



## “AETIOLOGY OF DELIRIUM IN ELDERLY PATIENTS PRESENTING TO GERIATRIC MENTAL HEALTH CARE SETUP”

### Clinical Science

**Dr. Sunil Suthar\*** Senior resident King Georges Medical University, Lucknow, Uttar Pradesh (India)  
\*Corresponding author

**Dr. S.M. Tripathi** Assistant professor King Georges Medical University, Lucknow, Uttar Pradesh (India)

**Dr. S.C. Tiwari** Professor and Head King Georges Medical University, Lucknow, Uttar Pradesh (India)

### ABSTRACT

**Introduction-** Presently, there is a progressive increase in the geriatric population which demands the mental health care setup because mental illness is common in this population. Delirium in elderly is common but its aetiology poorly studied in geriatric mental health care setup.

**Aim-** To study aetiology of delirium in elderly patients admitted in Department of Geriatric Mental Health and comparing aetiological differences in patients with and without dementia.

**Methods-** Sixty patients admitted consequently in Department of Geriatric Mental Health and diagnosed case of delirium as per DSM-IV TR criteria, were recruited in study. Aetiology of delirium was assessed by physical examination, biochemical investigations and neuroimaging. Aetiologies of delirium were compared in patients with and without dementia. Underlying dementia screened using Informant Questionnaire on **Cognitive Decline-** short form (IQCODE-sf)

**Results-** Among all cases of delirium, twenty-one patients (35%) were having underlying dementia. Psychotropic drugs, urinary tract infection and constipation were most common causes of delirium in patients with dementia while respiratory tract infection, hyponatremia and acute stroke were most common cause of delirium in patients without dementia. All seven cases delirium due to stroke were having left sided stroke.

**Conclusion-** There are differences in aetiology of delirium in patients with and without dementia, which should be considered in prevention and management of delirium. Patients presenting with delirium, left sided stroke should be suspected even in absence of sensory or motor deficit.

### KEYWORDS

Elderly, Aetiology, Delirium and Dementia.

#### Introduction

Delirium is acute medical and psychiatric condition which needs immediate intervention because if not identified and treated it can lead to worst outcomes in form of mortality or permanent cognitive deficits. Delirium is sign of underlying physical illness. Primary aim of management of delirium is to identify cause of delirium. In the various studies different causes has been identified. This difference in aetiology is due to different setup from where the patients were recruited. Only one study by Koponen et al.,(1) was found in literature, which studied the cause of delirium in patients admitted in psychogeriatric set-up. As there is growing need of psycho-geriatric units/department. It is important to know cause of delirium in patients admitted in psychogeriatric setup. Only two studies had compared differences in etiologic of delirium in patients with and without dementia. Holta E. H. et al.,(2) in a study on delirium found that there was patients of delirium with dementia has different etiological profile in compare to those without dementia. While Grover S et al.,(3) didn't find any significant difference.

Therefore, this study was planned to identify the aetiology of delirium and differences in the aetiology of delirium in patients with and without dementia.

#### Methodology –

**Ethical approval** – This study was approved by ethical board of King Georges Medical University.

**Setting-** The study was performed in the Department of Geriatric Mental Health, King George's Medical University, UP, Lucknow. All the elderly patients (age  $\geq 60$  years) who presents with delirium were included in this study. Delirium was diagnosed using Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR). Dementia was screened on basis IQCODE.

#### Assessment tools –

- 1) Semistructured proforma for sociodemographic and clinical profile
- 2) Informant Questionnaire on Cognitive Decline-short form (IQCODE-sf) (Jorm, 1994)(4) – A validated instrument to assess pre-existing cognitive functioning. The informants are asked to recollect the situation 2 weeks before the illness started for which the patient had been admitted and to compare it with the situation 10 years before. In short version of IQCODE there are total 16

questions. For scoring of IQCODE, total score for all questions is added up and divided by the number of questions. In this study cut off score  $\geq 3.5$  was used to define underlying dementia.

- 3) Delirium Aetiology Checklist (Paula Trzepacz, 2007) (5) – Its structured checklist. There may be more than one aetiology of delirium in one patient. In this checklist contribution of various aetiology of delirium are divided into 12 categories. Each category is rated on a 5-point scale for degree of attribution to the delirium episode, ranging from "ruled out/not present/not relevant" (0) to "definite cause" (4) as follows: Drug intoxication/drug withdrawal; metabolic/endocrine disturbance; traumatic brain injury; seizures; infection (intracranial); infection (systemic); neoplasm (intracranial); neoplasm (systemic); cerebrovascular; organ insufficiency; other CNS; and other systemic causes. This categorization helps for the documentation of the present or suspected role for multiple potential causes of delirium and provides more information specifically relevant to delirium than a listing of current medical conditions.

**Procedure-** Study was conducted from Dec 2015 to Nov 2016. Suspected cases of delirium were admitted and evaluated in detail. Diagnosis was confirmed by geriatric psychiatrist using DSM-IV-TR diagnostic criteria. Aetiology of delirium was identified by physical examination, biochemical, neuroimaging and other investigations as required on basis of physical examination. Wherever required opinion from other medical specialist was taken. Primary caregiver of patients with delirium were explained about the study in detail and written informed consent was obtained.

**Results-** Total 60 patients with delirium were recruited.

**Table-1 Sociodemographic Profile of all patients with delirium-**

Mean age (Years)		74.9 $\pm$ 8.7
Sex	Male	39 (65%)
	Female	21 (35%)
Marital Status	Single	3 (5.0%)
	Married	34 (56.7%)
	Widow/Widower	23 (38.3%)
	Divorced/separated	0
Educational Status	Illiterate	19 (31.7%)
	Primary and above	41 (68.3%)

Locality	Urban	27 (45.0%)
	Rural	33 (55.0%)
Monthly Income (per capita)	Nil - 5000	28 (46.7%)
	≥5001	32 (53.3%)
Substance abuse-Tobacco	Yes	9 (15%)
	No	51 (85%)
Dementia	Present	21 (35%)
	Absent	39 (65%)
Past History of Psychiatric illness (other than Dementia)	Present	18 (30%)
	Absent	43 (70%)

In all cases of delirium mean age of patients was 74.9 years. And male (65%) were more than female (35%). (Male: Female = 1.9:1). Most patients belong to rural background and poor socioeconomic status. In current substance use history, the only substance found was tobacco abuse, 15% were tobacco dependent at the time of admission. None of the patient had substance intoxication/withdrawal state. Among all the cases of delirium 21 patients (35%) were having underlying dementia. In all cases of delirium 30% cases had past history of psychiatric illness (Delirium, Late onset psychosis, Major depressive disorder, Bipolar affective disorder, Primary insomnia). 6 (10%) patients had past history of episodes of delirium.

**Table-2 Aetiology according to various causes-**

Aetiology	Definitive	Likely	Possible contributory
Psychotropic drugs	10	1	
Respiratory tract infection	8	4	1
UTI	6	5	4
Hyponatremia	6	5	3
Acute Stroke(ischemic/haemorrhagic)	6	1	
Constipation	3		3
Fracture#	3		
Septicemia	2		
Liver abscess	2		
Diarrhoea(Dehydration)	1	1	1
Kidney disease(uremia)			5
Hypoglycemia	1		1
Hyperglycemia			7
Hypokalemia	1		1
Infection-unknown		1	2
TBM	1		
Brain tumor	1		
TIA			2
CAD			2
Pain-injury		1	
Bedsore			1

In all the cases of delirium systemic infection (respiratory tract infection, urinary tract infection), psychotropic drugs, hyponatremia and acute stroke were common definitive cause of delirium. In 15 (25%) patients no definitive cause of delirium was found.

**Table-3 Difference in definitive cause of Delirium in patients with or without Delirium**

	With Dementia (N=21)	Without Dementia (N=39)
Psychotropic drugs	7	3
Respiratory tract infection	0	7
UTI	3	1
Hyponatremia	0	5
Acute Stroke(ischemic/haemorrhagic)	0	6
Constipation	2	1
Fracture#	1	2
Septicemia	1	1

Liver abscess	0	2
Diarrhoea(Dehydration)	0	1
Kidney disease(uremia)	0	0
Hypoglycemia	0	0
Hyperglycemia	0	0
Hypokalemia	0	0
Infection-unknown	0	0
TBM	0	1
Brain tumor	0	1
TIA	0	0
CAD	0	0
Pain-injury	0	0
Bedsore	0	0
None	7	8

Psychotropic drugs, UTI and constipation were most common causes of delirium in patients with dementia while respiratory tract infection, acute stroke and hyponatremia were most common cause of delirium in patients without dementia.

**Discussion** – Although delirium is psychiatric illness but it indicates underlying physical illness. In this study in all the cases of delirium systemic infection (respiratory tract infection, urinary tract infection), psychotropic drugs, hyponatremia and acute stroke were most common cause of delirium. In 25% patients no definitive aetiology was found. When definitive, likely and possibly contributory aetiologies were combined together, infection (53.4%), metabolic (42%), drug induced (18.3%) and cerebrovascular (18.3%) were most common contributing causes of delirium. In all contributing causes, 48% patients had more than one aetiologies and 21 % patients have more than two aetiologies. Similar to this study, Koponen et al.,(1) found that stroke, infections and metabolic disorders were common aetiologies of delirium in 70 elderly patients admitted in psychogeriatric ward. George J et al(6) studied cause of delirium in 171 elderly patient admitted in district general hospital and found that infection (37%), stroke (11%) and drugs (11%) were most common cause of delirium. While in a study by Meagher et al(5) on 100 cases of delirium (age =70±11) admitted in palliative care in-patient service setup, most common contributing causes were neoplasm (67%), systemic infection (63%), metabolic disorder (45%), organ failure (32%) and drug intoxication (27%). Rai D et al.,(8) in neurology ward found that hyponatremia, stroke, septic encephalopathy and viral encephalitis were the most common cause of delirium.

This difference in aetiology is possibly due medical setup from where patients recruited. In psychogeriatric setup psychotropic drugs, infection, metabolic and stroke were the most common causes of delirium.

When comparing etiological profile of delirious patients with or without dementia psychotropic drugs was most common cause of delirium in patients with dementia while infection (respiratory tract infection and urinary tract infection) was most common cause of delirium in patients without dementia. Only one study had compared the aetiology, in which Holta E. H. et al.,(2) found that infection and metabolic abnormalities were more common in patients with dementia while no difference in drugs causing delirium. While, Grover S et al.,(3) didn't find significant difference in aetiologies of delirium in patients with and without dementia. So psychiatrist/ physician/ neurologist must be cautious while prescribing psychotropic drugs to patient with dementia as it is commonest cause of delirium in dementia patients according to this study.

All the seven patients of delirium with acute stroke were having left sided stroke, which indicates that left sided stroke are more prone to develop delirium. In five patients, there was no focal neurological (sensory and motor deficit) deficit and family members brought the patients directly to geriatric mental health setup, which suggest that while evaluating the patient with delirium stroke must be suspected even in absence of motor and sensory deficit. Gustafson Y et al(9) studied delirium in acute stroke patients and found that delirium was more common in left sided stroke in compare to right sided stroke.

Substance intoxication/withdrawal was not found in any patients in this study, which suggests that it is uncommon cause of delirium in elderly patients. Nadkarni, A et al., (10) reviewed literature about Indian studied on alcohol use disorder in elderly and found that in

elderly there was downward trend of current use of alcohol. Which may be the possible reason of uncommon cause of delirium in elderly.

**Conclusions-** Delirium with dementia has different aetiology of delirium in compare to those without dementia. Psychotropic medications and constipation are the most common cause of delirium in patients with dementia, which can be easily prevented. So psychotropic medication must be avoided and should be prescribed judiciously in patients with dementia. Constipation should be identified and targeted early to prevent development of delirium in elderly. While managing a case of delirium possibility of stroke should be considered even in absence of without motor and sensory deficit.

**Declaration** - All authors have disclosed no conflicts of interest.

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