



ORIGINAL RESEARCH PAPER

Psychiatry

A STUDY ON COMMON ETIOLOGICAL FACTORS OF DELIRIUM AND THE AGE GROUP IN WHICH IT OCCURS.

KEY WORDS: Delirium, Etiological factors of delirium, age group of delirium,

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ABSTRACT	Delirium is defined as the acute onset of fluctuating cognitive impairment and a disturbance of consciousness with reduced ability to attend. Delirium involves other cognitive deficits, changes in arousal, altered sleep-wake cycle, perceptual deficits and features like delusions and hallucinations. More than a disease, delirium is a set of symptoms. Delirium may be difficult to diagnose without the proper knowledge of the normal mental function of the person. In the absence of proper assessment and history, delirium can often be confused with a number of psychiatric disorders and many of the signs and symptoms of delirium are also shown in dementia, depression and psychosis. A prospective study extending to six months was carried out in the Psychiatry department of a multi-specialty referral hospital in south India with the objective of identifying the common etiological factors causing delirium and to identify the common age group in which it occurs. It was found that the highest number of patients (38%) belonged to the age group 41-60 years of age. The second highest number of patients (32.4%) belonged to the age group less than 41 years. In the case of the age group of more than 60 years, the occurrence of delirium was found to be 29.6%. It was also found in the study that among the various causative factors for the occurrence of delirium, diabetes and hypertension have the highest percentage of 46.3%.
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INTRODUCTION

Delirium is an organically caused decline from a previously baseline level of mental function. An organic cause means a physically identifiable structural, functional, or chemical problem in the brain. It is defined as the acute onset of fluctuating cognitive impairment and a disturbance of consciousness with reduced ability to attend. Typically it involves other cognitive deficits, changes in arousal, altered sleep-wake cycle, perceptual deficits and features like delusions and hallucinations. More than a disease, delirium is a set of symptoms. There is an increased incidence of delirium in geriatric patients and those with terminal illness¹.

Delirium can result from an underlying disease, consumption of excess of alcohol, medicines used for the treatment of other diseases, or due withdrawal from drugs. It can also be caused by a disease which is not affecting the brain like urinary tract infection or because of the use of certain drugs like anticholinergics or CNS depressants².

Delirium may be difficult to diagnose without the proper knowledge of the normal mental function of the person. In the absence of proper assessment and history, delirium can often be confused with a number of psychiatric disorders. Many of the signs and symptoms of delirium are also shown in dementia, depression and psychosis³.

LITERATURE REVIEW

In B.C 500 the father of modern medicine Hippocrates coined the term 'Phrenitis' to describe mental abnormalities caused by fever, trauma or poisoning. He used another term 'Lethargus' to describe inertia and dulling of senses⁴. Hippocrates believed that the conditions of 'Phrenitis' and 'Lethargus' may interchange. The word delirium was first coined by Celsus during the 1st century AD to describe mental disorders due to fever or head trauma⁵.

During the ancient and medieval periods, several descriptions of delirium were put forward coining different names. During the medieval period, the historian Procopius described an epidemic of a possible bubonic disease in Constantinople in AD 542. He described two groups of people, one who developed

hallucination, insomnia, excitement and shouting, which very much resembles the hyperactive delirium of modern days. The second group belongs to those who drifted into coma, forgetting all those familiar to them which resembles the present day hypoactive delirium.

During the 16th century, Ambroise Pare, a surgeon wrote about delirium as a complication of surgical procedures and described delirium as a transient condition that commonly followed fever. In 1749 David Hartley described hypnagogic, hypnopompic and visual hallucinations in delirium and in 1794 Evasmus Darwin introduced disorientation and alteration of consciousness to distinguish delirium from madness⁶.

During the 19th century, Greiner introduced the concept of clouding of consciousness as the main characteristic of delirium and described a relationship between dreaming and delirium stating that delirium can be a type of dreaming in the waking state. Attempts were also made during the century to distinguish between delirium caused due to excessive use of alcohol and other causes.

During the 20th Century many discoveries and scientific advances helped to study delirium in depth. In 1904 Pickett tried to distinguish between delirium and confusion in geriatric population. He believed that delirium is always having an organic cause while confusion is caused by non-organic factors. In 1947 Kurt Schneider gave importance to clouding of consciousness as a central diagnostic feature of delirium. In 1959 Engel and Romano used EEG to investigate delirium and found that it is associated with a reduction in central metabolic rate as indicated by an increase in slow wave activity⁷. During the last part of the twentieth century, two systems of classification of delirium originated namely, the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD)⁸.

The Diagnostic and Statistical Manual of Mental Disorders (DSM) is published by the American Psychiatric Association (APA) since 1952. It offers a common language and standard criteria for the classification of all mental disorders. It is used by clinicians, researchers, psychiatric drug regulation agencies, health insurance

agencies, pharmaceutical companies and policy makers. The DSM is now in its fifth edition, DSM-5, published in May 2013. The DSM evolved from systems for collecting census and hospital (psychiatric) statistics, and from a US Army manual. Revisions since its first publication in 1952 have incrementally added to the total number of mental disorders.

The (ICD) is the other commonly used manual for mental disorders and actually the official system for the US. It is distinguished from the DSM in that it covers health as a whole. While the DSM is the most popular diagnostic system for mental disorders in the US, the ICD is used more widely in Europe and other parts of the world. The DSM-IV-TR (4th. ed.) contains specific codes that allows for comparisons between the DSM and the ICD manuals, which may not systematically match because revisions are not simultaneously coordinated. While the DSM has been praised for standardizing psychiatric diagnostic categories and criteria, it has also generated certain amount of criticism and controversy. Critics, including the National Institute of Mental Health, believe that the DSM represents an unscientific and subjective system.

OBJECTIVES.

- 1.To study the common etiological factors causing delirium.
2. To identify the common age group in which delirium occurs.

METHODOLOGY.

Study Centre. Psychiatry department of a teaching multi-specialty referral hospital in South India.

Study period. Six months- From 01.12.2015 to 31.05.2016

All patients admitted to the study centre during the study period were selected based on the inclusion exclusion criteria.

Inclusion criteria.

Patients diagnosed to have delirium using DSM IV TR criteria.
Patients whose relatives are ready to give informed consent for the study.

Exclusion criteria.

Patients diagnosed to have mental retardation.
Immediate post operative patients having post anesthetic confusion.

Patients whose relatives are not ready to give informed consent for the study.

A specially designed Proforma was used for the study which helped to collect information regarding socio- demographic details and causative factors that could have lead to the delirious conditions, laboratory data, systemic and mental status and other investigations. Delirium Rating Scale- Revised Version (DRS- R98) was used for initial assessment and repeated measurements of delirium symptoms and severity.

All suspected cases were initially examined by the duty psychiatrist and subsequently assessed by two independent consultant psychiatrists. Those cases diagnosed to have delirium by both the psychiatrists as per the DSM IV TR criteria alone were included in the study. Written informed consent forms were obtained from the close relatives or care givers of the patient after properly explaining the procedures and rationale for the study.

The Mini Mental State Examination (MMSE) or Folstein test is a 30-point questionnaire that is widely used in clinical research and other health research settings to measure cognitive impairment. It was originally introduced by Folstein et al. in 1975, in order to differentiate organic from functional psychiatric patients. It is commonly used in medicine and allied health to screen for dementia. It helps to measure or estimate the severity and progression of cognitive impairment and to follow the course of cognitive changes in an individual over time.

Administration of the test takes between 5 and 10 minutes and examines functions including registration (repeating named

prompts), attention and calculation, recall, language, ability to follow simple commands and orientation. The standard MMSE form which is currently published by Psychological Assessment Resources is based on its original 1975 conceptualization, with minor subsequent modifications.

MMSE require no specialized equipment or training for administration. It has both validity and reliability for the diagnosis and longitudinal assessment of Alzheimer's Disease. Due to its short administration period and ease of use, it is useful for cognitive assessment in the clinician's office space or at the bedside. The most frequently noted disadvantage of the MMSE relates to its lack of sensitivity to mild cognitive impairment.

MMSE was administered to the patients included in the study to assess their level of cognitive functioning. Patients with history of use of alcohol and diagnosed to have alcohol dependence using the DSM IV TR criteria were administered AUDIT. Patients with history of attempted suicide or those with history of mental illness were followed up after the period of confusion settled down.

RESULTS AND DISCUSSION

This study covered 108 patients who were treated in the study centre as inpatients during the period 01.12.2015 - 31.05.2016. Among them 65.7% were admitted in ICU and 34.3 % in the wards. Patients with mental retardation were excluded in the study because the assessment with MMSE is likely to be difficult in such cases. The Table No 1 shows the demographic profile of the study population. The highest number of patients (38%) belonged to the age group 41-60 years of age. The second highest number of patients (32.4%) belonged to the age group less than 41 years. In the case of the age group of more than 60 years, the occurrence of delirium was found to be 29.6 %.

Table No 1- demographic profile of patients

AGE	FREQUENCY	PERCENTAGE
<41	35	32.4%
41-60	41	38%
>60	32	29.6%
Total	108	100%

In a 1992 study reported by Albert et al it was found that the occurrence of delirium is highest among the age group greater than 65 years of age⁹. In the present study the occurrence of delirium is found highest in the age group 41 to 61. This may be because of the increase in number of alcoholics. Another reason may be because of the fact that people in the reproductive are brought to the hospital for medical help than those in the older age group.

It was also found in the study that among the various causative factors for the occurrence of delirium, diabetes and hypertension have the highest percentage of 46.3. Out of the 108 patients, 50 were having both diabetes and hypertension. Table No 2 shows the distribution of other causative factors that could lead to delirium. 42.6 % had the history of febrile illness, 30.6 % had some infection, 30 % had hepatic causes and 28 % neurological reasons. The study corroborates with the study reported by Trazepakz et al in 1998 where infection contributed to 30% among the various etiological factors leading to delirium¹⁰. The finding of 27.8 % of hepatic causes also corroborates with the findings reported by Gleason V in 2007 where it was reported that 20-30 % of patients who developed delirium had underlying hepatic impairments¹¹.

Table No 2-Possible causative factors that could Lead to delirium

CAUSATIVE FACTOR	NUMBER (%)
Infection	43(30.6%)
Febrile illness	46(42.6%)
Seizures	15(13.9%)

Trauma	2(1.9%)
Head injury	6(5.6%)
Other injuries	
Post-Operative	21(19.4%)
Hypertension	50(46.3%)
Diabetes	50(46.3%)
Neurological	28(25.9%)
Cardiac causes	16(14.8%)
Renal causes	27(25%)
Hepatic causes	30(27.8%)
Endocrinology	5(4.6%)
Pulmonary	12(11.1%)

The etiological cause of 25.9 % of neurological factors for delirium obtained in the study is also in corroboration with other reported findings. In a 2007 reported study McManus et al found that post stroke delirium and delirium following head injury has a prevalence rate of 10- 31 %¹².

The present study shows that 25 % of the delirium patients had renal impairment which is in conformity with the findings of Antoniadis et al that renal impairment and patients undergoing dialysis contributed to about 22 % of patients who developed¹³.

In one study conducted in a post operative ward it was found that the occurrence of delirium is as high as 50%¹⁴. This study conducted in a general settings of a specialty hospital well justifies a lower rate. 14.8 % of the study population had a history of cardiac abnormality, 13.9% had history of seizures prior to the onset of delirium and 11.1 % had pulmonary causes prior to the onset of delirium. Endocrine abnormality was found in 4.6 % prior to delirium and 4 were having hypothyroidism and one was detected to have empty sella turcica after admission. In a reported study in 2007 it was found that 15 % of patients who developed delirium were found to have thyroid abnormalities¹⁵.

Table No 3. Co-morbid psychiatric conditions

CO MORBID PSYCHIATRIC CONDITIONS/ PSYCHIATRIC HISTORY	NUMBERS (%)
History of mental illness	15(13.9%)
History of substance abuse	19(17.6%)
Alcohol	30(27.8%)
Alcohol + tobacco	
Past history of delirium	16(14.8%)
Suicide (burns, OPC poisoning , hanging)	11(9.3%)

Table No 3 shows the co-morbid psychiatric conditions. Out of the 108 patients covered under the study, 15 (13 %) had past history of mental illness and 3 of them were found to have high serum lithium levels during post admission period, 3 were having history of over dosage of medicines and 9 had other co-morbid conditions. 49 patients had the history of substance abuse of which 19 had history of alcohol use amounting to dependence and 30 had both alcohol and tobacco dependence and were diagnosed to have alcohol withdrawal delirium. 16 patients had past history of delirium which was found mainly in those with alcohol dependence history. 11 patients got admitted with attempted suicide including burns, hanging and OPC poisoning.

Table No 4 - Clinical profile of the patients

CLINICAL PARAMETERS	NUMBERS (%)
Disorientation to time	108 (100%)
Disorientation to place	97(89.8%)
Disorientation to person	51(27.2%)
Attention	108(100%)
Concentration	108(100%)
Immediate memory	108(100%)
Recent memory	91(84.3%)
Emote memory	33(30.6%)

Thought disorder	54(50%)
Perceptual abnormality	25(23.1%)
Auditory hallucination	14(13%)
Visual hallucination	23(21.3%)
Both	

The clinical profile of all the 108 patients covered under the study showed that all of them had impaired attention and concentration. All the patients has disorientation to time and impaired immediate memory. Table No 4 shows that 89.8 % had disorientation to place, 47.2 % had disorientation to person and 84.3 % had impaired recent memory. Other studies have also established that recent memory impairment and disorientation to time are prominent in delirious patients while remote memory is fairly intact. 50 % of the patients had thought disorder (delusions), 23.1% had auditory hallucinations, 13 % visual hallucinations and 21.3% had both auditory and visual hallucinations together.

All the 108 patients were administered the MMSE to assess their cognitive function and there was not much difference in the cognitive functioning between hyperactive and hypoactive group. However agitated behaviour, mood lability (emotional dysregulation) , rapid incoherent speech and psychosis were found to be more frequent in the hyperactive group.

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