

## A Study on Etiology of Acute Confusional State in Elderly with Short Term Outcome.

S. Islam, A.J. Talukdar, S. Dutta, P.P.Kalita

(Department Of Medicine, Gauhati Medical College, Guwahati, India)

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### **Abstract:**

**Introduction:** Acute confusional state is characterized by a disturbance of consciousness and a change in cognition that develops over a short period of time. It is a frequent cause of hospital admission in the elderly. Recognition and prompt treatment is crucial to decrease the morbidity and mortality associated with it.

**Materials and Methods:** In this prospective study, we determined the etiology and prognostic factors of an acute confusional state. A total of 81 patients of acute confusional state were clinically evaluated. All patients were also subjected to a battery of biochemical examination, cerebrospinal fluid analysis and neuroimaging.

**Results:** The mean age of our cohort was  $64.31 \pm 5.63$  years. 39(48.14%) patients were male. In 74 patients, we were able to identify possible precipitating cause of an acute confusional state. In the rest of the 7 patients results of all the tests were normal. Leukocytosis and hyponatremia were frequent factors associated with delirium. Patients without a precipitating cause for acute confusional state and multiple co morbidities had significantly higher mortality. 38 (46.91%) of our patients died, of these in 6 patients we could not find a precipitating cause and 17 patients had multiple co morbidities.

**Conclusion:** Patients with multiple comorbidities and in whom no definite cause could be found for the acute confusional state had poorer prognosis in terms of higher mortality.

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### **I. Introduction**

Acute confusional state or delirium is a common syndrome affecting many elderly patients not only admitted into medical wards but also in the community. The syndrome of delirium can be defined as acute brain failure associated with autonomic dysfunction, motor dysfunction and homeostatic failure. Delirium develops over a short period of time (hours to days) and fluctuates throughout the course of the day.<sup>(1,2)</sup> It is characterised by a reduction in clarity of awareness, inability to focus, distractibility and change in cognition. It is often associated with serious adverse outcomes such as death, dementia, and the need for long-term patient care. It appears that delirium occurs in 10% to 61% of elderly patients and 14% to 61% will have dementia at the time of admission.<sup>(9)</sup> It is more common in certain ward environments like ICU and palliative care units(80%) .Delirium is a common cause of mortality in the older population. We evaluated the elderly patients of acute confusional state with the objective of identifying the possible causes of acute confusional state along with the evaluation of its short term outcome .<sup>(3)</sup>

### **II. Materials And Methods**

We conducted this prospective observational hospital based study on patients with an acute confusional state. These patients were admitted in the Department of Medicine at Gauhati Medical College, Guwahati. Study period was from August 2014 to July 2015. A written informed consent was taken from the relatives.

### **III. Inclusion Criteria**

We included patients with acute confusional state/delirium of less than 7 days duration. The enrolled patients fulfilled the diagnostic criteria of an acute confusional state, according to the confusion assessment method which included the following criteria:

1. An acute onset and fluctuating course.
2. Inattention.
3. Disorganized thinking.
4. Altered level of consciousness.

The diagnosis of delirium by confusion assessment method needed the presence of features 1 and 2 and either 3 or 4.<sup>(4)</sup>

### **IV. Exclusion Criteria:**

The following patients were excluded:

1. Known case of dementia.
2. Known psychiatric illness.

3. History of recurrent seizures.
4. Pre existing neurological deficit.
5. Duration of more than 7 days.

### **V. Evaluation:**

All patients were subjected to a detailed history including drugs and alcohol intake with neurological and systemic examinations. Cognitive evaluation was performed using the Mini-Mental State Examination (MMSE). All the patients were subjected to routine biochemistry evaluation ,complete hemogram, liver, renal and thyroid functions, arterial blood gas analysis, chest X-ray, ultrasound abdomen, computed tomography of brain, Magnetic Resonance Imaging of brain(where necessary)and cerebrospinal fluid (CSF) analysis. Patients were categorized into the following two groups:

1. Patients in whom we were able to establish a possible precipitating cause for an acute confusional state.
2. Patients in whom we could not identify the possible precipitating cause.

Clinical, biochemical and neuroimaging parameters of two groups were compared.

The treatment of an acute confusional state and delirium was directed toward identifying and correcting precipitating medical conditions.

### **VI. Statistical Analysis**

Data were analyzed using the statistical software package, statistical package for the social sciences (Version 16.0, SPSS) and Microsoft Excel. The difference between two values was considered to be significant only if P value was found to be <0.05. Two sample t-test was used to see the difference between the mean of two delirium groups. If data was not normally distributed, a nonparametric equivalent of two sample t-test, two sample Wilcoxon rank-sum (Mann-Whitney) test was used. Chi-square or fisher exact test was used for qualitative data. A multivariate analysis was subsequently carried out using a logistic regression model.

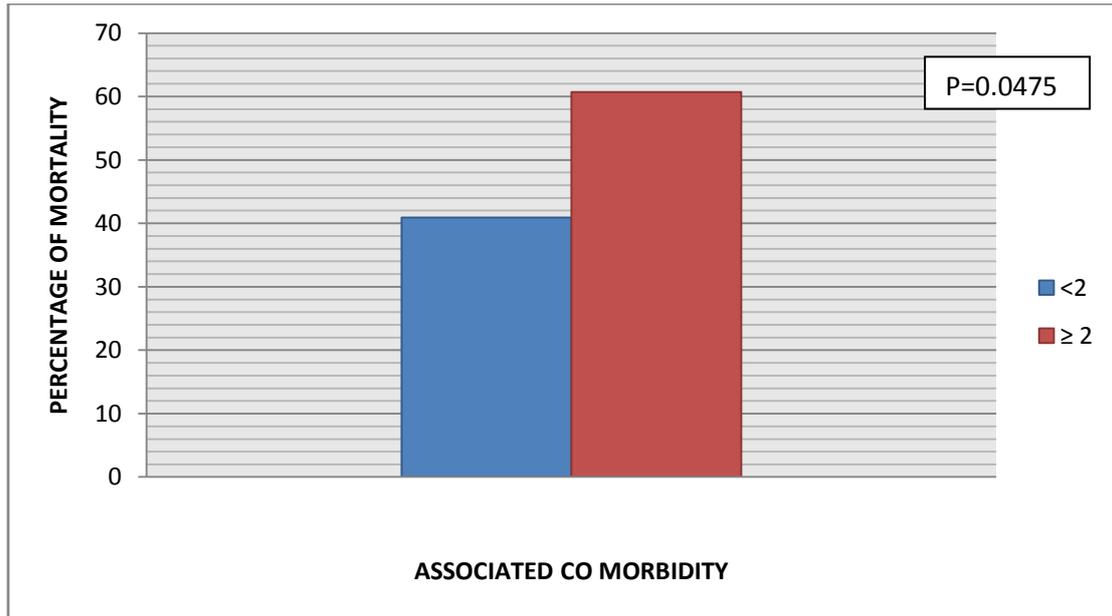
### **VII. Results**

During the study period, 91 patients of acute confusional state were screened. 10 patients did not meet the inclusion criteria . Our study cohort, thus, comprised of 81 patients. The mean age of patients was 64.31± 5.63 years. 39(48.14%) patients were male. 72 (88.88%) patients had a presence of a co-morbid medical condition. Hypertension was the most common associated co morbid condition. In this study, 74(91.35%) patients had a possible precipitating factor and in remaining 7 patients a precipitating cause of acute confusional state could not be established. 38(46.91%) of our patients expired, of these in 6 patients we could not find a precipitating cause for the delirium. Leukocytosis and hyponatremia were frequent contributing factor for delirium. We observed that the mortality rate was higher among patients, in whom the cause for delirium could not be ascertained. It was also observed that patients with multiple co morbid condition had greater mortality than patients with single associated co morbidity.

#### **1. Associated co morbidity and outcome**

ASSOCIATED CO MORBIDITY	ALIVE	EXPIRED
<2(n=44)	26(59.09%)	18(40.91%)
≥2(n=28)	11(39.28%)	17(60.71%)

P =0.0475

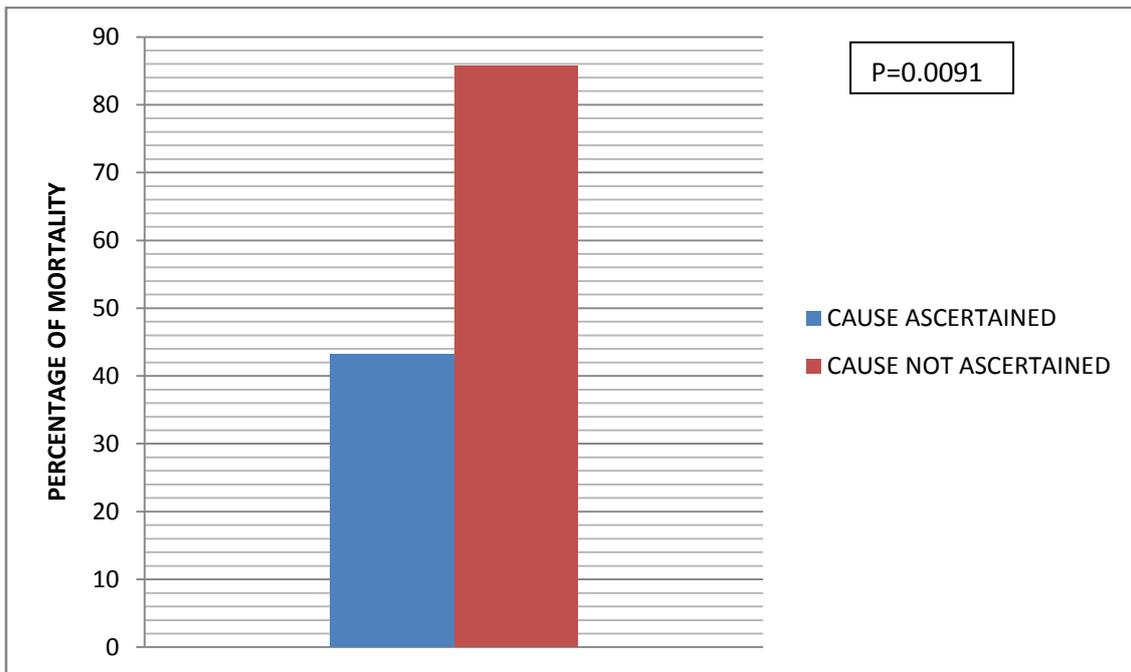


Mortality Outcome In Elderly Patients In Relation To Associated Co Morbid Condition

2. Outcome :

OUTCOME	CAUSE ASCERTAINED	CAUSE NOT ASCERTAINED
ALIVE	42(56.75%)	1(14.28%)
EXPIRED	32(43.24%)	6(85.71%)

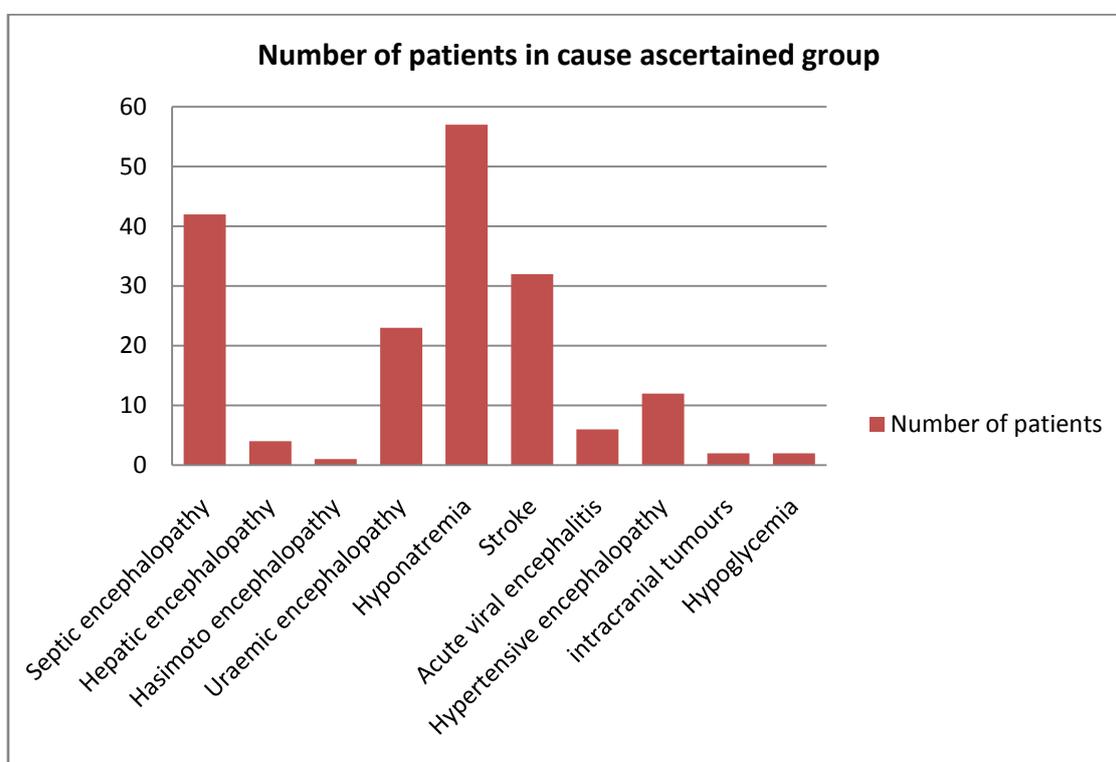
p=0.0091



Mortality Among Cause Ascertained And Not Ascertained Group In Elderly Patients

**3. Etiology Among The Ascertained Group:**

CAUSE	SEPTIC ENCEPHALOPATHY	HEPATIC ENCEPHALOPATHY	HASIMOTO ENCEPHALOPATHY	URAEMIC ENCEPHALOPATHY	HYPONATREMIA	STROKE	ACUTE VIRAL ENCEPHALITIS	HYPERTENSIVE ENCEPHALOPATHY	INTRACRANIAL TUMOURS	HYPOGLYCAEMIA
NO. OF PATIENTS	42	4	1	23	57	32	6	12	2	2



Probable Cause For Acute Confusional State In Elderly

**VIII. Discussion**

One of the main contributions of this study is to confirm the importance of delirium as a factor associated with short term mortality among elderly in-patients. We observed that percentage of deaths (85.71% vs 43.24%) was more in patients in whom a precipitating factor could not be identified. Therefore, identifying the precipitating factor and its treatment is very important as it influences the overall outcome in patients with acute confusional state.

A multicentric study carried out in Europe by Campbell SE et al. that included 1,626 patients verified that death was correlated both to functional and cognitive impairment and with the male gender.<sup>(8)</sup> A recent systematic review from the same group indicated that increased comorbidity scores was associated with higher mortality. Our results confirmed the association between higher mortality rates and greater co morbid condition.

Delirium often has an adverse prognostic impact on functional and cognitive outcome, as well as on morbidity. In our study, a definite cause for acute confusional state was found in 91.35% of all the included patients. Hyponatremia (n=57, 77.02%) was a dominant precipitating metabolic factor followed by infections(n=42, 56.75%) and stroke(n=32,43.24%). Rai, et al in a study of 52 patients found that leukocytosis and hyponatremia were frequent factors associated with delirium.<sup>(10)</sup> In a meta-analysis, it was observed that stroke patients with delirium had higher inpatient mortality compared with non-delirious patients.<sup>(11)</sup> In our study, out of 32 patients with stroke, 18(56.25%) patients expired. Patients with an abnormal work-up (possible precipitating cause) had significantly lower mortality. Similar to our study, Chrispal et al. made an important observation that mortality was significantly lower among those patients in whom a possible precipitating cause could be found.<sup>(12)</sup> A correct identification of possible etiological factor is important because reversal of that cause will help in early resolution of delirium.

### **IX. Conclusion:**

1. Commonest etiology of acute confusional state in elderly was hyponatremia( n=57, 77.02%).
2. Mortality was significantly higher in patients without any detectable precipitating cause for the acute confusional state (85.71% vs 43.42%)
3. Patients with multiple co morbid conditions had a poorer outcome (60.71% vs 40.91%).

### **References**

- [1]. Young J, Murthy L, Westby M, Akunne A, O'Mahony R, Guideline Development Group. Diagnosis, prevention, and management of delirium: Summary of NICE guidance. *BMJ* 2010;341:c3704.
- [2]. McCusker J, Cole M, Dendukuri N, Han L, Belzile E. The course of delirium in older medical inpatients: A prospective study. *J Gen Intern Med* 2003;18:696-704.
- [3]. Burns A, Gallagley A, Byrne J. Delirium. *J Neurol Neurosurg Psychiatry* 2004;75:362-7.
- [4]. Inouye SK, van Dyck CH, Alessi CA, Balkin S, Siegel AP, Horwitz RI. Clarifying confusion: The confusion assessment method. A new method for detection of delirium. *Ann Intern Med* 1990;113:941-8.
- [5]. McDowell I, Newell C. *Measuring Health - A Guide to Rating Scales and Questionnaires*. 2nd ed. Oxford: Oxford University Press; 1996. p. 56-63.
- [6]. Leentjens AF, van der Mast RC. Delirium in elderly people: An update. *Curr Opin Psychiatry* 2005;18:325-30.
- [7]. Han JH, Shintani A, Eden S, Morandi A, Solberg LM, Schnelle J, et al. Delirium in the emergency department: An independent predictor of death within 6 months. *Ann Emerg Med* 2010;56: 244-2521.
- [8]. Campbell SE, Seymour DG, Primrose WR, Lynch JE, Dunstan E, Espallargues M, et al. A multi-centre European study of factors affecting the discharge destination of older people admitted to hospital: analysis of in-hospital data from the ACMEplus project. *Age Ageing*. 2005; 34:467-75.
- [9]. Tirupati SN, Punitha RN. Cognitive decline in elderly medical and surgical inpatients. *Indian J Psychiatry*. 2005;47:99-101
- [10]. Rai D, Garg RK, Malhotra HS, Verma R, Jain A, Tiwari SC, et al. Acute confusional state/delirium: An etiological and prognostic evaluation. *Ann Indian Acad Neurol* 2014;17:30-4.
- [11]. Shi Q, Presutti R, Selchen D, Saposnik G. Delirium in acute stroke: A systematic review and meta-analysis. *Stroke* 2012;43:645-9.
- [12]. Chripal A, Mathews KP, Surekha V. The clinical profile and association of delirium in geriatric patients with hip fractures in a tertiary care hospital in India. *J Assoc Physicians India*. 2010;58:15-9.