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ASSESSING THE IMMEDIATE OUTCOMES AND ETIOLOGY OF COMATOSE ADULT SUBJECTS ADMITTED FOR NON-TRAUMATIC CAUSES

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ABSTRACT

Background: In Indian subjects, adult comatose subjects provide a difficulty to the attending medical experts. It is essential to handle these topics appropriately and promptly in order to achieve positive results. To treat these patients appropriately, determining the diagnosis based on the etiology is essential.

Aim: The purpose of this study was to evaluate the etiology and immediate results of adult comatose individuals in Indian settings.

Methods: In the Indian healthcare centre, 150 adult comatose patients with GCS values of less than or equal to 10 who were hospitalized for etiologies other than non-traumatic cases were included in this prospective and observational clinical study. Following inclusion, each person had a thorough examination, investigation, and history. For every subject, the etiologies and immediate results were evaluated.

Results: Of the individuals, 2.66% (n=4) were unconscious due to cancer, 5.33% (n=8) were bitten by a snake, 14% (n=21) had an infection, 28.66% (n=43) had a metabolic reason, and 49.33% (n=74) had a stroke. 3.49% (n=1) of the subjects died in cases of malignancy, while 3.61% (n=3) of the subjects survived; 5.97% (n=4) of the subjects died and 4.81% (n=4) of the subjects survived; 7.46% (n=5) of the subjects died and 19.27% (n=16) of the subjects survived; 13.43% (n=9) of the subjects died and 40.96% (n=34) of the subjects survived; and 71.64% (n=48) of the subjects died and 31.32% (n=26) of the subjects survived in the case of the stroke.

GCS scores showed that 30% (n=45) of the subjects had a score of 3-6, meaning that 56.71% (n=38) of the subjects died and 8.43% (n=7) of the subjects survived; on the other hand, 70% (n=105) of the subjects had a score of 7–10, meaning that 43.28% (n=29) of the subjects died and 91.56% (n=76) of the subjects survived.

Conclusion: The current study comes to the conclusion that stroke is the most frequent cause of non-traumatic coma. On the other hand, it was also shown that infectious and metabolic factors were equally significant.

Keywords: Glasgow Coma Scale (GCS), Non-Traumatic Coma (NTC), adult comatose patients, coma etiology

INTRODUCTION

It might be difficult for medical staff in Indian healthcare facilities to evaluate and care for comatose patients. Subjects with non-traumatic coma/unconsciousness problems who present to emergency rooms at different institutions have high death rates, ranging from around 25% to 48%. In adults with non-traumatic comatose

etiology, examination of clinical presentations and etiology is critical for prognosis prediction in comatose people.1

For non-traumatic coma participants, previous literature data employ a cut-off value of less than or equal to 10. In adult patients, coma may be linked to meningitis syndromes, acute encephalitic syndromes, or metabolic and toxic encephalopathies without focal neurological indications. It may also be accompanied with obvious focal signs, such as stroke.[2]

The most frequent causes of abrupt coma include drug consumption, cardiac arrest, epilepsy, basilar artery occlusion, and brain hemorrhage. Adult patients may also experience sub-acute coma due to cerebral edema or infarction. Adults may also experience it as a result of neurological disorders or as a result of underlying ailments that already exist.3

When it comes to predicting death rates in individuals with non-traumatic coma instances, the Glasgow Coma Scale (GCS) is also one of the best indications. In adult patients, metabolic causes of coma are associated with improved clinical and survival results. The etiology, onset, GCS scores, and pre-existing Comorbidities are important variables to consider when evaluating and forecasting the clinical outcomes of coma victims. The purpose of the current study was to evaluate the causes and acute effects of adult patients who were comatose in Indian settings.

MATERIALS AND METHODS

This prospective, observational, clinical investigation was carried out in Indian settings to evaluate the etiology and immediate consequences of adult patients who were comatose. The adult comatose participants, who were brought to the department of general medicine and emergency care, made up the research population. All study participants gave their informed permission after being given a thorough explanation of the study design. One hundred fifty adult participants of both sexes participated in the study. Subjects who has a GCS of less than 10, older than 20, and whose relatives were prepared to provide permission were the study's inclusion criteria.

Subjects with underlying neurologic disorders who often experienced loss of consciousness and whose relative refused to provide informed permission were excluded from consideration. The purpose of the study was to evaluate the etiology and immediate results in adult comatose participants within four weeks after admission. Following the research subjects' final inclusion, each subject had a thorough history taken, and then they had a clinical and laboratory evaluation. The following laboratory parameters were evaluated: blood ammonia, HIV screening, hepatitis B, C, A and E, arterial blood gas analysis, liver function test, creatinine, urea, complete hemogram, serum potassium, serum sodium and/or capillary blood glucose. Depending on the parameter's accuracy, other evaluations included EEG, CT scan chest/abdomen, MRI brain, chest X-ray PA view, CT scan brain, ECG, serum osmolality, urine ketone bodies, CSF analysis, coagulation profile, ANA profile and blood Following the commencement of the trial, each individual was monitored for four weeks.

Using SPSS software version 21 (Chicago, IL, USA) for statistical assessment and one-way ANOVA and t-test for result formulation, the gathered data were examined. The data were presented as a mean, standard deviation, percentage, and number. At $p<0.05$, the significance threshold was maintained.

RESULTS

This prospective, observational, clinical investigation was carried out in Indian settings to evaluate the etiology and immediate results of adult participants who were comatose. A total of 150 adult participants, spanning the ages of 21 to 88, were enrolled in the study. The majority of the study participants, or 22% (n=23), were in the 51–60 year age range. Of these, 25.37% (n=17) of the participants died and 19.27% (n=16) of the participants survived. The remaining subjects were divided into the following age groups: 14.66% (n=22) from 61–70 years, 16% (n=24) from 41–50 years, 14.66% (n=22) from 71–80 years, 14% (n=21) from 31–40 years, 13.33% (n=20) from 21–30 years, and 2% (n=3) from the 81–88 years age group.

The greatest number of subjects (n = 18) who passed away were aged 61–70, comprising 25.66% of those who were 51–60 years old, 16.41% of those who were 71–80 years old, 11.94% of those who were 41–50 years old, 8.95% of those who were 31–40 years old, 7.46% of those who were 21–30 years old, and 2.98% of those who were 81–88 years old. Table 1 shows that the age range of 41-50 and 51-60 years accounted for 19.27% (n=16) of the recovered patients, while the age groups of 21-30 and 31-40 years had 18.07% (n=15) of subjects each. After determining the etiology, it was discovered that 2.66% (n=4) of the participants were in a coma due to cancer, 5.33% (n=8) were bitten by a snake, 14% (n=21) were infected, 28.66% (n=43) were suffering from a metabolic reason, and 49.33% (n=74) had suffered a stroke. 3.49% (n=1) of the subjects died in cases of

malignancy, while 3.61% (n=3) of the subjects survived; 5.97% (n=4) of the subjects died and 4.81% (n=4) of the subjects survived; 7.46% (n=5) of the subjects died and 19.27% (n=16) of the subjects survived; 13.43% (n=9) of the subjects died and 40.96% (n=34) of the subjects survived; and 71.64% (n=48) of the subjects died and 31.32% (n=26) of the subjects survived in the case of the stroke. According to GCS scores, 30% of subjects (n = 45) had a GCS score of 3-6, meaning that 56.71% of subjects (n = 38) died and 8.43% of subjects (n = 7) survived; in contrast, 70% of subjects (n = 105) had a GCS score of 7-10, meaning that 43.28% of subjects (n = 29) died and 91.56% of subjects (n = 76) survived (Table 2).

It was observed that the comorbidity was connected with one subject who had malignancy based on the etiology and comorbidities of the deaths recorded in the research participants. 2.08% (n=1) of the 5.97% (n=4) participants with a snake bite etiology had comorbidities, whereas 15.78% (n=3) of the subjects had none at all. 6.25% (n=3) of the infected participants had comorbidities. All participants with metabolic etiology (n = 9) had concomitant comorbidities in 13.43% of cases. As seen in Table 3, of the participants with stroke as the etiology (71.64%, n = 48), 70.83% (n = 34) had related comorbidities, whereas 73.68% (n = 14) had no associated comorbidity.

DISCUSSION

In Indian settings, the current prospective, observational, clinical investigation was carried out to evaluate the etiology and immediate consequences of adult participants who were comatose. A total of 150 adult participants, spanning the ages of 21 to 88, were enrolled in the study. The majority of the study participants, or 22% (n=23), were in the 51–60 year age range. Of these, 25.37% (n=17) of the participants died and 19.27% (n=16) of the participants survived. The remaining subjects were divided into the following age groups: 14.66% (n=22) from 61–70 years, 16% (n=24) from 41–50 years, 14.66% (n=22) from 71–80 years, 14% (n=21) from 31–40 years, 13.33% (n=20) from 21–30 years, and 2% (n=3) from the 81–88 years age group.

The majority of the deceased subjects (n = 18) were between the ages of 61 and 70, making up 25.66% of the group, then 25.37% of the group from 51 to 60 years, 16.41% of the group from 71 to 80 years, 11.94% of the group from 41 to 50 years, 8.95% of the group from 31 to 40 years, 7.46% of the group from 21 to 30 years, and 2.98% of the group from 81 to 88 years. The age range of 41–50 and 51–60 years comprised the bulk of recovered participants (19.27%; n = 16), followed by the age ranges of 21–30 and 31–40 years (18.07%; n = 15) respectively. These results were similar to those of studies conducted in 2019 by Magwood GS et al. and in 2018 by Joseph SA et al., where authors found similar rates of mortality and survival in age groups that were similar to those of the current research.

According to the causes of coma in adult participants, 2.66% (n=4) had a cancerous tumour that had put them into a comatose state; 5.33% (n=8) had a snake bite; 14% (n=21) had an infection; 28.66% (n=43) had a metabolic reason; and 49.33% (n=74) had a stroke. 3.49% (n=1) of the subjects in cancer cases died, while 3.61% (n=3) of the subjects survived; 5.97% (n=4) of the subjects died and 4.81% (n=4) of the subjects survived; 7.46% (n=5) of the subjects died and 19.27% (n=16) of the subjects survived; 13.43% (n=9) of the subjects died and 40.96% (n=34) of the subjects survived; and 71.64% (n=48) of the subjects died and 31.32% (n=26) of the subjects survived in the case of the stroke.

. GCS scores showed that 30% (n=45) of the subjects had a score of 3-6, meaning that 56.71% (n=38) of the subjects died and 8.43% (n=7) of the subjects survived; on the other hand, 70% (n=105) of the subjects had a score of 7–10, meaning that 43.28% (n=29) of the subjects died and 91.56% (n=76) of the subjects survived. These findings aligned with those of Owolabi LF et al.7 (2013) and Posner JB et al.8 (2019), who observed a comparable etiology in comatose adult individuals. It was shown that the comorbidity was related with 1 malignant subject, depending on the etiology and comorbidities of the deaths recorded in the research subjects.

2.08% (n=1) of the 5.97% (n=4) participants with a snake bite etiology had comorbidities, whereas 15.78% (n=3) of the subjects had none at all. 6.25% (n=3) of the infected participants had comorbidities. All participants with metabolic etiology (n = 9) had concomitant comorbidities in 13.43% of cases. Seventy-eight percent (n=48) of the participants with stroke as the etiology had concomitant comorbidities, compared to seventy-eight percent (n=14) who had none at all. These findings were consistent with studies by Mwanja K et al. (2016) and Greer DM et al. (2012), in which the authors reported similar fatality rates related to comorbidities and etiology.

CONCLUSION

Within its limitations, the present study concludes that the most common cause of non-traumatic coma is stroke. However, infective and metabolic causes were also found to be equally important causes. Prompt and early

identification of etiology can help in achieving better clinical outcomes. Poor GCS scores are associated with poor clinical outcomes in adult comatose subjects. However, the present study had a few limitations including a small sample size, shorter monitoring period, and geographical area biases. Hence, more longitudinal studies with larger sample size and longer monitoring period will help reach a definitive conclusion.

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TABLES

Parameters	Total subjects n=150 (%)	Deaths n=67 (%)	Recovered n=83 (%)
Age Range(years)			
21-30	20 (13.33)	5 (7.46)	15 (18.07)
31-40	21 (14)	6 (8.95)	15 (18.07)
41-50	24 (16)	8 (11.94)	16 (19.27)
51-60	33 (22)	17 (25.37)	16 (19.27)
61-70	27 (18)	18 (26.86)	9 (10.84)
71-80	22 (14.66)	11 (16.41)	11 (16.41)
81-88	3 (2)	2 (2.98)	1 (1.20)

Table 1: Clinical outcomes based on age range in the study subjects

Etiology	Total subjects n=150 (%)	Deaths n=67 (%)	Recovered n=83 (%)
Malignancy	4 (2.66)	1 (1.49)	3 (3.61)
Snakebite	8 (5.33)	4 (5.97)	4 (4.81)
Infection	21 (14)	5 (7.46)	16 (19.27)
Metabolic	43 (28.66)	9 (13.43)	34 (40.96)
Stroke	74 (49.33)	48 (71.64)	26 (31.32)
GCS			
3-6	45 (30)	38 (56.71)	7 (8.43)
7-10	105 (70)	29 (43.28)	76 (91.56)

Table 2: Clinical outcomes based on etiology and GCS in the study subjects

Etiology	Total deaths n=67 (%)	With comorbidities n=48 (%)	Without comorbidities n=19 (%)
Malignancy	1 (1.49)	1 (2.08)	
Snakebite	4 (5.97)	1 (2.08)	3 (15.78)
Infection	5 (7.46)	3 (6.25)	2 (10.52)
Metabolic	9 (13.43)	9 (18.75)	
Stroke	48 (71.64)	34 (70.83)	14 (73.68)

Table 3: Clinical outcomes based on etiology and comorbidities in the study subjects