

Evaluation of the Prevalence of Sub-Clinical Hepatic Encephalopathy in Compensated Cirrhotics

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Abstract: Hepatic Encephalopathy is a leading cause of morbidity and mortality in cirrhotic patients. The advent of Positron Emission Tomography and Magnetic Resonance Spectroscopy has lead to earlier diagnosis of Hepatic encephalopathy, often at a sub clinical stage. Sub clinical hepatic encephalopathy is a distinct clinical entity now, with subtle personality changes and impairment of performance. Now with the help of few simple tests we can diagnosis sub clinical hepatic encephalopathy and treat it early enough to prevent significant morbidity and mortality. The treatment of these patients diagnosed to have sub clinical hepatic encephalopathy has brought reduction in the progression of these patients to frank encephalopathy.

I. Introduction

The study is about the evaluation of the prevalence of sub clinical Hepatic encephalopathy in compensated cirrhotics. The subclinical stage is evaluated by number connection tests, serum ammonia levels and electro encephalogram. The study is for the diagnosis of subclinical stage and to give treatment before it goes for decompensation and further complications.

II. Aim Of The Study

1. To evaluate the prevalence of performance impairment in compensated cirrhotics.
2. To evaluate the prevalence of cerebral cortical involvement in compensated cirrhotics using electroencephalography.
3. To assess the prevalence of subclinical hepatic encephalopathy in compensated cirrhotics using number connection test, EEG, & Serum Ammonia levels.

III. Materials And Methods

The study was conducted in Coimbatore Medical College Hospital. The cases were selected from the general medical wards, the intensive care unit or medical Gastro enterology department.

50 cases of compensated cirrhosis were chosen, over a time span of two years. 50 healthy controls were chosen from volunteers. Only ultrasound proven cases of cirrhosis were chosen. Patients with frank encephalopathy or other signs of decompensation like ascites, jaundice, history of previous episode of encephalopathy, massive upper GI bleed, were excluded from study. Patients who developed encephalopathy during their stay in the hospital [one case] was also excluded.

Patients with other confounding illnesses like severe congestive cardiac failure or severe renal failure or severe respiratory failure were also excluded. 42 males and 8 females were finally included in the study.

A detailed history was recorded giving special emphasis to rule out any subtle performance impairment. Detailed history was also taken to probe into etiological cause of the patients cirrhosis.

A detailed clinical examination was done to rule out any signs of decompensation. Minimal ascites was not taken as an exclusion criteria. Minimal evidence of portal hypertension was also not taken as an exclusion criteria.

All the baseline investigation were done and a CNS examination carried out to rule out other causes of encephalopathy. Patients above 75 years of age were ruled out as the incidence of dementing illnesses were high in these patients.

A number connection test was given to the patient and the control simultaneously, after proper explanation on how to complete the test. Before interpreting the results it was made sure that the patient understood the procedure properly. The time taken to complete the test added to the time taken to correct the errors are noted.

An arterial blood sample was obtained from radial artery and was sent for ammonia analysis. An electro encephalogram was performed in all study subjects and in 10 healthy controls.

The studies especially the number connection test was repeated just before discharge of the patients after treatment.

IV. Observation

Number Connection Test:

All controls were able to complete correctly before 60 seconds.

34% of cases were positive by this test.

The grading system commonly follows as

0 → 15-30 seconds ----- No SCHE

1 → 30-50 seconds-----High Normal

2 → 51-80 seconds-----Highly suggestive of SCHE

3 → 81-119 seconds----- Highly suggestive of SCHE

4 → >120seconds----- Highly suggestive of SCHE

Prevalence Of Sche In Cirrhotics By Number Connection Test

NCT POSITIVE	NUMBER	PERCENTAGE
MALES	15	30%
FEMALES	2	4%
TOTAL	17	34%

Serum Ammonia:

Arterial samples of all patients were sent for Ammonia Analysis. 15 patients whose blood was drawn for ABG analysis were taken as controls. None of these controls were known cirrhotic patients or suffering from hepatic encephalopathy.

The normal ammonia level standardized for the laboratory was 10-30 µmol/l. Any value above 30 µmol/l were taken as positive. 48% of cases were positive for raised serum ammonia. One control tested positive for increased levels of serum ammonia.

Prevalence Of Sche Based On Ammonia Analysis

ARTERIAL AMMONIA >30 µmol/l	NUMBER	PERCENTAGE
MALES	18	36%
FEMALES	6	12%
TOTAL	24	48%

Electro Encephalography:

All 50 patients and 10 controls were sent for EEG analysis.

None of them were on sedatives or any cerebro active drugs, none were epileptic.

All other causes for encephalopathy were ruled out by examination and baseline investigation.

EEG was taken as significant if any of the following were present.

1. Diffuse slowing of waves

2. High amplitude, low frequency waves.

3. Triphasic waves.

3 patients had significant findings (6%) No controls had any of these findings.

Prevalence Of Sche Based On Eeg Analysis

EEG CHANGES POSITIVE	NUMBER	PERCENTAGE
MALES	3	6%
FEMALES	0	0%
TOTAL	3	6%

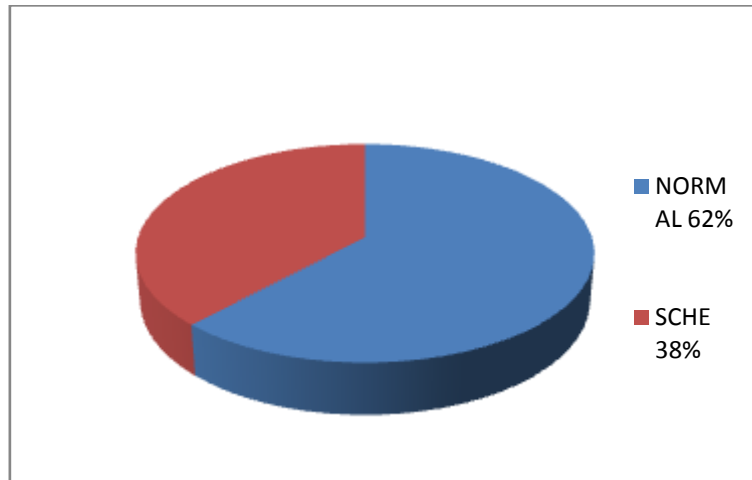
Prevalence Of Sche In Cirrhotics Using A Combination Of

Tests

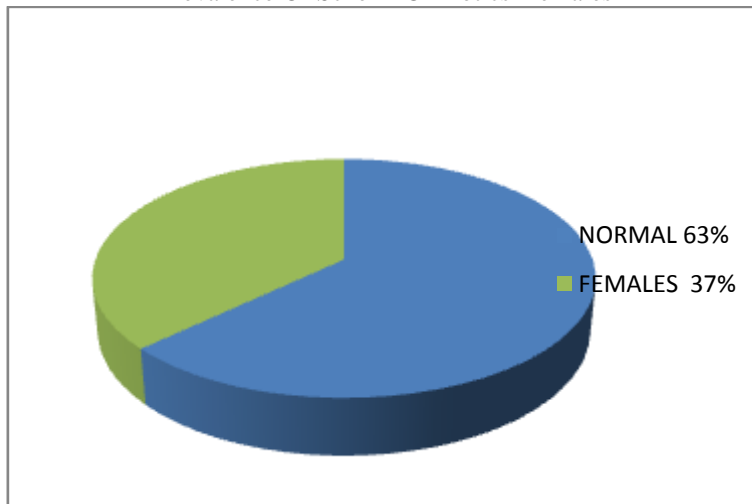
NAME OF THE TESTS	NUMBER POSITIVE	PERCENTAGE
Number connection test +EEG	Males :3	Males :6%
	Females :0	Females :0%
	Total :3	Total :6%
Number connection test + arterial ammonia	Males :15	Males :30%
	Females :1	Females :2%
	Total :16	Total :32%
EEG+Arterial Ammonia	Males :2	Males :4%
	Females :0	Females :0%
	Total :2	Total :4%
NCT +Arterial Ammonia +EEG	Males :2	Males :4%

Females	:0	Females	:0%
Total	:2	Total	:4%

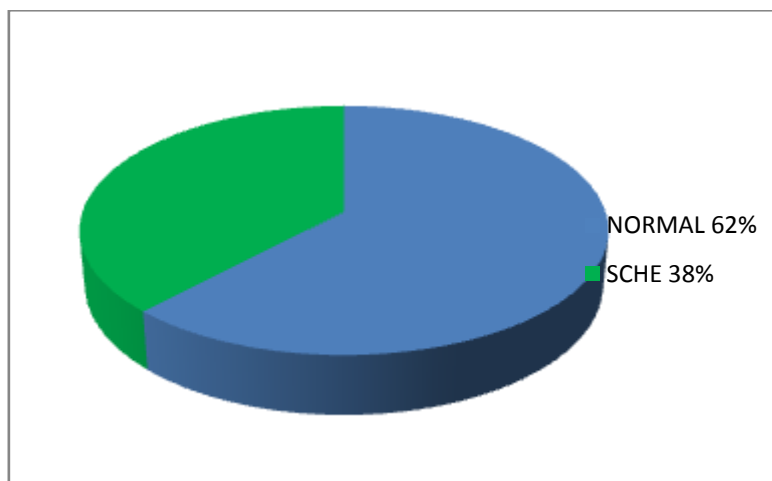
Prevalence Of Sche In Cirrhotics Males



Prevalence Of Sche In Cirrhotics Females



Prevalence Of Sche In Cirrhotics Males & Females



V. Conclusions

The prevalence of subclinical Hepatic Encephalopathy in Compensated cirrhotics in our study is 38%. There is no significant difference in the prevalence rate between males [38.09%] and females [37.5%]. Number connection test and other psychometric tests are useful as bedside tools in Sub Clinical Hepatic Encephalopathy screening. Psychometric test positivity does not correlate well with Electro Encephalo Graphic changes in the diagnosis of Sub Clinical Hepatic Encephalopathy.

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