



## ETIOLOGICAL PROFILE OF ACUTE CONFUSIONAL STATE OF THE PATIENTS AT TERTIARY CARE CENTER.

|                         |   |
|-------------------------|---|
| <b>Bhat Aijaz Ahmed</b> | Medical Officer (physician) director Health Services Kashmir.   |
| <b>Nath Mohd Yousuf</b> | Senior Resident Department Of General Medicine Sheri Kashmir Institute Of Medical Sciences (skims-mch) Bemina Srinagar. |
| <b>Unjum Aasiya*</b>    | MD Pediatrics Medical Officer (pediatrician) Director Health Services Kashmir India.<br>*Corresponding Author           |

### 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. Causes of acute confusional state include acute infections such as sepsis, pneumonia, urinary tract infection, viral infections, encephalitis, meningitis, cerebral abscess, malaria. Prescribed drugs like benzodiazepines, anticholinergics, analgesics (e.g. morphine), anti-Parkinsonism medications, anticonvulsants, steroids also cause acute confusional state. Other causes are surgical (postoperative), toxic substances like substance misuse or withdrawal, alcohol – acute intoxication or withdrawal, carbon monoxide poisoning, exposure to heavy metals and barbiturate withdrawal. Vascular disorders that cause acute confusional state are cerebrovascular haemorrhage or infarction, cardiac failure or ischaemia, cerebral venous thrombosis, subarachnoid haemorrhage, subdural haemorrhage, vasculitis (e.g. SLE), hypoxia, hypo- or hyperglycaemia, migraines, metabolic causes, electrolyte abnormalities (e.g. hyponatremia and hypercalcaemia), hepatic impairment and renal impairment. Vitamin deficiencies like thiamine, nicotinic acid and vitamin B12 cause acute confusional state. **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 clinical 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. **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. Overall the most common diagnosis among the females was sepsis 10 patients (35.71%) out of 28 patients, followed by metabolic 7 (25%) and CVA 5 (17.86%). Among the males the most common diagnosis was sepsis and metabolic both constituting 28.13% followed by CVA 7 (21.13%). **Conclusion:** In our study the most common final diagnosis was Sepsis/ infections 19 (31.67%), metabolic disturbances group 16 (26.67%), CVA (Cerebrovascular accidents) 12 patients (20.0%) followed by then, intra cranial infections (meningitis, encephalitis, meningoencephalitis) 3 (5.0%), ICSOL 3 (5.0%), seizures 2 (3.33%), poisoning 1 (1.67%) and unknown/miscellaneous 4 (6.67%). Our study was supported by the various other studies which were done here in India as well as other parts of the world.

### KEYWORDS :

#### 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<sup>1</sup>. 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<sup>2</sup>. Confusion is a mental and behavioural state of reduced comprehension, coherence, and capacity to reason. Confused patient is usually subdued, not inclined to speak, and is physically inactive. A state of confusion that is accompanied by agitation, hallucination, tremor and illusions (misperception of environmental sight, sound/touch). States of reduced alertness and responsiveness represent a continuum that in its severest form is called coma, a deep sleep like state from which patient cannot be aroused<sup>3</sup>. The concept of delirium has been known since the time of the ancient Greek and Roman physicians. The word itself is derived from the Latin *de* (from, away) and *lira* (track, furrow) suggesting an understanding, that the delirious state was a change from normal consciousness and behaviour<sup>4</sup>. In the general community the point-prevalence of delirium is yet undefined, though it may be 1% of the population over 55 years old<sup>5</sup>. Even in the twenty-first century the syndrome is often unrecognized or not diagnosed in up to 67% of cases or it is misdiagnosed as dementia or other psychiatric illnesses such as depression or schizophrenia, or perhaps worse, accepted as a normal part of ageing<sup>6</sup>.

Various studies have indicated the multifactorial nature of delirium and have found that between two and six factors may be present in any single case<sup>7</sup>. Next to increasing age, preexisting cognitive decline is the most confirmed risk factor. Delirium may be the first indicator of

dementia in elderly, and may "unmask" an insidiously developing cognitive decline<sup>8</sup>.

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%)<sup>9</sup>. It is not clear if there is a relationship between the subtype and risk factors for delirium or aetiologies, except for the suggestion that delirium from drug withdrawal states has a hyperactive presentation<sup>10</sup>. 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.

It is very common, especially in the elderly and many of these patients subsequently do not return to their baseline function and some even require institutionalisation. It can occur acutely or subacutely and symptoms fluctuate. In up to one third of cases acute confusional state can be avoided and the lack of awareness leads to a large amount of morbidity and mortality and a burden on NHS costs in the west<sup>11</sup>.

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) defines acute confusional state/delirium as disturbance of consciousness (*i.e.* reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention<sup>12</sup>.

A change in cognition (such as memory deficit, disorientation, language disturbance) or the development of a perceptual disturbance that is not better accounted for by a preexisting, established, or evolving dementia.

The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day. Evidence from the history, physical examination, or laboratory and imaging findings show that the disturbance is caused by the direct physiological consequences of a general medical condition.

Acute confusional state occurs in about 15-20% of all general admissions to hospital<sup>13</sup>. For patients in intensive care units the prevalence of delirium may reach as high as 80%<sup>14</sup>. Occurrence rates vary from 11-42% and it is the commonest complication of hospitalisation in the elderly population and 6-24% of nursing home patients<sup>6,11</sup>. 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 underdiagnosed and poorly managed – upto two-third of cases are missed in some centres<sup>13</sup>. In patients who are admitted with delirium, mortality rates are 10-26%<sup>14</sup>. 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<sup>15</sup>.

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<sup>13,16,17</sup>.

Causes of acute confusional state include acute infections such as sepsis, pneumonia, urinary tract infection, viral infections, encephalitis, meningitis, cerebral abscess, malaria. Prescribed drugs like benzodiazepines, anticholinergics, analgesics (e.g. morphine), anti-Parkinsonism medications, anticonvulsants, steroids also cause acute confusional state. Other causes are surgical (postoperative), toxic substances like substance misuse or withdrawal, alcohol – acute intoxication or withdrawal, carbon monoxide poisoning, exposure to heavy metals and barbiturate withdrawal. Vascular disorders that cause acute confusional state are cerebrovascular haemorrhage or infarction, cardiac failure or ischaemia, cerebral venous thrombosis, subarachnoid haemorrhage, subdural haemorrhage, vasculitis (e.g. SLE), hypoxia, hypo- or hyperglycaemia, migraines, metabolic causes, electrolyte abnormalities (e.g. hyponatremia and hypercalcaemia), hepatic impairment and renal impairment. Vitamin deficiencies like thiamine, nicotinic acid and vitamin B12 cause acute confusional state. Endocrinopathies like hypopituitarism, porphyria, hypo- and hyperthyroidism, hypo- or hyperparathyroidism, Cushing's disease, Carcinoid are also responsible for causing acute confusional state. Some other causes of acute confusional state are primary cerebral malignancy, secondaries in the brain, paraneoplastic syndromes (all neoplasias), epilepsy (post-ictally), head injury, urinary retention, faecal impaction, multiple aetiology and unknown aetiology<sup>16,18,19</sup>.

Few studies have been conducted in India on etiological profile of acute confusional state in a tertiary care hospital and none in this part of the country. 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 clinical correlate of different causes of ACS.

## OBJECTIVE

To study the etiological profile of Acute confusional state patients 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 clinical 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 behaviour.
- 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.

**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

Most patients were in the age group of 61-70 years i.e. 6<sup>th</sup> 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.

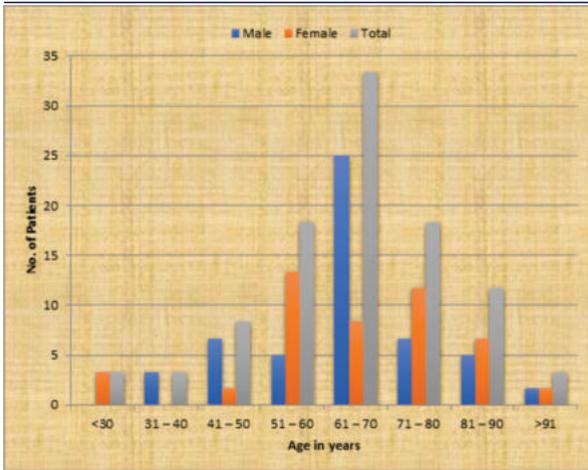


Fig. 1: Age And Sex Distribution

Table 2: Frequency Of Patients In Various GCS Groups (n=60)

| GCS Score | Total |            |
|-----------|-------|------------|
|           | No.   | Percentage |
| <8        | 9     | 15.00      |
| 8 – 11    | 12    | 20.00      |
| 12 – 15   | 39    | 65.00      |
| Total     | 60    | 100.00     |

Mean GCS  $\pm$  SD (range) =  $11.25 \pm 2.36$  (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 (20%) and <8 having 9 patients (15%).

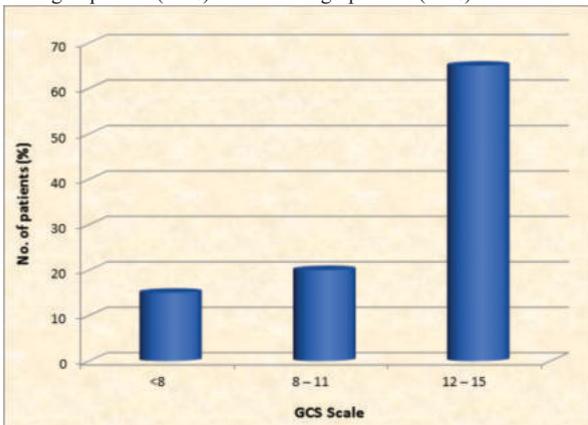


Fig. 2: Graph Showing Frequency Of Patients In Various GCS Groups.

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     |

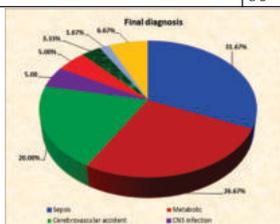


Fig. 3: Final Diagnosis Of Patients Of Acute Confusional State

Table 4: Sex Distribution Of Patients According To Final Diagnosis (n=60)

| Final diagnosis          | No. of patients (%) |             |             |
|--------------------------|---------------------|-------------|-------------|
|                          | Male                | Female      | Total       |
| Sepsis                   | 9 (28.13)           | 10 (35.71)  | 19 (31.67)  |
| Metabolic                | 9 (28.13)           | 7 (25.00)   | 16 (26.67)  |
| Cerebrovascular accident | 7 (21.86)           | 5 (17.86)   | 12 (20.00)  |
| CNS infection            | 3 (9.38)            | 0 (0.00)    | 3 (5.00)    |
| ICSOL                    | 1 (3.13)            | 2 (7.14)    | 3 (5.00)    |
| Seizure                  | 2 (6.25)            | 0 (0.00)    | 2 (3.33)    |
| Poisoning                | 0 (0.00)            | 1 (3.57)    | 1 (1.67)    |
| Unknown cause            | 1 (3.13)            | 3 (10.71)   | 4 (6.67)    |
| Total                    | 32 (100.00)         | 28 (100.00) | 60 (100.00) |

The above table showing the sex distribution of the patients with respect to final diagnosis. Overall the most common diagnosis among the females was sepsis 10 patients (35.71%) out of 28 patients, followed by metabolic 7(25%) and CVA 5(17.86%). Among the males the most common diagnosis was sepsis and metabolic both constituting 28.13% followed by CVA 7 (21.13%).

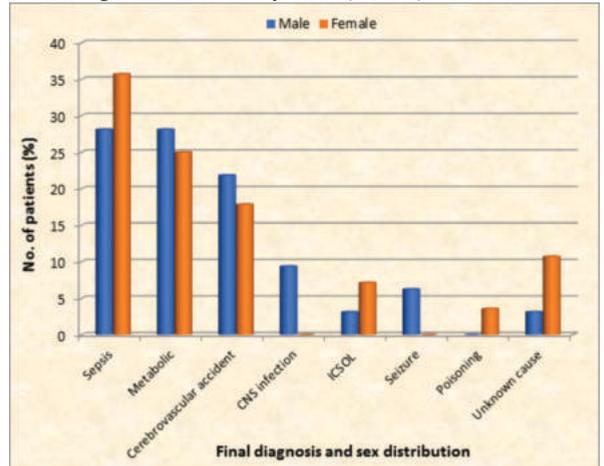


Fig. 4: Sex Distribution Of Patients According To Final Diagnosis

Table 5: Various Subgroups Under CVA Group

| CVA          | Subtypes | No.   | Percentage |
|--------------|----------|-------|------------|
|              | Ischemic | 9     | 69.23      |
| Haemorrhagic | 3        | 23.08 |            |
| SAH          | 1        | 7.69  |            |
| Total        |          | 13    | 100.00     |

The above table shows the various conditions under CVA group were ischemic stroke 9 out of 13, ICH 3 and SAH 1 patient.

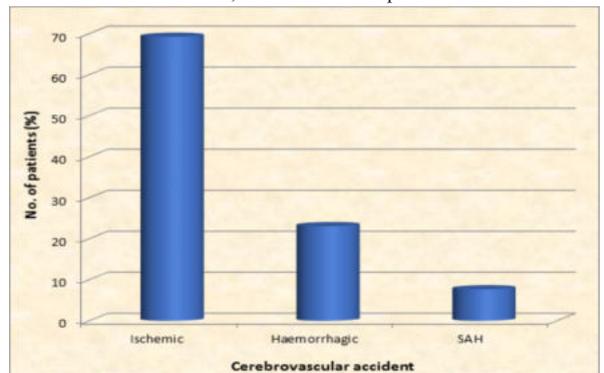


Fig. 5: Various Subgroups Under CVA Group

Table 6: Various Diagnosis Under Metabolic Group (n=16)

| Diagnosis           | Total |            |
|---------------------|-------|------------|
|                     | No.   | Percentage |
| Hyponatraemia       | 5     | 31.25      |
| Hypercalcaemia      | 3     | 18.75      |
| Uremia              | 3     | 18.75      |
| Respiratory failure | 2     | 12.50      |
| Hypernatraemia      | 1     | 6.25       |

|         |    |        |
|---------|----|--------|
| Hepatic | 1  | 6.25   |
| DKA     | 1  | 6.25   |
| Total   | 16 | 100.00 |

The above table shows various conditions under metabolic group. Metabolic group itself was a big group in our study constituting 16 patients was constituted by heterogenous causes like hyponatraemia 31.25%, hypercalcaemia 18.75%, uremic 18.75%, respiratory failure 12.50%, hypernatraemia 6.25%, hepatic 6.25% and DKA 6.25%.

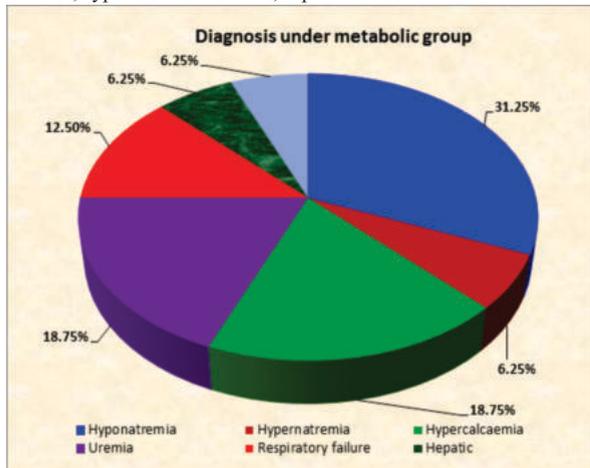


Fig. 6: Various Diagnosis Under Metabolic Group

Table 12 : Various Diagnosis Under Sepsis Group (n=19)

| Diagnosis        | Total |            |
|------------------|-------|------------|
|                  | No.   | Percentage |
| Pneumonia        | 9     | 47.37      |
| UTI              | 6     | 31.58      |
| Pancreatitis     | 2     | 10.53      |
| Undifferentiated | 1     | 5.26       |
| Cholangitis      | 1     | 5.26       |
| Total            | 19    | 100.00     |

The above table represents the various conditions under sepsis group. Sepsis constituted the most common cause of acute confusional state in our study and the various conditions under this group were pneumonia 47.37%, UTI 31.58%, pancreatitis 10.53%, cholangitis 5.26% and undifferentiated 5.26%.

**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 between 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<sup>th</sup> 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)**<sup>20</sup>, the mean age of patients was 65.04±10.6 years. In the study conducted by **George et al. (1997)**<sup>7</sup>, 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)**<sup>20</sup>, 32 (61.5%) were males and 20 (38%) were females. In the study done by **Kanich et al. (2002)**<sup>2</sup>, there were 57% males (180) and 43% (137) females. In the study done by **Nadeem et al. (2005)**<sup>21</sup>, the sex distribution was 312 male (60.35%) and 205 female (39.65%) patients. **Inouye et al. (1994)**<sup>6</sup>, 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)**<sup>22</sup>, 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)**<sup>23</sup>, 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)**<sup>24</sup>, 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)**<sup>21</sup>, 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)**<sup>25</sup>, the outcome of 248 patients (90.84%) was established. 152 (61.29%) were discharged after recovery and 96 (38.71%) died. The remaining 25 (9.16%) patients were lost to follow up. In the study done by **Kanich et al. (2002)**<sup>2</sup>, Ninety-one percent of the patients lived, whereas 2% died in the emergency department ED and 7% died after admission to hospital.

**FINAL DIAGNOSIS:**

In our study the most common final diagnosis was Sepsis/ infections 19 (31.67%), metabolic disturbances group 16 (26.67%), CVA (Cerebrovascular accidents) 12 patients (20.0%) followed by then, intra cranial infections (meningitis, encephalitis, meningoencephalitis) 3 (5.0%), ICSOL 3 (5.0%), seizures 2 (3.33%), poisoning 1 (1.67%) and unknown/miscellaneous 4 (6.67%). Our study was supported by the various other studies which were done here in India as well as other parts of the world.

In the study done by **Rai D et al. (2014)**<sup>20</sup>, predominant primary etiologies for delirium were infections (58%), following by metabolic abnormalities (36%) and adverse drug effects (18%).

In the study done by **Grover S et al. (2009)**<sup>24</sup> commonest cause for the delirium was an active infection (25.9%); other common medical and surgical problems included trauma (15%) and metabolic/endocrine problems (14.8%).

In the study by **George J et al. (1997)**<sup>7</sup>, in elderly patients having confusion as a part of their complaints, the causes of delirium as in descending order was infection 35% (75), metabolic 15% (34), CVA 11% (24), drug related 11% (24), carcinoma 5% (10), ICSOL 0.5% (1), SDH 1% (2), fractures 5% (10), miscellaneous 6% (12).

In the study done by **Wofford et al. (1996)**<sup>22</sup>, the most common cause of acute cognitive impairment in elderly was infection 26.1% (40), followed by decreasing order by metabolic/toxic group 22.9% (35), cerebrovascular 20.2% (31), unknown 15.6% (24), miscellaneous 7.2% (11), trauma 6.5% (10), cardiac 6% (9), medication related 4.6% (2).

In the study done by **E.E.Vasilevskis et al. (2012)**<sup>26</sup>, found that Infections, such as a urinary tract infection or pneumonia, are probably some of the most common precipitants of delirium and may be present in 34-64% of the hospitalised patients with delirium. Other delirium precipitants in the hospital literature include dehydration, electrolyte abnormalities, acute kidney injury or liver failure, ethanol or benzodiazepine withdrawal, central nervous system insults and seizures.

In the study done by **Rahkonen T et al. (2000)**<sup>27</sup>, found that the most important primary causes of delirium were infections in 22 cases (43%) and cerebrovascular attacks in 13 cases (25%).

**Goulia et al. (2009)**<sup>28</sup>, the most common potential etiological factors that contributed to the development of delirium were fluid and electrolyte imbalance, fractures and infection, (29.0%, 27.9%, and 23.6%, respectively).

**Shivanandh et al. (2015)**<sup>29</sup>, also reported infections (65%) followed by intentional poisonings (19%), metabolic causes (10%) and substance abuse (6%) were the important aetiological causes.

**Kanich et al. (2002)**<sup>2</sup>, the most common diagnoses accounting for

AMS were neurologic (28%) then toxicologic (21%) followed by trauma (14%), psychiatric (14%), infectious (10%), endocrine/metabolic (5%), pulmonary (3%), oncologic (3%) cardiovascular (1%), gastrointestinal (1%), and renal (1%).

In the study done by **Nadeem et al. (2005)**<sup>21</sup>, 25.8% (30) had structural cause for coma. CVA comprised the bulk of these patients 28 patients 24.1% and one patient each of brain tumor and tuberculoma.

According to **O'Keefe S, Lavan J. (1997)**<sup>30</sup>, the most common cause of altered mental status in elderly patients were metabolic/toxic (65%), structural (33%) and psychiatric (2%).

In our study sepsis formed the major group of the patients responsible for acute confusional state and the various conditions which were included in sepsis group were, pneumonia 9(47.0%), Urinary tract infections(31.37%),pancreatitis 2(10.53%),cholangitis 1(5.26%) and undifferentiated infections 1(5.26%).

The study done by **George J et al. (1997)**<sup>7</sup> found that most common cause of delirium was found to be infections 73(34.0%), particularly chest 40 and urinary infections 25 and other 8.

In our study the various conditions under CVA group were ischemic infarct 69.23%, ICH 23.23% and SAH 9.69%. The study conducted by **L. B. Leong et al. (2008)**<sup>31</sup>, Of all CT scans performed, 246 (36%) were reported to be abnormal; 135 were found to have ischaemic stroke, 106 to have haemorrhagic stroke and 5 to have tumours.

## 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.

The common and important causes of AMS require timely diagnosis, intervention and are largely amenable to treatment. AMS remains a symptom that carries a significant degree of morbidity and mortality, especially in elderly patients with neurological aetiologies.

Our study was designed to workout the important causes and clinical correlates of acute confusional state in our population, thus helping to keep in mind different diseases while we confront with a patient of acute confusional state. The combined knowledge of the most frequent causes of acute confusional state and the most useful diagnostic tools in the evaluation of acute confusional can assist the emergency physician in the management of these demanding and potentially ill patients.

This randomised cross sectional study with limited number of study population may not reflect the exact situation of the condition in the community, but its nearness to the reality cannot be underestimated. Its important to note that, many causes of altered confusional state are completely reversible with prompt diagnosis and proper management, like infections ,metabolic and poisoning. This finding emphasize the great importance of early accurate diagnosis of acute confusional state, as correct diagnosis can lead to judicious management and save the valuable lives.

## REFERENCES

1. Dasgupta M and Hillier LM. Factors associated with prolonged delirium: a systematic review. *Int Psychogeriatr* 2010; **22**(3): 373-94.
2. Kanich W, Brady WJ, Huff JS, et al. Altered Mental Status: Evaluation and Etiology in the ED. *Am J Emerg Med*. 2002 Nov; **20**(7):613-7.
3. Ropper AH. Acute confusional states and coma. Harrison's principles of internal medicine, 16th Edition, vol.2. Mc Graw Hill Company; 2005. 1624-36.
4. Lipowski and Zbigniew J. Delirium: Acute Confusional States. New York, Oxford University Press. 1992; Volume 115, Issue 4, 1242-43.
5. Folstein MF, Bassett SS, Romanoski AJ, et al. The epidemiology of delirium in the community: the Eastern Baltimore mental health survey. *Int Psychogeriatr* 1991; **3**: 169-76.
6. Inouye SK. The dilemma of delirium: clinical and research controversies regarding diagnosis and evaluation of delirium in hospitalized elderly medical patients. *Am J Med* 1994; **97**:278-88.
7. George J, Bleasdale S and Singleton SJ. Causes and prognosis of delirium in elderly patients admitted to a district general hospital. *Age Ageing* 1997; **26**: 423-7.
8. Marcantonio ER, Goldman L, Orav EJ, et al. The association of intraoperative factors with development of post op delirium. *Am J Med* 1998; **105**: 380-4.
9. Liptzin B and Levkoff SE. An empirical study of delirium subtypes. *Br J Psychiatry* 1992; **161**: 843-5.
10. Meagher DJ, O'Hanlon D, O'Mahony E, et al. Relationship between etiology and phenomenologic profile in delirium. *J Geriatr Psychiatry Neurol* 1998; **11**: 146-9.
11. Young J and Inouye SK. Delirium in older people. *BMJ* 2007; **334**:842-846.
12. Fong TG, Tulebaev SR and Inouye SK. Delirium in elderly adults: diagnosis, prevention and treatment. *Nature reviews Neurology*. 2009; **5**(4):210-220.

13. Meagher DJ. Delirium: Optimising management. *BMJ* 2001; **322**(7279): 144-9.
14. Kalabalik J, Brunetti L and El-Strougy R. Intensive care unit delirium: a review of the literature. *J Pharm Pract* 2014; **27**(2): 195-207.
15. Marcantonio ER, Kiely DK, Simon SE, et al. Outcomes of older people admitted to postacute facilities with delirium. *J Am Geriatr Soc* 2005; **53**(6): 963-9.
16. Brown TM and Boyle MF. Delirium. *BMJ*. 2002 Sep **21**:325(7365):644-7.
17. Burns A, Gallagley A and Byrne J. Delirium. *J Neurol Neurosurg Psychiatry*. 2004 Mar; **75**(3):362-7.
18. Gleason OC. Delirium. *Am Fam Physician*. 2003 Mar **1**; **67**(5): 1027-34.
19. Allen CMC, Lueck CN and Dennis M. Neurological disease. Davidson's Principles and Practice of Medicine, 20th Edition. Elsevier Limited, 2006, 1187-88.
20. Rai D, Garg RK, Malhotra HS, et al. Acute confusional state/delirium: An etiological and prognostic evaluation. *Ann Indian Acad Neurol* 2014; **17**: 30-4.
21. Nadeem MA, Irfan K, Waheed KAL, et al. Is there any relationship of age and sex to the etiology and outcome of medical coma? *Ann King Edward Med Uni* 2005; **11**(4): 407-10.
22. Wofford JL, Loehr LR and Schwartz E. Acute cognitive impairment in elderly ED patients: Etiologies and outcomes. *Am J Emerg Med* 1996; **14**(7): 649-53.
23. Bates D, Caronna JJ, Carlidge NE, et al. A prospective study of non-traumatic coma; methods and results in 310 patients. *Ann Neurol* 1977; **2**(3): 211-20.
24. Grover S, Subodh BN, Avasthi A, et al. Prevalence and clinical profile of delirium: A study from a tertiary-care hospital in north India. *Gen Hosp Psychiatr* 2009; **31**: 25-9.
25. Nadeem MA, Irfan K and Waheed KAL. Prognostic value of initial Glasgow Coma Score in comatose patients on medical floor. *Ann King Edward Med Coll* 2006; **12**(2): 229-31.
26. Vasilevskis EE, Han JH, Hughes CG, et al. Epidemiology and risk factors for delirium across hospital settings. *Best Pract Res Clin Anaesthesiol* 2012; **26**: 277-87.
27. Rahkonen T, Makela H, Paanila S, et al. Delirium in elderly people without severe predisposing disorders: etiology and one year prognosis after discharge. *Int Psychogeriatric* 2000; **12**:473-81
28. Goulia P, Mantas C and Hyphantis T. Delirium, a 'confusing' condition in general hospitals: The experience of a Consultation-Liaison Psychiatry Unit in Greece. *Inter J Gen Med* 2009; **2**: 201-7.
29. Shivanandh B, Sudhakar TP, Mohan A et al. Aetiology and factors affecting outcome in patients admitted to medical intensive care unit with delirium in a tertiary care teaching hospital. *J Clin Sci Res*. 2015; **4**: 136-42.
30. O'Keefe S and Lavan J. The prognostic significance of delirium in older hospital patient. *J Am Geriatr Soc* 1997; **45**(2): 174-8.
31. Leong LB, Jian KHW, Vasu A, et al. Prospective study of patients with altered mental status: Clinical features and outcome. *Int J Emerg Med* 2008; **1**: 179-82.