Delirium: A Review of Risk Factors and Diagnosis

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KEYWORDS

Delirium, DRS-R98, ICU, cognitive impairment, alcohol dependence, healthcare settings.

ABSTRACT

Background: Delirium is one of the neuropsychiatric syndromes that are characterized by several impairments in consciousness and cognitive function. It is a condition that is very commonly encountered in hospital settings. Delirium is associated with higher risks for unfavorable outcomes, extended hospital stay and also higher mortality. It therefore becomes essential to understand the phenomenology and risk factors of delirium in an effort to ensure proper diagnosis and treatment.

Methods: This cross-sectional study was conducted on 50 patients referred to the consultation liaison psychiatry department within the age group of 16 to 60 years at SCB Medical College, Cuttack. A thorough collection of sociodemographic and clinical data along with the assessment of the severity of delirium by using Delirium Rating Scale Revised 98 (DRS-R98) was done on the patients through various laboratory investigations to assess the underlying medical conditions.

Results: There was a male preponderance of 57% and significant alcohol dependence (38%). There was predominance of hyperactive delirium as the presentation in this group (68%), with DRS-R98 score significantly higher compared to that in the ICU group (19.68 ± 8.89 vs 15.32 ± 8.26). Several clinical factors like deranged liver and renal functions, were precipitant and contributory factors to the severity of delirium.

Conclusion: The results underscore the multifactorial and polymorphic nature of delirium in hospitalized patients. Early detection and appropriate management are thus underscored in these settings. The significant differences observed in the severity of delirium in different settings advocate for individualized interventions and use of diagnostic tools validated to improve the outcome of patients.

I. INTRODUCTION

Delirium is an acute and fluctuating disturbance in consciousness, attention, and cognition that constitutes a neuropsychiatric syndrome of significant complexity. It is commonly seen in the health-care setting, especially in patients who are hospitalized, associated with serious adverse outcomes such as prolonged hospital stay, increased institutionalization, and increased mortality [1]. Despite being a ubiquitous and severely impactful condition, delirium remains underdiagnosed, misdiagnosed, or overlooked in more than half of cases, especially in vulnerable populations like the elderly or those with prior cognitive dysfunction [2].

There are three subtypes of delirium: hyperactive, hypoactive, and mixed. Hyperactive delirium, characterized by agitation, restlessness, and hypervigilance, is the most common cause for referral to liaison psychiatry services. However, hypoactive delirium is characterized by lethargy, confusion, and decreased physical activity, which is generally associated with poorer outcomes, especially in the elderly suffering from dementia, since it is often underdiagnosed due to its subtle symptoms. Mixed delirium combines the characteristics of both hyperactive and hypoactive delirium and can oscillate between the two [3-4].

Several factors contribute to the development of delirium. A broad categorization is into vulnerability factors-being old, having prior comorbid conditions, and cognitive impairment-and precipitating factors related to the acute environment of healthcare such as infections, surgeries, or pharmacological interventions [5]. This is a multifactorial disease, which should be approached with careful, systematic assessment, including recognition of predisposing as well as precipitating factors, in order to make an adequate diagnosis and management within an appropriate period [6].

Understanding the risk factors, clinical presentation, and the challenges in diagnosing delirium is essential in improving outcomes for these patients. Early detection and timely management of delirium can significantly reduce its associated morbidity and mortality. This review has been made to study prominent risk factors leading to delirium as well as current modes of diagnosis, aiding the practitioner in effective identification and management of this condition [7-8].

II. METHODS

The present study proposes to research the phenomenology and severity of delirium in patients referred to the consultation liaison psychiatry department of SCB Medical College, Cuttack. The study followed a cross-sectional, hospital-based design and was conducted after taking due permission from the Institutional Ethics Committee of the Mental Health Institute.

Study Setting and Participants

In this study, 50 patients between the ages of 16 and 60 years referred to the consultation liaison psychiatry department were selected. These patients were referred from the Central ICU and general inpatient units by different specialties. The inclusion criteria in this study were strictly applied in a way that only those patients who would fulfill the diagnostic criteria for delirium would be studied.

Study Design

This is a cross-sectional observational study in a tertiary care hospital. The patients referred to the liaison psychiatry department were assessed on structured clinical interviews and detailed histories conducted by experienced clinicians. The study consisted of several medical specialties and addressed both cognitive and non-cognitive manifestations of delirium.

Tools Used for Assessment

The Delirium Rating Scale Revised 98 (DRS-R98) was the principal instrument used for measuring the severity of delirium. The DRS-R98 is a validated scale that is increasingly employed for rating both cognitive and noncognitive symptoms associated with delirium. It takes into consideration a whole range of symptomatology such that delirium phenomenology could be rated comprehensively.

Data Collection Procedures

Patients were evaluated with a semi-structured proforma that gathered all detailed clinical histories, including onset, duration, and course of symptoms of delirium. In consultations conducted with the primary treating medical teams, the diagnosis was established based on examination and available treatment records concerning any physical morbidities present.

The laboratory workups would include, as advised by the primary consultants, liver function tests, renal function tests, hemoglobin levels, complete blood counts, serum electrolytes, and computed tomography (CT) imaging. The investigations would exclude other causes for altered mental status and ensure that delirium was diagnosed according to clinical guidelines.

Data Analysis

The descriptives for all the demographic and clinical variables were computed and statistical inference made to assess the association between the severity of delirium and the various types of cognitive, behavioral, and psychiatric symptoms utilizing inferential statistical analysis. An inferential result was considered statistically significant if its p-value was less than 0.05. We analyzed the data on SPSS version 24.0.

III. RESULTS

The study analyzed the sociodemographic, clinical, and biochemical characteristics of patients referred to the consultation liaison psychiatry department at SCB Medical College, Cuttack, and compared findings between ICU and General Ward groups. The study involved 100 patients, of which 57% were males and 44% were females. The majority of the patients were married, with occupations spanning daily wage laborers, farmers, private/government employees, and housewives. Educational status revealed that 29% of the patients were illiterate, and the majority practiced Hinduism. These sociodemographic variables are presented in Table 1.

Table 1: Sociodemographic Characteristics of Patients (N=100)

Variable	Frequency (%)
Gender (Male)	57
Gender (Female)	44

Marital Status (Married)	89
Occupation (Daily wage laborer)	36
Occupation (Farmer)	24
Occupation (Private/Government Employee)	18
Occupation (Housewife)	11
Religion (Hindu)	93
Education (Illiterate)	29

The study identified several clinical factors associated with delirium. Substance dependence was common, with 38% of the patients showing alcohol dependence, 9% nicotine dependence, and 3% opioid dependence. Additionally, 34% of the patients had deranged liver and renal function, and 41.6% had abnormalities in their complete blood counts. The majority of patients (92%) presented with acute delirium, while only 8% had chronic persistent delirium. The predominant type of delirium was hyperactive (68%), followed by hypoactive (18%) and mixed (14%).

Table 2: Clinical Characteristics of Patients (N=100)

Variable	Frequency (%)
Alcohol Dependence	38
Nicotine Dependence	9
Opioid Dependence	3
Deranged Liver/Renal Functions	34
Acute Delirium Presentation	92
Chronic Delirium Presentation	8
Hyperactive Delirium	68
Hypoactive Delirium	18
Mixed Delirium	14

In terms of etiology, encephalopathy was the primary cause of delirium in 29% of cases, followed by head injuries (22%), congestive heart failure (CHF), seizure disorders, poisoning, and post-operative shock. In ICU patients, 42% had delirium due to medical causes, while in the General Ward group, 52% had encephalopathy, and 66% of delirium cases were due to other medical conditions. The DSM-5 criteria were used for diagnosis, and 54 patients were diagnosed with delirium, with 16% of cases due to medical causes, 9% due to substance intoxication, 9% to substance withdrawal, and 13% with multiple etiologies.

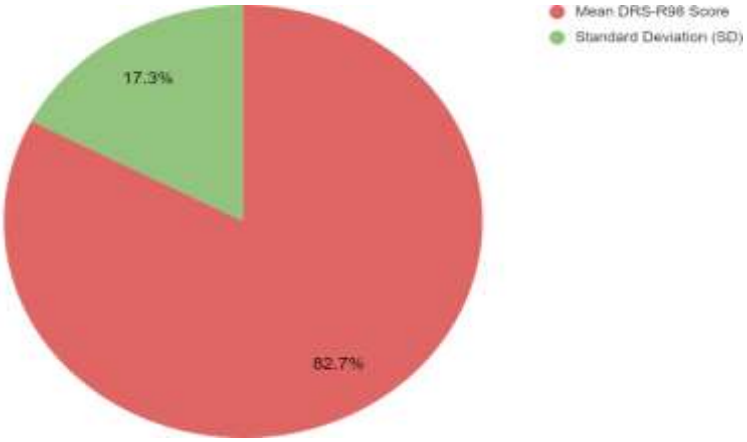
Significant differences were observed between the ICU and General Ward groups in age, family type, education level, occupation, and biochemical parameters. However, marital status and monthly income were non-significant factors. A higher prevalence of hyperactive delirium was noted in the ICU, with higher mean DRS-R98 scores observed in the General Ward group ($p < 0.05$).

Table 3: Comparison of Clinical Characteristics between ICU and General Ward Groups

Characteristic	ICU Group (%)	General Ward Group (%)	p-value
Hyperactive Delirium	42	26	< 0.05
Hypoactive Delirium	16	32	< 0.05
Mixed Delirium	12	10	0.45
Encephalopathy	29	52	< 0.01
Seizure Disorder	14	22	< 0.05
Renal Function Abnormality	38	30	< 0.05

The study also examined cognitive and psychiatric symptoms using the Delirium Rating Scale Revised 98 (DRS-R98). The mean DRS-R98 score in the General Ward group was 19.68, significantly higher than in the ICU group ($p < 0.05$). Visuo-spatial disturbances were the most common symptom in the ICU group, while perceptual disturbances and motor agitation were prominent in both groups. Sleep-wake cycle disturbances were more severe in ICU patients (mean score: 2.30) compared to the General Ward group, and a significant correlation between cognitive scores and total severity scores was observed.

Graph 1 below illustrates the DRS-R98 scores across the ICU and General Ward groups, highlighting the significant differences in symptom severity.



Graph 1: Comparison of DRS-R98 Scores between ICU and General Ward Groups

This comprehensive analysis demonstrates the significant clinical variability in delirium across different hospital settings, emphasizing the need for tailored interventions based on patient demographics, clinical presentation, and underlying etiologies.

IV. DISCUSSION

The objectives of the present study were the phenomenology, severity, and associated factors of delirium in patients referred to the consultation liaison psychiatry department at SCB Medical College, Cuttack. Results are discussed with the exploration of sociodemographic

characteristics, clinical presentation, and related cognitive disturbances in patients suffering from delirium [9].

Male predominance was an important finding, with 57% of the sample being male; again, this is a common finding from previous work and may relate to a higher frequency of substance use, including alcohol and nicotine dependence, in males. Alcohol dependence was found to be a major risk factor for the development of delirium, with a rate of 38% in the sample. This goes hand-in-hand with the earlier studies that showed the association of substance use with delirium onset, particularly in those who have an existing vulnerability such as comorbidities or old age. The fact that 34% of the patients manifested disturbed liver and renal functions attests to this association since alcohol abuse is known to cause multi-organ dysfunction, which leads to cognitive disturbances [10-11].

Hyperactive delirium was the most common and accounted for 68% of the various types, which was also evident in patients admitted to the ICU. Patients with hyperactive delirium often exhibit agitation, restlessness, and increased motor activity, hence receiving more attention from the care providers. This is in comparison with hypoactive delirium that occurred in 18% of patients [12]. Hypoactive delirium typically goes unnoticed due to the subtlety of presentation as the patient becomes lethargic, and motor activity is decreased. While less obvious, this type of delirium is associated with worse outcomes, particularly in the geriatric patient. The mixed form of delirium, noted in 14% of the sample, only serves to underscore the clinical complexity and the diagnostic challenges of neuropsychiatric syndrome [13].

The comparison between the two groups in the study highlighted marked differences in both clinical features and degree of severity of delirium. The higher incidence of encephalopathy (52%) in the General Ward group could be related to the underlying metabolic disturbances and systemic infections, which are commonly prevalent in these patients [14]. In contrast, the patients in the ICU had a higher rate of delirium associated with head injuries and acute poisoning. These findings underscore the varied etiologies of delirium and the need to treat the underlying cause of this condition. Such a conspicuous variation in DRS-R98 scores between the two groups highlights the greater seriousness of delirium in the General Ward group. This could be partly due to more chronic and medically complex cases being treated within the confines of the facility itself, thus also explaining the duration of their delirious episode [15].

This criterion was that the study evaluated subjects using the Delirium Rating Scale Revised 98 (DRS-R98) for both cognitive and non-cognitive symptoms of delirium. Results show higher mean DRS-R98 scores for the General Ward, reflecting not just more severe impairments in cognitions but also more widespread symptomatology that may reflect delays in onset and treatment of delirium outside of the ICU setting. Thus, the close relationship between cognitive measures score and total severity scores underscores the importance of conducting comprehensive evaluations for delirium: cognitive impairment is at the core of the syndrome, and impairment in it is highly associated with overall severity [16].

Disturbances of visuo-spatial components were the most common type of cognitive impairment in patients who had received intensive care. What the researchers found was that perceptual disturbances-characterized as hallucinations and delusions-occur in similar percentages between ICU and General Ward participants. Disturbances with motor agitation, disruption of sleep-wake cycles, and generalized fear in patients with delirium, more so in patients in the ICU point to the urgent need for interventions that are specific to managing distressing features [17].

ICU and General Ward groups produced a large number of sociodemographic differences: age, gender, occupation, and family type. Such differences underline the diversity of patients treated in different hospital settings and point to the need for the adoption of differentiated approaches in delirium management. Paradoxically, despite major differences in education level and occupation, marital status and monthly income did not play a role. This would point out that whereas socioeconomic determinants can influence the risk of delirium, they may not be directly implicated in the clinical severity and outcome of delirium [18-19].

The study's findings contribute to the growing literature on delirium, especially in the Indian context, wherein sociodemographic and cultural factors influence presentation and management of the disorder. Strengths of the study- First, the study has an adequate sample size. It carried out detailed clinical assessments in various hospital settings while using a validated scale to rate delirium. Several limitations must be taken into account in this study. First, the cross-sectional nature of the study cannot be used to establish causality. Additionally, findings may not be able to generalize to another population. In addition, the study relied on referrals to the consultation liaison psychiatry department and would not have captured patients with mild forms of delirium, which probably had not been identified by the primary treating teams [20].

This study shines light on the clinical presentation heterogeneity and the heavy burden of delirium among inpatients, particularly those in ICU and general wards. The findings rather reinforce the urgency for early recognition, comprehensive assessment. It will be essential to improve outcomes for patients by conducting future studies on the progression of delirium and long-term implications for patients, along with elaborate personalized interventions for the needs of the delirium patient within different hospital settings. Increased awareness by health-care providers about this condition, coupled with the use of validated diagnostic tools such as the DRS-R98, may help in early diagnosis and subsequently improve the quality of care for such patients with a complex neuropsychiatric syndrome.

V. CONCLUSION

From this vantage point, this research underlines the complex nature of delirium as a very common neuropsychiatric syndrome among hospitalized patients, especially in ICUs and general wards. The results were of great socio demographic importance; thus, there is an argumentative need for more awareness and time-to-time recognition of cognitive and behavioral manifestations of delirium. Indeed, the high incidence rate of hyperactive delirium coupled with its association with substance dependence and other medical conditions calls for intensive and individualized management plans. Inasmuch as delirium has scant accurate diagnosis, it is key to implement certified diagnostic tools like the DRS-R98 to improve patient care. At large, such findings pave the way for further studies as well as interventions targeted to help improve understanding in this challenging clinical phenomenon in healthcare.

VI. REFERENCES

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