Original Research Article

Impact of clinical and various lab parameters on final outcome of acute confusional state patients of different etiologies at tertiary care center

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Abstract

Background: Acute confusional state or delirium is a clinical syndrome characterized by disturbed consciousness, cognitive function, or perception. The delirium usually develops over a short period of time (usually hours to days) and it has a tendency to fluctuate during the course of the day.
Materials and methods: This study was undertaken on the patients presenting with acute confusional state to the emergency wing of Acharya Shri Chander College of Medical Sciences and Hospital, Jammu to find out the Outcome, Hospital Stay and Prognosticate of different causes of ACS. Patients of acute confusion state that were admitted in the emergency wing of Postgraduate Department of Medicine Acharya Shri Chander College of medical sciences and hospital were enrolled prospectively in the study. Sixty patients of acute confusional state from November 2015 to October 2016 were enrolled who were selected from various patients admitted in ASCOMS.
Results: Most patients were in the age group of 61-70 years i.e. 6th decade. Mean age of males was 63.78 (range, 35 to 92) years and of females was 65.85 (range, 26 to 95) years. Median age of males was 64 years and of females 68 years. Sex wise, patients were equally distributed with 32 (53.33%) males and 28 (46.67%) females with male to female ratio of 1.14:1 Out of 60 patients there were 10 deaths, the mortality being 16.67%, 39 (65%) had good recovery and 11 (16.67%) patients had partial

recovery. Overall mortality was 16.67%. The mortality depends on age, etiology of acute confusional state, initial GCS and some lab Parameters (TLC, PH, SO_2).

Conclusion: The increased hospital stay and the prolonged acute confusional state in patients discharged alive were increased age, etiology of ACS, abnormal CT head, decreased PO2 and SO2, focal neurological deficit.

Key words

Impact, Clinical, Lab parameters, Confusional state, Etiology, Patients.

Introduction

Acute confusional state or delirium is a clinical syndrome characterized by disturbed consciousness, cognitive function, or perception. The delirium usually develops over a short period of time (usually hours to days) and it has a tendency to fluctuate during the course of the day [1]. These changes may be sudden or gradual in onset, transient, fluctuating, or sustained in progression and acute or chronic in duration. Altered mental status is a common presentation in the emergency department yet is a significant challenge to the emergency physician in that altered mentation does not suggest a specific diagnosis but rather a manifestation of a wide range of medical syndromes [2].

Several clinical subtypes of delirium have been described on the basis of the level of psychomotor activity such as hypoactive (19-43%), hyperactive (15-29%), mixed (43-52%) and no psychomotor disturbance (0-14%) [3, 4]. It is not clear if there is a relationship between the subtype and risk factors for delirium or etiologies, except for the suggestion that delirium from drug withdrawal states has a hyperactive presentation. However, there is a suggestion that hypoactive delirium states lead to longer hospital stay, inferring a possible worse outcome and this may have clinical significance. This is probably confounded by the increased likelihood of missed diagnosis of hypoactive delirium compared to the mixed and hyperactive types. Obviously more research is needed to fully glean the clinical significance of such a sub-classification.

Acute confusional state occurs in about 15-20% of all general admissions to hospital [5]. For patients in intensive care units the prevalence of delirium may reach as high as 80% [14]. Occurrence rates vary from 11-42% and it is the commonest complication of hospitalization in the elderly population and 6-24% of nursing home patients [6, 7]. The incidence is also higher in those with pre-existing cognitive impairment. The prevalence is higher in patients with malignancy and HIV. Despite these facts acute confusional state remains under diagnosed and poorly managed – up to two-third of cases are missed in some centres [8]. In patients who are admitted with delirium, mortality rates are 10-26% [9]. In patients who are elderly and patients in the postoperative period, delirium may result in a prolonged hospital stay, increased complications, increased cost, and long-term disability [10].

Risk factors for acute confusion state include male sex, extremes of age, pre-existing cognitive deficit (e.g. dementia, stroke), previous episode of delirium, severe co-morbidity, severity of dementia, certain conditions (e.g. burns, AIDS, fractures, infection, low albumin, dehydration), operative factors (e.g. type of operation – hip fracture repairs), extremes of sensory experience (e.g. hypothermia or hyperthermia), drug use (implicated in nearly half of cases) and dependence (e.g. benzodiazepines), substance misuse (e.g. alcohol), visual or hearing problems, social isolation, terminally ill patients, movement to a new environment, ICU admission, stress, poor mobility [5, 11, 12].

In patients who are admitted with delirium, mortality rates are 10-26% [13]. In a review of 28 studies of critically ill patients the rate of death for patients with delirium was more than doubled [14]. In patients who are elderly and patients in the postoperative period, delirium may result in a prolonged hospital stay, increased complications, increased cost, and long-term disability [15]. According to one study, delirium is associated with worse survival and greater resource consumption in those with cardiac critical illness. Among 590 patients included, the prevalence of cardiac ICU delirium was 20.3%. Delirious patients were older, had greater disease severity, required longer ICU stays (5 vs 2 days; p<.001), and had higher mortality (27% vs 3%; p<.001) [16].

Functional recovery of ACS patients not only depends on age but was to some degree related to the cause of coma (subarachnoid hemorrhage and other cerebrovascular disease having the worst recovery; hypoxia-ischemia, intermediate; and hepatic and miscellaneous causes, best recovery) and especially to early clinical signs of brain dysfunction. Clinical features of comatose patients that appear within the first week and that are important for predicting recovery and designing future therapeutic trials. Other indicators were the Glasgow Coma Score on admission and subsequent scores, early neurological signs and complications that arose. Delirium occurs commonly in hospitalized elderly patients who are associated with chronic and acute problems. Elderly are at risk for death, longer hospitalization, and institutionalization. Patients with multiple co-morbidities and in whom no definite cause can be found for the acute confusional state have poorer prognosis in terms of higher mortality [17, 18, 19, 20, 21].

Objective

To study outcome, hospital stay and impact of lab and clinical parameters on final outcome and hospital stay duration of Acute confusional state patients with different etiologies at tertiary care center.

Materials and methods

This study was undertaken on the patients presenting with acute confusional state to the emergency wing of Acharya Shri Chander College of Medical Sciences and Hospital, Jammu to find out the etiological profile and clincial correlate of different causes of ACS. Patients of acute confusion state that were admitted in the emergency wing of postgraduate department of medicine Acharya Shri Chander College of medical sciences and hospital were enrolled prospectively in the study.

Sixty patients of acute confusional state from November 2015 to October 2016 were enrolled who were selected from various patients admitted in ASCOMS.

Patients fulfilling the below given criteria, before their final inclusion, a informed written consent was taken from the attendants of the patients for participation in the study.

Inclusion criteria

A patient was deemed to have acute confusional state if the attending physician identified any one of the following criteria for the patient at the time of initial presentation.

- Glasgow coma scale score less than 15.
- Mini mental state examination score less than 24.
- Diminished responsiveness to verbal or physical stimulation.
- Patient not alert and oriented to person, place and or time.
- Hallucinations, confusion, bizarre or inappropriate behavior.
- Difficult to arouse, unable to remain awake or conversant.

Exclusion criteria

- Age less than 18.
- Psychiatric disease.
- Patient with dementia.
- Any obvious evidence of trauma.

A proper history was taken from attendants and other available sources. A thorough general physical and systemic examination was done. After taking history and clinical examination, an initial diagnosis was made which was then compared with the final diagnosis which was made after doing all the necessary investigations.

Baseline investigations (CBC, KFT, LFT, Blood sugar, Arterial Blood gas and Electrolytes, CXR, ECG) were done routinely. Cranial NCCT scan was done in every patient within 6 hours of hospitalization. If required serum calcium, phosphorous, magnesium, blood, urine and other relevant body fluid analysis were done in selected cases as and when required.

The following were done as when required.

- EEG (awake record).
- MRI brain.
- CSF analysis.
- Toxic screen.

Patients were assessed and followed up on daily basis till he or she

(a) was discharged from the hospital.
(b) succumbs to illness.

Results

Sixty patients of acute confusional state from November 2015 to October 2016 were enrolled who were selected from various patients admitted in ASCOMS.

Most patients were in the age group of 61-70 years i.e. 6th decade. Mean age of males was 63.78 (range, 35 to 92) years and of females was 65.85 (range, 26 to 95) years. Median age of males was 64 years and of females 68 years. Sex wise, patients were equally distributed with 32 (53.33%) males and 28 (46.67%) females with male to female ratio of 1.14:1 (**Table – 1, Figure - 1**).

Table - 1: Age and sex distribution of patients of acute confusional state (n=60).

Age group (years)	No. of patients (%)		
	Male	**Female**	**Total**
≤30	0 (0.00)	2 (3.33)	2 (3.33)
31 – 40	2 (3.33)	0 (0.00)	2 (3.33)
41 – 50	4 (6.67)	1 (1.67)	5 (8.33)
51 – 60	3 (5.00)	8 (13.33)	11 (18.33)
61 – 70	15 (25.00)	5 (8.33)	20 (33.33)
71 – 80	4 (6.67)	7 (11.67)	11 (18.33
81 – 90	3 (5.00)	4 (6.67)	7 11.67)
≥91	1 (1.67)	1 (1.67)	2 (3.33)
Total	**32 (53.33)**	**28 (46.67)**	**60 (100.00)**

Male = Mean age ± SD (Range) = 63.78 ± 13.88 (35 – 92) years; Median age = 64 years
Female = Mean age ± SD (Range) = 65.85 ± 16.19 (26 – 95) years; Median age = 68 years

Mean GCS ± SD (range) = 11.25 ± 2.36 (5 – 14) with minimum of 3 and maximum of 14. Median GCS = 12. The frequency in various groups in descending order being 12-15 having 39 patients (65%), then 8-11 having 12 patients (12%) and <8 having 9 patients (15%) as per **Table – 2**, **Figure - 2**.

Final diagnosis of patients of acute confusional state was as per **Table – 3**, **Figure – 3**.

Out of 60 patients there were 10 deaths, the mortality being 16.67%, 39(65%) had good recovery and 11 (16.67%) patients had partial recovery (**Table – 4**).

As per **Table – 5**, the etiology of ACS had an immense impact on mortality. Poisoning, CNS infections and seizures had zero mortality in our study group whereas those in whom the cause ACS remained unknown (75%) followed by

CVA (25%) and sepsis (15%) had highest mortality rate.

As per **Table – 6**, the duration of hospital stay among the various groups. Average hospital stay was 8.12 days with highest hospital stay among those where the cause of ACS remained unknown followed by CVA (10.17 days) and sepsis (9.21 days). Minimum hospital stay was seen in poisoning group (2 days).

Figure - 1: Age and sex distribution.

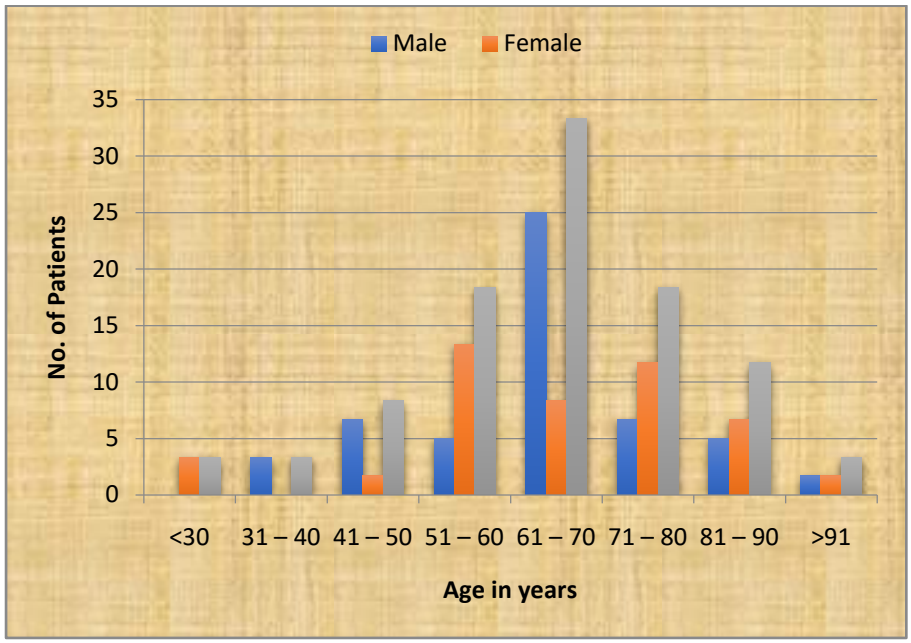

Table - 2: Frequency of patients in various GCS groups (n=60).

GCS Score	Total	
	No.	
<8	9	<8
8 – 11	12	8 – 11
12 – 15	39	12 – 15
Total	**60**	**Total**

Figure - 2: Graph showing frequency of patients in various GCS groups.

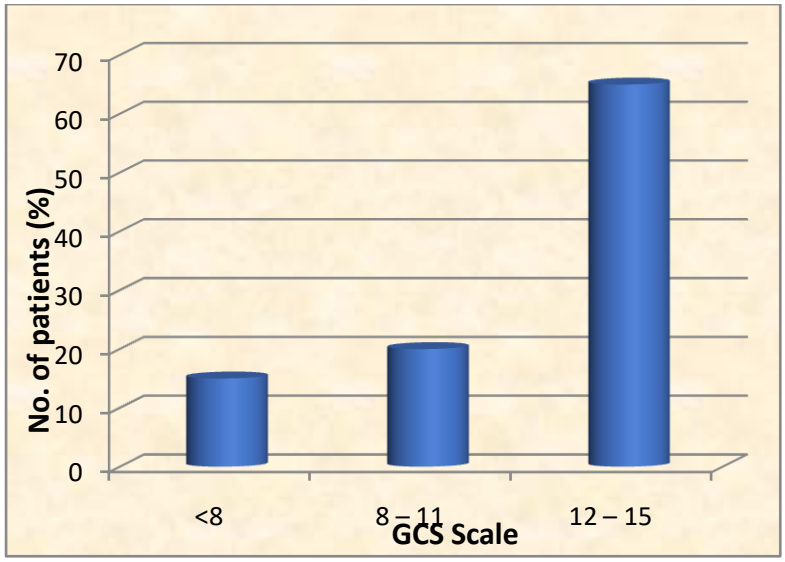

Table - 3: Final diagnosis of patients of acute confusional state (n=60).

Final diagnosis	Total	
	No.	Percentage
Sepsis	19	31.67
Metabolic	16	26.67
Cerebrovascular accident	12	20.00
CNS infection	3	5.00
ICSOL (intracranial space occupying lesion)	3	5.00
Seizure	2	3.33
Poisoning	1	1.67
Unknown cause	4	6.67
Total	**60**	**100.00**

Figure - 3: Final diagnosis of patients of acute confusional state.

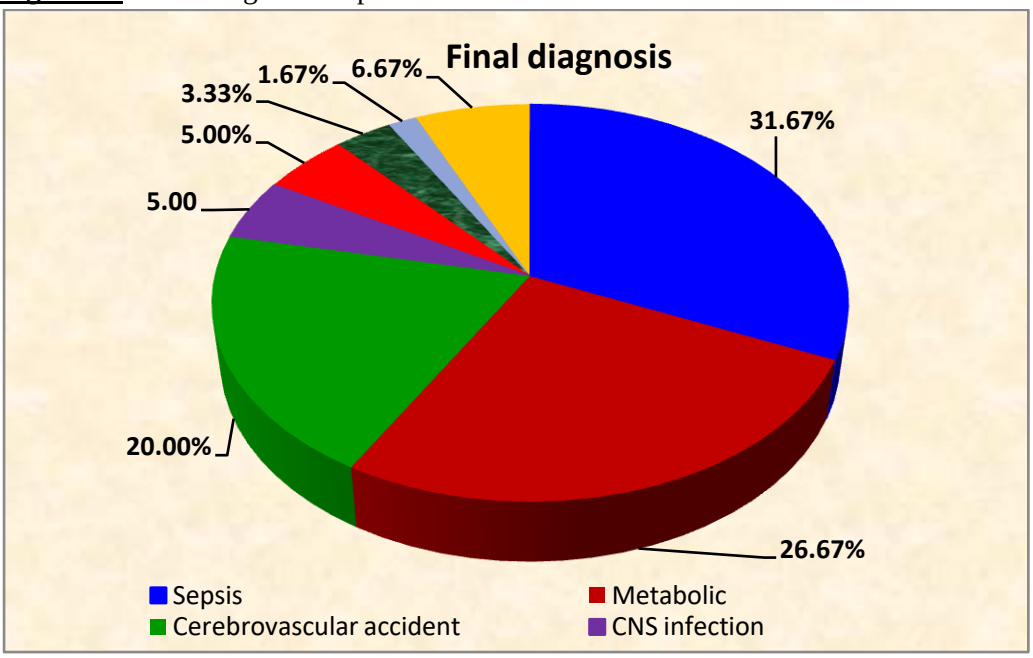

Table - 4: Final outcome in terms of mortality and morbidity at discharge.

Final outcome	Total	
	No.	%
Full recovery	39	65.00
Partial recovery	11	18.33
Death	10	16.67
Total	60	100.00

As per **Table – 7**, the effect of delay in hospital as we can see most the patients which presented to hospital within first 12 hours from the presentation of ACS, majority of them were discharged within 7 days of hospitalization while as those, who presented to hospital after 24 hours were discharged after 7 days.

As per **Table – 8**, effect of various factors on days in ACS during hospital stay .Those patients who remained in ACS for less than 3 days there mean age was 56.80 as compare to those who remained in ACS for more than 3 days whose mean age was 69.68. Similarly, those who remained in ACS for less than 3 days there mean PO_2 and SO_2 was 82.20% and 93.40% respectively, as compare to those who remained in ACS for more than 3 days whose PO_2 and SO_2 was 72.83% and 90.85% respectively.

Table - 5: Mortality and survival in each diagnostic group.

Final Diagnosis	No. of patients (%)		
	Survived	Died	Total
Sepsis	16 (84.21)	3 (15.79)	19 (31.67)
CVA	9 (75.00)	3 (25.00)	12 (20.00)
Metabolic	16 (100.00)	0 (0.00)	16 (26.67)
CNS infection	3 (100.00)	0 (0.00)	3 (5.00)
Seizure	2 (100.00)	0 (0.00)	2 (3.33)
ICSOL	2 (66.67)	1 (33.33)	3 (5.00)
Poisoning	1 (100.00)	0 (0.00)	1 (1.67)
Unknown	1 (25.00)	3 (75.00)	4 (6.67)
Total	50 (83.33)	10 (16.67)	60 (100.00)

Table - 6: Final diagnosis of patients and hospital stay duration.

Final diagnosis	Hospital stay (days)
Sepsis	9.21
Metabolic	6.00
Cerebrovascular accident	10.17
CNS infection	6.33
ICSOL	7.00
Seizure	5.00
Poisoning	2.00
Unknown cause	11.25
Average hospital stay	8.12

Table - 7: Effect of delay in admission on hospital stay.

Delay hours	Hospital stay groups					
	<7 days		>7 days		Total	
	No.	%	No.	%	No.	%
<6 hrs	6	54.55	5	45.45	11	18.33
6–11 hrs	3	60.00	2	40.00	5	8.33
12–24 hrs	8	57.14	6	42.86	14	23.34
>24 hrs	11	36.67	19	63.63	30	50.00

X^2 = 13.46, p-value = <0.0001

Table - 8: Effect of various factors on days in acute confusional state.

Prognostic factors	Mean ± SD		p-value	Remarks
	< 3 days	> 3 days		
Age	56.80 ± 18.27	69.68 ± 15.79	**0.196**	**NS**
PO_2	82.20 ± 1.48	72.83 ± 7.00	**<0.0001**	**S**
SO_2	93.40 ± 1.82	90.85 ± 4.89	**0.036**	**S**

NS = Non-significant, S = Significant

Table - 9: Effect of various factors on days in hospital stay.

Prognostic factors	Mean ± SD		p-value	Remarks
	< 7 days (n=47)	> 7 days (n=39)		
PO_2	79.14 ± 5.18	69.17 ± 6.45	**0.001**	**S**
SO_2	93.81 ± 3.95	89.22 ± 4.25	**0.0001**	**S**

NS = Non-significant, S = Significant

Table - 10: Effect of various factors on hospital stay.

Prognostic factors	Total	Number of patients (%)		p-value	Remarks
		<7 days	>7 days		
Fever	22	7 (31.82)	15 (68.18)	**0.001**	**S**
Smoking	17	5 (29.41)	12 (70.59)	**0.001**	**S**
CT Head abnormality	13	5 (38.46)	8 (61.54)	**0.021**	**S**
CVA	11	4 (36.36)	7 (63.64)	**0.011**	**S**
Poisoning	1	1 (100.00)	0 (0.00)	**-**	**-**
Multi factorial	14	5 (35.71)	9 (64.29)	**0.001**	**S**

NS = Non-significant, S = Significant

Table - 11: Prognostic indicators of outcome according to GCS (n=60).

GCS Score	No. of patients (%)		
	Survived	Died	Total
< 8	3 (33.33)	6 (66.67)	9 (15.00)
8 – 11	9 (75.00)	3 (25.00)	12 (20.00)
12 – 15	38 (97.44)	1 (2.56)	39 (65.00)
Total	**50 (83.33)**	**10 (16.67)**	**60 (100.00)**

p=0.0003, Significant (Chi-square)

Table - 12: GCS components as reliable indicators of outcome (n=60).

GCS Component	Mean ± SD		p-value
	Survived (n=50)	Died (n=10)	
Eye response (E)	3.04 ± 0.44	1.90 ± 0.74	**0.001**
Verbal (V)	3.22 ± 0.86	2.20 ± 0.79	**0.003**
Motor (M)	5.68 ± 0.79	3.80 ± 1.03	**0.001**

Table - 13: Prognostic factors on mortality.

Prognostic factors	Mean ± SD		p-value	Remarks
	Survived	Dead		
Hb	10.85 ± 1.37	10.38 ± 0.92	**0.229**	**NS**
Urea	117.10 ± 129.26	89.00 ± 39.16	**0.539**	**NS**
S. creatinine	1.98 ± 0.41	2.20 ± 0.44	**0.379**	**NS**
TLC	10871.88 ± 2746.58	15500.00 ± 3144.66	**0.001**	**S**
SO_2	92.35 ± 4.57	86.20 ± 1.81	**<0.0001**	**S**
Ph	7.40 ± 0.07	7.30 ± 0.10	**0.017**	**S**
K	3.92 ± 0.30	4.74 ± 0.50	**0.001**	**S**
Mean BP	97.87 ± 10.44	76. 60 ± 17.77	**0.003**	**S**

NS = Non-significant, S = Significant

Table - 14: Effect of papillary abnormality on mortality.

Prognostic factors	Present/ absent	No. of patients (%)		p-value	Remarks
		Survived	Dead		
Pupillary abnormality	**Yes**	3 (6.00)	6 (60.00)	**0.0001**	**S**
	No	47 (94.00)	4 (40.00)		

NS = Non-significant, S = Significant

As per **Table – 9**, the effect of various factors on the days in hospital stay. Those patients who were discharged within first 7 days of hospitalization there PO2 and SO2 were 79.14% and 93.81% respectively. As compare to those who were discharged after 7 days there PO2 and SO2 was 69.17% and 89.22% respectively.

As per **Table – 10**, the effect of various factors on hospital stay. As we can see those patients who had history of fever, smoking, CT abnormality, CVA group and multi factorial causes were associated with prolong stay of more than 7 days.

GCS was grouped in 3 groups <8, 8-11 group and 12-15 group. The mortality was 66% among <8 group, 25% among 8-11 group and 2.56% among 12-15 group (**Table – 11**).

GCS components as reliable indicators of outcome were as per **Table – 12**. The individual components E, V and M were again seem to be individually having prognostic value.

As per **Table - 13**, it can be inferred that high TLC, high potassium, low arterial PH. Low mean BP and low SaO_2 are related positively with death.

As per **Table – 14**, mortality was more in patients having pupillary abnormality .Thus the following factors were shown to have prognostic value PH, GCS, serum potassium, SaO_2, TLC, mean B.P. and abnormal pupil.

Discussion

This was a hospital based cross sectional study on patients with acute confusional state. These patients were admitted in the emergency wing of postgraduate department of medicine Acharya Shri Chander College of medical sciences and hospital. The study was conducted from November 2015 to October 2016. The patients were taken on random days, total number of days in which patients were entered was 365 days and 60 patients were identified.

Most patients were in the age group of 61-70 years i.e. 6^{th} decade. Mean age of males was 63.78 (range, 35 to 92) years and of females was 65.85 (range, 26 to 95) years. Median age of males was 64 years and of females 68 years. The patients along with the respective percentages from total 60 patients in various age groups were 2 (3.33%) in 18-30 age group, 2 (3.33%) in 31-40 age group, 5 (8.33%) in 41-50 age group, 11 (18.33%) in 51-60 age group, 20 (33.5%) in age group 61-70 years, 11 (18.33%) in age group 71-80 years, 7 (11.67%) in age group 81-90 years and 2 (3.33%) in >90 age group. In the study done by Rai D, et al. (2014) [21], the mean age of patients was 65.04+10.6 years. In the study conducted by George, et al. (1997) [22], the age range was 65-98 (mean 81) years. The sex distribution was males were 32(53.33%) and females 28 (46.67%). In the study done by Rai D, et al. (2014) [21], 32 (61.5%) were males and 20 (38%) were females. In the study done by Kanich, et al. (2002) [2], there were 57% males (180) and 43% (137) females. In the study done by Nadeem, et al. (2005) [23], the sex distribution was 312 male (60.35%) and 205 female (39.65%) patients. Inouye, et al. (1994) [24], also reported demographic characteristics like age 65 years and older and male sex were predisposing factors for delirium in his study. Similarly, the study done by Wofford, et al. (1996) [25], which was done in elderly ED patients the males were 32.2% (73) and females constituted 67.8% (154). Overall males predominate than females in our study but If we see the sex distribution in age group 71-80 years out of 11 patients 4 (36.3%) were male and 7 (63.7%) were female. In the study done by Bates, et al. (1997) [26], males were 49.45% (153), females were 50.5% (157) but most comatose patients under 65 were men whereas women constituted the majority over the age of 65. Thus it is inferred that in the studies from west in older age group the relative percentage of females in Altered Mental Status patients increases as compared from overall percentage while such relation could not be seen in our study except in age group 71-80 years.

Of the 60 patients there were 10 deaths, the mortality being 16.67%, 39 (65.0%) patients had full recovery, 11 (18.33%) patients had partial recovery in the study conducted by Grover S, et al. (2009) [27]. The common outcomes recorded at the time of last follow-up were improved (65.9%), recovered (8.8%), unchanged (8%),

death (6.6%), worse (0.5%) and not known (10.3%). In the study done by Nadeem, et al. (2005) [23], 297 (57.4%) were discharged after recovery and 179 (34.6) died. 80 out of 205 female patients died (39%) while 99 out of 312 males had a fatal outcome (31.7%). In the study done by Nadeem, et al. (2006) [28], the outcome of 248 patients (90.84%) was established. 152 (61.29%) were discharged after recovery and 96 (38.71%) died. The remaining 25 (09.16%) patients were lost to follow up. In the study done by Kanich, et al. (2002) [2], Ninty-one percent of the patients lived, whereas 2% died in the emergency department ED and 7% died after admission to hospital.

Average Hospital Stay: In our study the average hospital stay was 8.12 days. The study done by Rai D, et al. (2014) [21], found that, the mean duration of hospital stay was 10.73 ± 3.6 days (range 5-21 days). In th study conducted by L.B. Leong (2008) [29] he found that the mean hospital length of stay was 11.6 days (median 7 days; range 1–137 days).

Factors affecting mortality

GCS: The GCS was grouped in 3 groups <8, 8-11 and 12-15. The <8 group had 66.67% mortality 6 (out of 9), 8-11 GCS group had 12.0% mortality 3 (out of 25) and patients in 12-15 GCS group had 2.56% mortality 1(out of 39).The individual components eye opening, verbal response, motor response were again seen to be individually having statistically significant prognostic value.

In the study done by Farrukh, et al. (2001) [30], the patients were divided into three groups, as per GCS, same as in our study. The mortality was significantly higher in <8 GCS group. According to GCS scoring, the conscious level was worse in intracerebral bleed as compared to cerebral infraction, so was the high rate of mortality in the intracerebral bleed as compare to cerebral infraction. They concluded that GCS (3/15) is inversely related to mortality.

In the study, done by Abdullah, et al. (2001) [19], the recovery was 100% with Glasgow coma scale level >11 while it was 34.5% in those having GCS <5. In the study done by Nadeem, et al. (2006) [28], four categories of Glasgow coma score were made at three point intervals. In the lowest category (score 3-5) there was 59.67% mortality and only 30.66% patients were successfully treated and discharged. In The category of GCS 6-8, 30.91% died and 60% were discharged while in 9-11 category, 26.47 % died and 66.18% were discharged. In the highest score category (12-15), 27.27% deaths occurred, probably related to severity of the Main event and 62.50% were discharged. Matuja WB, et al. (1987) [18], the Glasgow coma score on admission and subsequent scores, was found to be good predictor of outcome.

TLC: Total leukocyte count was related to death positively with mean TLC of death group 15500 compared from 10871 in the alive group, this can be explained by stress state and co-morbid infections.

Potassium: Potassium was again related to mortality directly, the mean potassium in death group was 4.74 compared from 3.92 in the alive group, this could be explained by increased mortality in the patients with co-morbid renal failure.

PH: Low PH was associated with increased mortality mean PH 7.30 in death group lowest value being 7.1. The explanation being same as potassium, increase in mortality in circulatory collapse and with patients of co-morbid renal failure.

SaO_2 and PO_2: Decreased SaO2 was again associated with increased mortality mean SaO_2 on death group being 86.20. PO_2 however did not show any such relation.

This can be explained by the fact that most of our patient which died during the hospital stay had complication of aspiration during the hospital stay.

Blood Pressure: Blood pressure was again important prognostic factor in assessing the mortality. Mean BP in patients who died was 76.60 mm Hg as compared to 97.87 mm hg in patients who survived. Bansal, et al. (2005) [31], found in their study which was done in pediatric age group in non-traumatic coma patients that circulatory instability, poor pulse volume at admission and after 48hours were associated with 66% mortality. Similarly noted that hypotension is a bad prognostic factor, with two-third of patients having hypotension at the time of their admission ultimately dying. We could not find any study addressing these points in adults.

Pupillary Abnormality: Pupillary abnormality was again a prognostic sign, out of 9 patients who had papillary abnormality 6 patients died, that corresponds to mortality of 60%. In the study done by Sharma, et al. (1995) [32], pupillary abnormality and oculocephalic reflexes were found to be statistically significant to judge the prognosis, no patient made good recovery when any two brain reflexes were absent. In study done by Hamel, et al. (1995) [33], five clinical variables available on day 3 after enrolment were associated independently with 2 month mortality and identified a large sub group of patients in non traumatic comma at high risk for poor out comes, they were abnormal brain stem response, absent verbal response, absent withdrawal response to pain, creatinine level greater than or equal to 132.6 micro mol/lit (1.5 mg/dl) and age of 70 years or older.

Etiology of ACS: The etiology of ACS had an immense impact on the mortality. Mortality rate was highest among patients where the cause of ACS was not determined, which in our study were 4 and among them 3 patients died, that corresponds to mortality rate of 75%, followed by ICSOL 33%, CVA 25% and sepsis 15.7%. Metabolic, Intracranial infections, seizures and poisoning were not associated with any mortality. Rai D, et al. (2014) [21], conducted a study in which there were 19 patients where the cause of ACS could not be assessed, among which 10 died corresponding to the mortality rate of 52%, followed by sepsis. In the study done by Abdullah, et al. (2001) [34], worst prognosis was seen in undiagnosed patients, patients with viral encephalitis and poisoning. Favorable outcome was seen in patients with electrolyte disturbances and diabetic ketoacidosis. Nadeem, et al. (2005) [23], concluded that structural comma had worst prognosis i.e. 13 patients died (43%) and hemorrhagic CVA having a mortality of 63% and ischemic one 36%.

Thus in our study following factors were shown to have prognosis value GCS, etiology of ACS, PH, potassium,SO_2, TLC, mean BP, hypotension and abnormal pupils. Further studies taking appropriate controls needs to be done to ratify these findings further.

Factors affecting hospital stay and days in acute confusional state in the patients discharged alive.

Delay in reaching hospital: The average hospital stay in days was 8.12 days (range, 2 day to 24 days). The group reaching belatedly after starting of acute confusional state was associated with prolonged stay in hospital in the discharged alive group.

Age: increased age was associated with increased days in acute confusional state in patients discharged alive. Mean age of patients remaining in ACS >3days was 69.68 years.

Decreased PO_2 and SO_2: Mean PO_2 and SO_2 of the patients who remained in ACS > 3 days were 72.83% and 90.85 % respectively and for the patients who remained in ACS < 3 days were 82.20% and 93.40% respectively. There was no such relation with hospital stay.

Etiology of ACS: Among the patients who were discharged alive from hospital, CVA group was associated with increased hospital stay which was followed by sepsis. Poisoning and seizure were associated with minimum hospital stay. In the study conducted by Rai D, et al. (2014) [21], he found that Stroke patients with the development of delirium have unfavorable

outcomes, particularly higher mortality, longer hospitalizations and a greater degree of dependence after discharge

Conclusion

Altered mental status (AMS) is and will be a growing symptom complex that prompts caregivers to consult the public healthcare system particularly in the context of a rapidly aging population in many countries.

- Most of the patients which presented to our hospital in acute confusional state were in their 6^{th} decade of life.
- 51% of patients presented within 24hours of onset of acute confusional state.
- Sepsis/infections, metabolic and CVA were the most important causes of acute confusional state.
- Mortality was highest among those where the cause of ACS remained unknown followed by sepsis and CVA group.
- Overall mortality was 16.67%.The mortality depends on age, etiology of acute confusional state, initial GCS and some lab. Parameters (TLC, PH, SO_2).
- Some simple clinical parameters as pupillary abnormality, GCS can gauge the prognosis.
- The increased hospital stay and the prolonged acute confusional state in patients discharged alive were increased age, etiology of ACS, abnormal CT head, decreased PO_2 and SO_2, focal neurological deficit.

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