



TO ASSESS SUBCLINICAL UREMIC ENCEPHALOPATHY IN NEWLY DIAGNOSED CHRONIC KIDNEY DISEASE PATIENTS BY USING COGNITIVE PARAMETERS IN TERTIARY CARE CENTRE

Nephrology

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ABSTRACT

Background: Chronic kidney disease (CKD) is one of the leading cause of death in the world because of its late or end stage presentation. In our study we assessed patients of CKD for cognitive dysfunction with Addenbrooke scale and other biochemical parameters. **Methods:** This cross-sectional study was conducted on 60 newly diagnosed CKD patients at MGM Medical College and MY Hospital Indore, MP, India, from 2019 to 2021. Baseline parameters like serum urea, creatinine, bilirubin and sodium were done and patients were subjected to Addenbrooke scale to assess subclinical uremic encephalopathy and data were analysed using SPSS statistics version 22.0 and p value <0.05 and confidence interval more than 95% were considered significant. **Results:** In my study of 60 patients, we have different mean of Addenbrooke scale according to stages. In stage 1 of CKD the mean value of scale is 94.33%. In CKD stage 2 the mean scale is 96.833%. In stage 3 CKD mean value is 94.5%. In CKD stage 4 the mean value is 91.2%. In CKD stage 5 the mean value is 86.88%. **Conclusions:** This study supports the fact that as CKD stages progresses, there is propensity of Addenbrooke score to decrease which helps in early detection of subclinical uremic encephalopathy and therefore the risk of uremic seizures.

KEYWORDS

Chronic Kidney Disease, Addenbrooke Scale, Subclinical Encephalopathy.

INTRODUCTION

There is increased risk for developing cognitive impairment in patients with Chronic kidney disease (CKD) as compared to the general population¹. It is associated with albuminuria and low glomerular filtration rate in the patients of CKD². The main pathology being cerebrovascular disease, also impaired clearance of urea, depression, sleep disturbance, anaemia, and different drugs could also be some contributory factors³. Clinical uremic encephalopathy due to renal failure can present with subtle symptoms of mental slowing, drowsiness, decreased mental acuity and vigilance to non-specific symptoms such as nausea, anorexia, restlessness, itching, and hypothermia to more obvious and grave symptoms such as seizures, myoclonus and even coma⁴. Addenbrooke scale was developed to overcome the neuropsychological omissions present in the Mini Mental State Examination (MMSE)⁵.

ACE aimed to be a screening technique that evaluates the principal cognitive functions and grants free access to health professionals⁵. In this way, ACE turns into a brief cognitive screening tool, which takes only 15–20 minutes to administer and is useful in the detection of dementia syndromes⁵.

The ACE is composed of tests of attention, orientation, memory, language, visual perception and visuospatial skills³. All of these measures have significant correlations with the classical neuro psychological tests⁵.

This study aims to critically review the Addenbrooke's cognitive examination III A timely recognition and prompt intervention can decrease the burden of morbidity caused by CKD. The clinical manifestations in patients of CKD having uremic encephalopathy vary from mild confusion to deep coma. They can also have movement disorders and clinically we can diagnose encephalopathy by asterixis⁶. Uremic encephalopathy is a major indication of dialysis (renal replacement therapy) with or without transplantation⁶.

Uremic encephalopathy is generally reversible and usually takes 2-3 days before mental state clears, although some amount of mental deficit can still remain even after dialysis in patients with chronic renal failure. In case patient's alertness does not improve even after dialysis, it should raise the suspicion of some other etiology of encephalopathy. In most cases of dialysis disequilibrium syndrome, neurologic recovery is rapid and complete.⁷⁻¹⁰

MATERIAL AND METHODS

This cross-sectional study is conducted on 60 newly diagnosed chronic kidney disease admitted in Medicine Department MGM Medical College and M.Y. Hospital Indore to assess subclinical uremic encephalopathy in such patients from July 2019- February 2021.

Methodology-

The patient and/or his/ her legally acceptable representative were explained about the study in detail including the procedures, risks/benefits, etc. After obtaining their verbal approval for participation in the study, a voluntary written informed consent was obtained from them for participation in the study. All the study related procedures were carried out after obtaining the consent.

Sub-clinical uremic encephalopathy is defined in our study as patients with urea more than 100mg/dl, normal higher mental functions and Addenbrooke scale was applied. A detailed medical history including the presenting complaints, history of any chronic medical illness, surgical history, history of drug treatment, family history of chronic medical illness or any familial surgical history were obtained. The personal history included diet, sleep, bowel, and bladder patterns. The patient underwent general and systemic examinations. Following which blood samples were collected for routine laboratory investigations and Addenbrooke scale was applied on these patients.

Ethical Considerations

This study was approved by the institutional ethical committee and review board. (EC/MGM/JAN-21/28.)

Statistical Analysis

The data were initially entered into Microsoft Excel for analysis. Online statistical software such as SPSS and EpiInfo. Were used for calculating the values. Comparison of means between the groups was done using unpaired "t"-test and within the group was done using Paired "t"-test. Association between two non-parametric variables was done using the Pearson Chi-square test. P<0.05 was taken as statistically significant. The final data were presented in the form of tables and graphs.

RESULTS

As shown in table 1 and graph 1, In stage 1 of CKD the mean value of scale is 94.33%. In CKD stage 2 the mean scale is 96.833%. In stage 3 CKD mean value is 94.5%. In CKD stage 4 mean value is 91.2%. In

CKD stage 5 mean value is 86.88%. As shown in table 2 and graph 2, in alpha wave of EEG, mean Addenbrooke score was 93%. In beta waves of EEG, mean Addenbrooke score was 94%. In delta wave of EEG, mean Addenbrooke score was 85%.

In graph 3 and table 3, Pearson correlation has been shown between creatinine and CKD stages with Addenbrooke scale. Between creatinine and Addenbrooke scale Pearson coefficient is -0.67 and p value <0.001.

With CKD stages and Addenbrooke scale Pearson coefficient is -0.57 and p value <0.001.

DISCUSSION

Study concluded that, In study of 60 patients, we have different mean of Addenbrooke scale according to stages. In stage 1 of CKD the mean value of scale is 94.33%. In CKD stage 2 the mean scale is 96.833%. In stage 3 CKD mean value is 94.5%. In CKD stage 4 mean value is 91.2%. In CKD stage 5 the mean value is 86.88%.

Compared to this, in a study by M. A. Reyesa,b, S. P. Lloreta et al, 44 patients were taken out, of which 31 were not having any cognitive decline and 13 were having cognitive decline. Mean Addenbrooke score in 31 patient was 89.8±6, while 13 were having mean score of 71.7±8.9.

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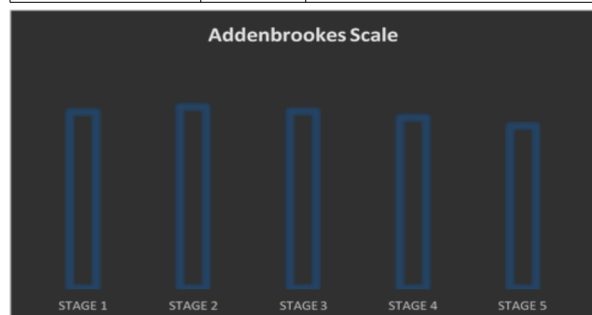
Conflict of interest- None

Ethical statement-

This study was approved by the institutional ethical committee and review board. (CODE: EC/MGM/JAN-21/28.)

Table 1 – Correlation Of Addenbrooke Scale With Different Stages Of Ckd.

CKD STAGES		ADDENBROOKE SCORE
	I	94
	II	97
	III	94
	IV	91
	V	87



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