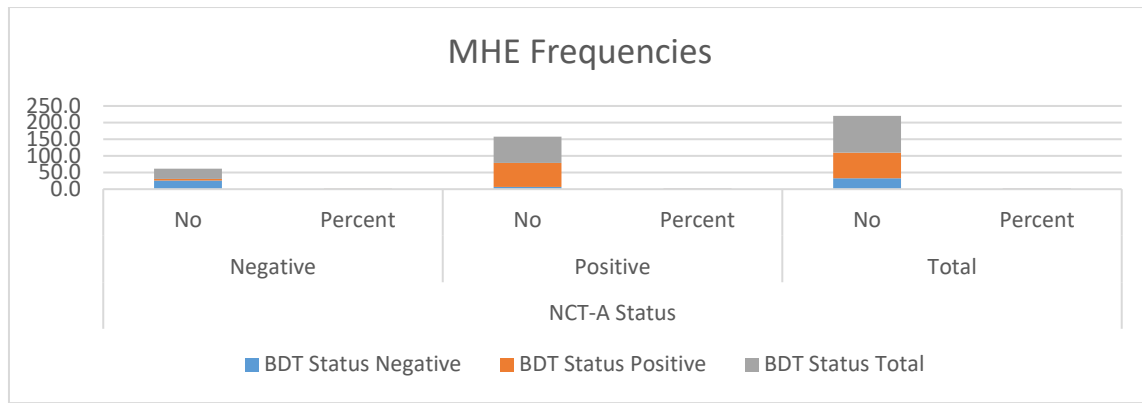
MHE Staging on basis of 2 tests time scores is present in Table-3.

Table-III: MHE Staging based on NCT-A & BDT Tests.

MHE Stages	NCT-A Test		BDT Test	
	No	Percent	No	Percent
MHE Absent	30.0	27.300%	18.0	16.400%
MHE Stage-I	21.0	19.100%	11.0	10.000%
MHE Stage-II	17.0	15.500%	33.0	30.000%
MHE Stage-III	24.0	21.800%	30.0	27.300%
MHE Stage-IV	18.0	16.400%	18.0	16.400%
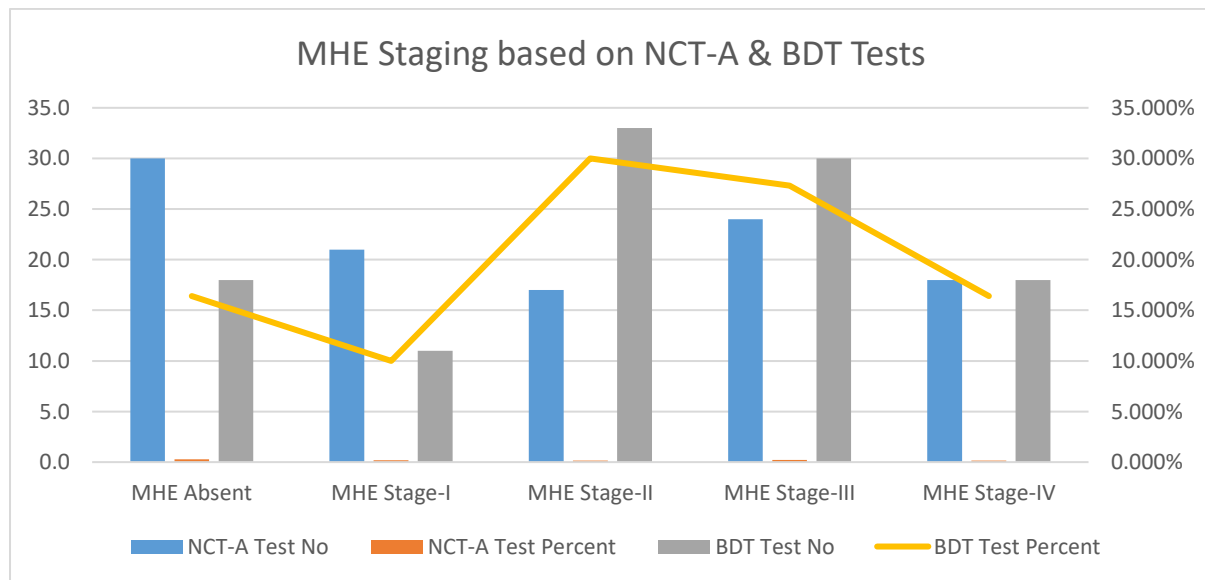
We observed main differences in MHE Stage-2 and Satge-3 by these 2 test procedures. Overall, there was detection of more cases by BDT test and it gave high staging in Stage-2 and Stage-3 in comparison with the NCT-A test method.

DISCUSSION:

The findings of this research work showed a significant availability of MHE in the patients suffering from compensated cirrhosis. Many procedures are present for the diagnosis of MHE but there are some drawbacks of all these procedures as high costs, lack of standardization and need of education. So, there is lack of gold standard in this very field [12]. The diagnosis of MHE in uneducated patients is much challenging as majority of the test procedures require some qualification level as well as constructive capabilities. Majority of the research works conducted in past have stressed on stating the MHE in the patients suffering from decompensated cirrhosis but here in this research work, we focused on the MHE present in the patients suffering from

compensated cirrhosis. The rate of occurrence of MHE in the patients present with decompensated cirrhosis is from 40.0% to 80.0% patients [5].

The variation in the rate of occurrence of MHE is the outcome of differences in the used methods for identification. Most of the patients in our setting were uneducated and they were not able to take part for complicated or more sophisticated tests methods for the identification of MHE. Therefore, we selected the test which were more easily be understood by such patients. Interpretation of psychometric methods in MHE should be carried out with carefulness in the patients available with comorbidities as heart failure and renal failure, as they incline to overemphasize MHE [13]. It is important for professionals to be aware about the knowledge of MHE for enhancement in the quality of life and health of these patients due to absence of gold standard for identification of MHE [14]. Internationally, most favored test is PHES (Psychometric Hepatic Encephalopathy Score) [15], but it needs that the patient should be able to write and read.

CONCLUSION:
There is a serious challenge to diagnose the MHE in uneducated patients but test methods like BDT and NCT-A are useful for the identification of MHE in illiterate population present with compensated cirrhosis.

REFERENCES:
1. Mina A, Moran S, Ortiz-Olvera N, Mera R, Uribe M. Prevalence of minimal hepatic encephalopathy and quality of life in patients with decompensated cirrhosis. Hepatol Res. 2014;44:E92-99. doi:10.1111/hepr.12227
2. Chen HJ, Wang Y, Zhu XQ, Li PC, Teng GJ. Classification of cirrhotic patients with or without minimal hepatic encephalopathy and healthy subjects using resting-state attention-related network analysis. PLoS One. 2014;9:e89684. doi:10.1371/journal.pone.0089684
3. Prasad S, Dhiman RK, Duseja A, Chawla YK, Sharma A, Agarwal R. Lactulose improves cognitive functions and health-related quality of life in patients with cirrhosis who have minimal hepatic encephalopathy. Hepatology. 2007;45:549-559. doi:10.1002/hep.21533
4. Chen HJ, Chen R, Yang M, Teng GJ, Herskovits EH. Identification of minimal hepatic encephalopathy in patients with cirrhosis based on white matter imaging and Bayesian data mining. AJNR Am J Neuroradiol. 2015;36:481-487. doi:10.3174/ajnr.A4146

5. Kharbanda PS, Saraswat VA, Dhiman RK. Minimal hepatic encephalopathy: diagnosis by neuropsychological and neurophysiologic methods. Indian J Gastroenterol. 2003;22(Suppl 2):S37-41.
6. Gupta D, Ingle M, Shah K, Phadke A, Sawant P. A Prospective Comparative Study of Inhibitory Control Test (ICT) Versus Psychometric Hepatic Encephalopathy Score (PHES) for Diagnosis and Prognosis of Minimal Hepatic Encephalopathy (MHE) in Patients of Cirrhosis in Indian Subcontinent. J Dig Dis. 2015;16(7):400–407. doi:10.1111/1751-2980.12248
7. Schomerus H, Hamster W. Quality of life in cirrhotics with minimal hepatic encephalopathy. Metab Brain Dis. 2001;16:37-41.
12 Weissenborn K. Diagnosis of minimal hepatic encephalopathy. J Clin Exp Hepatol. 2015;5:S54-59. doi:10.1016/j.jceh.2014.06.005
13 Lauridsen MM, Poulsen L, Rasmussen CK, Hogild M, Nielsen MK, de Muckadell OB, et al. Effects of common chronic medical conditions on psychometric tests used to diagnose minimal hepatic encephalopathy. Metab Brain Dis. 2015. doi:10.1007/s11011-015-9741-6
14 Bajaj JS. Diagnosing Minimal Hepatic Encephalopathy: From the Ivory Tower to the Real World. Gastroenterology. 2015;149:1330-1333. doi:10.1053/j.gastro.2015.09.028
15 Li SW, Wang K, Yu YQ, Wang HB, Li YH, Xu JM. Psychometric hepatic encephalopathy score for diagnosis of minimal hepatic encephalopathy in China. World J Gastroenterol. 2013;19:8745-8751. doi:10.3748/wjg.v19. i46.8745
16 Ferenci P, Lockwood A, Mullen K, Tarter R, Weissenborn K, Blei AT. Hepatic encephalopathy--definition, nomenclature, diagnosis, and quantification: final report of the working party at the 11th World Congresses of Gastroenterology, Vienna, 1998. Hepatology. 2002;35:716-721. doi:10.1053/ jhep.2002.31250
17 Stinton LM, Jayakumar S. Minimal hepatic encephalopathy. Can J Gastroenterol. 2013;27:572-574.
18 Bustamante J, Rimola A, Ventura PJ, Navasa M, Cirera I, Reggiardo V, et al. Prognostic significance of hepatic encephalopathy in patients with cirrhosis. J Hepatol. 1999;30:890-895.
19 Bajaj JS. Minimal hepatic encephalopathy matters in daily life. World J Gastroenterol. 2008;14:3609-3615.