Diagnosis and Initial Management of Agitated Patients in a General Hospital in Thailand

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ABSTRACT

Objective: This study aimed to examine the characteristics, diagnosis and management of agitated inpatients before psychiatric consultation in a general hospital and to explore the concordance between the diagnoses by attending physicians with that of consultant psychiatrists.

Methods: Medical records of inpatients aged 18 years or older that were referred for psychiatric consultation due to agitation in a general hospital in Thailand in 2018 were abstracted by a consultant psychiatrist. Data included (1) demographic and clinical factors, (2) the working diagnoses before the consultation, and final diagnoses by consultant psychiatrists, and (3) initial management.

Results: Of the 188 patients, confusion was the most commonly detected early sign of agitation (33.5%), while fidgeting was the most common symptom/behavior that led to psychiatric consultations (50.0%). The average onset time of agitation after admission was 62 hours 48 minutes. The most common cause of agitation was delirium due to a medical condition (47.3%). Primary psychiatric disorders were only found in 9 (4.8%) of agitated patients. There was a low diagnostic concordance between attending physicians and psychiatrists (Cohen's Kappa=0.32). Physical restraints were used in 109 (58.0%) patients, whereas 166 (88.3%) were prescribed with sedatives. Attending physicians prescribed benzodiazepine to ameliorate agitation in 32 (36.0%) of patients with delirium. However, 4 (7.3%) patients with alcohol-withdrawal delirium were untreated initially with benzodiazepine.

Conclusion: Medical conditions are more common causes of agitation than psychiatric illness. There is poor diagnostic concordance between attending physicians and psychiatrists, and high rates of physical restraints and benzodiazepine injection were found.

Keywords: Psychomotor agitation; delirium; alcohol withdrawal delirium; diagnosis; physical restraint; benzodiazepines
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INTRODUCTION

Agitation, defined as an excessive motor activity associated with a feeling of inner tension[1], is one of the most common emergency conditions in general practice.[2] Agitation can result from both psychiatric and medical conditions, including metabolic disturbances, traumatic brain injury, severe infections, dementia, delirium, and drug exposure.[3] Severe agitation can contribute to worse treatment outcomes and can be harmful to patients and hospital staff.[4-5] Agitated patients risk complications from

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impulsive behavior such as falls and removal of catheters and tubes.[6] Additionally, agitated patients often pose a threat of physical injury to other patients or caregivers. Up to half of health care workers report experiencing violence from agitated patients in the prior year, with the highest prevalence among nurses.[7]

Although there have been many proposed guidelines for the management of the patients with agitation, treatment results are generally unsatisfactory and evidence of agitation management in specific groups of patients are still limited.[8] A lack of universally accepted definitions and the complex and varied presentation of agitated patients presents a significant challenge for diagnosis and management.[9] Different settings and countries face altogether different problems in the management of agitation management. A growing body of literature tends to focus on settings such as psychiatric wards, intensive care units (ICUs), or emergency departments[10-12], a specific diagnosis (e.g., delirium, schizophrenia) or certain age groups[13], rather than on all agitated cases in the inpatient ward in a general hospital. To improve the quality of care for patients with agitation, we need to consider the heterogeneous characteristics of patients in all inpatient wards, and the common pitfalls of initial treatments.

We studied agitated patients in all inpatient wards in a general hospital, and used the results to develop a clinical practice guideline and to design medical education for the management of agitation. This study aimed to describe agitated patient characteristics, and examine the concordance between the diagnoses and initial management by attending physicians (APs) with that of consultant psychiatrists.

MATERIALS AND METHODS

Participants

This retrospective chart review consisted of inpatients aged 18 years and older referred for psychiatric evaluation due to agitation from 1 January to 31 December 2018 at Buddhachinaraj Hospital in Phitsanulok, Thailand. Agitation was defined according to expert consensus from the 1st International Meeting on Agitation in 2018[9] that includes (1) inability to stay calm or still, (2) motor and verbal hyperactivity and hyperresponsiveness, (3) emotional tension and (4) difficulties in communication. The following keywords were used as search terms to identify patients with agitation; motor hyperactivity (agitation, restless, unable to stay still, chaotic behavior, thrashing, shaking, removal of medical tubes and devices, physically violent behavior, hitting, kicking, elopement), verbal hyperactivity (screaming, angry ranting) and emotional tension (fearful, anxious and nervous). Patients with previous consultations with psychiatrists or those that had insufficient data in their medical records were excluded.

Setting

Buddhachinaraj Hospital is a 1,000-bed general medical hospital in Thailand with 19,050 admissions in 2018 and also serves as a medical education center for Naresuan University. There is no psychiatric ward or seclusion rooms. In case of agitation, the AP provides initial management before notifying a consultant psychiatrist who is required to see the patient within 24 hours.

Data collection

Medical records were abstracted by the first author during 1 January and 30 June 2019. Data included (1) demographic and clinical factors (e.g., alcohol and illicit drug use, history of surgery), (2) the working diagnoses (WD) by APs before the consultation, and final diagnoses (FD) by consultant psychiatrists, and (3) initial management before psychiatric consultation

Statistical analysis

Patient identifying information was removed and descriptive statistics were analyzed using SPSS version 22. Cohen's Kappa was calculated to test the agreement between the WDs given by APs and the FDs by consultant psychiatrists.

Ethics Approval

The Buddhachinaraj Phitsanulok Hospital Institutional Review Board (IRB) approved the study (IRB No.024/2020). Individual patient consent was waived by the IRB because data were de-identified before statistical analysis in this retrospective chart-review study.

RESULTS

Nine-hundred and eighteen patients were referred for psychiatric consultation in 2018 and 270 (29.4%) were consulted due to agitation representing 1.4% of all admissions. Patients who received treatment from psychiatrists before the consultation (n=72) and patients with incomplete data (n=10) were excluded. Therefore, data from 188 patients were analyzed.

Patient characteristics

One-hundred and fifty (79.8%) patients were male. The median age was 52 years (range 18-89; SD 15 years). One-hundred and twenty-four patients reported using alcohol (66.0%), 72 (38.3%) reported using tobacco and one patient reported using amphetamine (0.5%). At the

time of psychiatric consultation, 83 (44.1%) patients were admitted to General Surgery, 55 (29.3%) to Internal Medicine, 33 (17.6%) to Orthopedic Surgery, 5 (2.7%) to Ophthalmology and Ear-Nose-Throat, and 1 (0.5%) to Obstetrics and Gynecology wards. In addition, 6 (3.2%) were in an observation ward and 5 (2.7%) were in ICUs.

The most common principal diagnosis was "Injury, poisoning and certain other consequences of external causes" (35.1%, n=66), 17 (25.8%) of which had intracranial injuries. Among patients with a principal diagnosis of "mental and behavioral disorders" (13.8%, n=26), 84.6% were alcohol-related. The average number of comorbidities was 2.7 diseases per person. Twenty-seven (14.4%) patients did not have any comorbid disorders. Details of principal diagnoses, comorbidities, and past medical history are shown in Table 1.

Characteristics and detection of agitation

The average time of onset of agitation occurred was 62 hours 48 minutes after admission. Early signs of agitation noted in the medical records included confusion (63; 33.5%), fidget (51; 27.1%), chaotic behavior (31; 16.5%), and other symptoms such as thrashing, screaming, restless, aggression, removal of indwelling tubes and catheters, and "climbing out of a bed".

Initial interventions before psychiatric consultations

Once the presence of agitation was detected, initial interventions included physical restraint (109; 58.0%), sedative medications (166; 88.3%), and verbal de-escalation (1; 0.5%) (Fig 1). The mean time from detection of agitation to psychiatric consultation was two days. The most common reason for psychiatric consultation included fidget (94; 50.0%), followed by chaotic behavior (58; 30.9%), screaming or angry rants (12; 6.4%), violent behaviors (5; 2.7%), and leaving the hospital against medical advice (1; 0.5%). Documented violent behaviors include "kicking a nurse", "striking a visiting family member", and "threatening to hit a staff member".

Diagnoses: Causes of agitation

Of the 188 agitated cases, the FDs made by consultant psychiatrists were delirium due to a medical condition (89; 47.3%), alcohol withdrawal delirium (AWD) (55; 29.3%), alcohol withdrawal (AW) (27; 14.4%), and other psychiatric disorders (9; 4.8%), including schizophrenia, adjustment disorder, brief psychotic disorder, bipolar disorder, major depressive disorder and dementia. Eight patients were not diagnosed with any psychiatric disorders.

Concordance of diagnoses

The overall diagnostic concordance Cohen's Kappa (κ) was 0.32 suggesting a low level of agreement between diagnoses made by APs and psychiatrists. Of the 89 delirium FD cases, only 47 (52.8%) had a WD of delirium, demonstrating weak diagnostic concondance (κ=0.51) (Table 2). Twenty (22.5%) of patients with a FD of delirium were misdiagnosed as having alcohol withdrawal syndrome: AW (13; 14.6%), and AWD (7; 7.9%). In addition, 5 (5.6%) were misdiagnosed with other psychiatric disorders. A low level of agreement was found in diagnostic concordance of AW (κ=0.42) and 'other psychiatric disorders' (κ=0.58). The lowest concordance rate (κ=0.30) was found in diagnosing AWD (13; 23.6%). Most patients with this FD were initially diagnosed with AW (61.8%) by physicians.

Initial pharmacological management of agitation

Benzodiazepines were most commonly used for the initial management of agitation (112; 67.5%), followed by antipsychotics (42; 25.3%) (Table 3). Regarding benzodiazepine use, intravenous diazepam (5-10 mg) and oral lorazepam (0.5-4 mg) were prescribed to 85 (51.2%) and 27 (16.3%) patients, respectively. APs prescribed benzodiazepines to ameliorate agitation in 18 (36.0%) of patients with a WD of delirium (n=50) before psychiatric consultation (Table 4). Regarding the FD of delirium (n=89), 32 (36.0%) patients was prescribed with benzodiazepine. However, benzodiazepine was prescribed to only 51 (92.7%) patients with a FD of AWD; this left 4 (7.3%) patients untreated initially with benzodiazepine.

DISCUSSION

Agitation with variable presentation and initial management is a common problem. This study explored agitation in all wards of a general hospital, and was not limited to specific settings or populations, reflecting a real-world situation of agitation management in limited-resource settings. The strength of this study is that all patients were assessed and diagnosed by consultant psychiatrists to avoid limitation of previous studies where agitated patients were assessed by medical or psychiatry residents, and senior/trained nurses.[13,14]

We observed that most agitated cases referred for psychiatric consultation were caused by medical conditions and AWD. Only 4.8% of these referrals resulted from primary psychiatric disorders. Our findings offer useful insight for healthcare providers (HCPs) in the general hospital setting to be alert for medical conditions that

TABLE 1. Principal diagnoses, comorbidities and past medical history of patients referred for psychiatric consultation due to agitation (n=188).

Principal diagnosis (ICD-10)	N	%
Injury, poisoning and certain other consequences of external causes (S00-T98)	66	35.1
Diseases of the digestive system (K00-K93)	32	17.0
Mental and behavioral disorders (F00-F99)	26	13.8
Diseases of the circulatory system (I00-I99)	18	9.6
Diseases of the respiratory system (J00-J99)	10	5.3
Neoplasms (C00-D48)	8	4.3
Certain infectious and parasitic diseases (A00-B99)	6	3.2
Diseases of the musculoskeletal system and connective tissue (M00-M99)	6	3.2
Diseases of the nervous system (G00-G99)	5	2.7
Diseases of the genitourinary system (N00-N99)	4	2.1
Comorbidities (ICD-10)		
Endocrine, nutritional and metabolic diseases (E00-E90)	111	59.0
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)	78	41.5
Diseases of the circulatory system (I00-I99)	58	30.9
Diseases of the respiratory system (J00-J99)	45	23.9
Injury, poisoning and certain other consequences of external causes (S00-T88)	42	22.3
Diseases of the digestive system (K00-K93)	39	20.7
Diseases of the genitourinary system (N00-N99)	36	19.1
Certain infectious and parasitic diseases (A00-B99)	25	13.3
Diseases of the musculoskeletal system and connective tissue (M00-M99)	23	12.2
Diseases of the nervous system (G00-G99)	13	6.9
Diseases of the skin and subcutaneous tissue (L00-L99)	11	5.9
Intracranial injury (S06)	9	4.8
Mental and behavioral disorders (F00-F99)	7	3.7
Neoplasms (C00-D48)	4	2.1
Past medical history		
Metabolic disease	**N**	
Essential hypertension (I10)	42	(22.3%)
Diabetes (E08-E13)	18	(9.6%)
Dyslipidemia (E78.5)	17	(9%)
Neurological disease		
Epilepsy (G40)	9	(4.8%)
Old cerebrovascular accident (CVA) (I63)	5	(2.7%)
Dementia (F03)	2	(1.1%)
Other neurological disorders (G98)	3	(1.6%)

TABLE 1. Principal diagnoses, comorbidities and past medical history of patients referred for psychiatric consultation due to agitation (n=188). (Continue)

Principal diagnosis (ICD-10)	N	%
Rheumatologic disease		
Gout (M10)	11	(5.9%)
Cardiovascular disease		
Atrial fibrillation (I48)	6	(3.2%)
Ischemic heart disease (I20-I25)	7	(3.7%)
Dilated cardiomyopathy (I42)	2	(1.1%)
Other cardiovascular diseases (I51.6)	6	(3.2%)
Renal disease		
Chronic kidney disease (N18)	8	
Psychiatric disorders		
Schizophrenia (F20)	4	(2.1%)
Alcohol-induced psychosis (F10.5)	1	
Alcohol use disorder (F10.1-F10.2)	1	
Bipolar disorder (F31)	1	
Major depressive disorder (F32-F33)	1	
Other diseases	37	(19.7%)

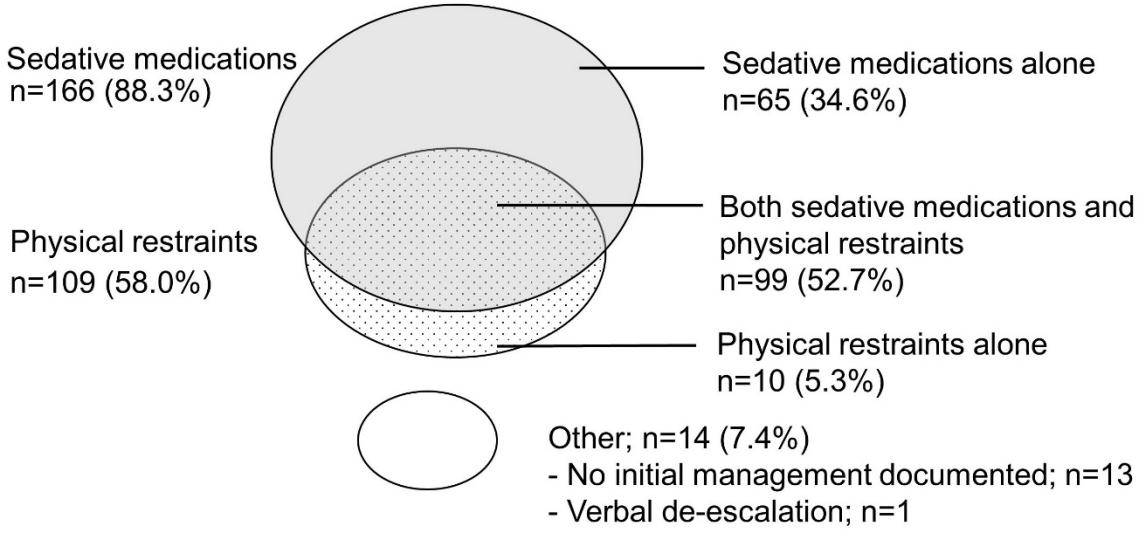

Fig1. Initial management of agitation before psychiatric consultation (n=188)

TABLE 2. Concordance between final diagnoses by psychiatrists and working diagnoses by physicians among inpatients with agitation.

Final diagnoses by psychiatrists	Working diagnoses by attending physicians	n	%	Cohen Kappa (κ)
Delirium due to a medical condition (n=89)	Delirium due to a medical condition	47	52.8	0.51
	Alcohol withdrawal	13	14.6	
	Alcohol withdrawal delirium	7	7.9	
	Psychiatric disorders	5	5.6	
Alcohol withdrawal delirium (n=55)	Alcohol withdrawal	34	61.8	
	Alcohol withdrawal delirium	13	23.6	0.30
	Delirium due to a medical condition	3	5.5	
	Psychiatric disorders	1	1.8	
Alcohol withdrawal (n=27)	Alcohol withdrawal	22	81.5	0.42
	Alcohol withdrawal delirium	1	3.7	
	Delirium due to a medical condition	-	-	
	Psychiatric disorders	-	-	
Other psychiatric disorders* (n=9)	Other psychiatric disorders	6	66.7	0.58

*Other psychiatric disorders include schizophrenia, adjustment disorder, brief psychotic disorder, bipolar disorder, major depressive disorder and dementia

TABLE 3. Initial medications prescribed by attending physicians to relieve agitation (n=166)

Medications prescribed before psychiatric consultation	Number of patients (%)	Mean dose (range) in mg	
		Parenteral injection	Oral
Benzodiazepine	112 (67.5)		
Diazepam	85 (51.2)	9.7 (5-10) (IV)	-
Lorazepam	27 (16.3)	- *	1.3 (0.5-4)
Antipsychotics	42 (25.3)		
Haloperidol	40 (24.1)	4.8 (2.5-5) (IM)	1.5 (0.5-2)
Quetiapine	2 (1.2)	-	18.8 (12.5-25)
Opioids	9 (5.4)		
Fentanyl	8 (4.8)	0.1325* (0.030-0.500) (IV)	-
Pethidine	1 (0.6)	0.025 (IV)	-
Tricyclic antidepressants	3 (1.8)		
Amitriptyline	2 (1.2)	-	17.5 (10-25)
Nortriptyline	1 (0.6)	-	10

Abbreviations: IV; intravenous injection, IM; intramuscular injection
*IV form of lorazepam is unavailable in Thailand

TABLE 4. First medications prescribed by attending physicians for initial management of agitation, classified by working diagnoses made by attending physicians and final diagnoses made by consultant psychiatrists.

Cause of agitation	N	First medications prescribed by attending physicians for initial management of agitation							
		Benzodiazepine		Antipsychotics		Opioid		TCA*	
		n	%	n	%	n	%	n	%
All causes	188	112	59.6	42	22.3	9	4.8	3	1.6
Delirium due to a medical condition									
Working diagnosis	50	18	36.0	23	46.0	4	8.0	-	-
Final diagnosis	89	32	36.0	37	41.6	7	7.9	2	2.2
Alcohol withdrawal delirium									
Working diagnosis	21	19	90.5	2	9.5	-	-	-	-
Final diagnosis	55	51	92.7	1	1.8	-	-	-	-
Alcohol withdrawal									
Working diagnosis	71	58	81.7	4	5.6	1	1.4	1	1.4
Final diagnosis	27	20	74.1	2	7.4	-	-	-	-
Other psychiatric disorders**									
Working diagnosis	12	4	33.3	3	25	1	8.3	-	-
Final diagnosis	9	3	33.3	2	22.2	1	11.1	1	11.1

*TCA; tricyclic antidepressants

**Other psychiatric disorders include schizophrenia, adjustment disorder, brief psychotic disorder, bipolar disorder, major depressive disorder and dementia

precipitate agitation.[10,15] Misdiagnosing medical conditions as psychiatric disorders can lead to lethal consequences as the underlying causes of agitation remain uncorrected.[15] Consistent with other reports[16,17], delirium was a common diagnosis in patients referred for a psychiatric consultation. In this study, almost half of the cases suffered from delirium due to general medical conditions and around one-third had AWD.

Of equal importance is the burden that agitation can add to hospital costs and human resources. One study reported that among general hospitals, the presence of agitation significantly increased the length of stay and increased total hospital costs by 8%.[18] Thus, it is imperative that HCPs are properly trained to identify and manage agitation to prevent the escalation of symptoms and reduce the use of coercive measures such as physical restraints and involuntary medication, which can lead to complications.[19]

Interestingly, one-third of agitated patients first manifested with a cognitive symptom, "confusion", but more easily noticeable physical symptoms such as fidget were the main reason for psychiatric consultation. This reflects how agitation is a heterogeneous and complex symptom that can start as mild confusion and may spiral to violence. Therefore, HCPs need to understand the course of agitation and its capacity to deteriorate so timely diagnosis can be made. Our findings suggest that physicians should remain vigilant for agitation, especially in the first three days after admission. Additionally, medications should be reviewed to reduce the use of polypharmacy and avoid drugs that may induce or worsen agitation. The prevention and early detection of agitation can reduce adverse outcomes, shorten the length of hospital stay, and decrease hospital costs.[9,20]

There was a low concordance between AP and psychiatrist diagnoses of delirium, AWD, and AW. This confirms a previous finding that agitation may hinder the diagnosis of delirium[21] and makes it more difficult for physicians to correctly diagnose the condition.[22] Our findings demonstrated that 22.5% of patients with

delirium due to medical conditions were misdiagnosed as AW and AWD. This led to 36.0% patients with delirium receiving benzodiazepines instead of antipsychotics in this study, which is of concern as benzodiazepines lack evidence in the management of non-alcohol-related delirium[23] and can worsen delirium.[24] Our findings underline the need for a thorough history and physical examination to differentiate delirium due to another medical condition from alcohol withdrawal syndrome.

Furthermore, 5.6% of our patients with delirium were misdiagnosed as having other psychiatric disorders. This may be because delirium often presents with psychiatric symptoms, such as hallucination, illusion, and delusion[16,25] and some physicians may consider delirium as a psychiatric condition instead of a complex manifestation of medical conditions. This finding is significant in drawing attention to the importance of specific guidelines for HCPs and a need for improved knowledge and skills in diagnosing delirium.

Only one patient received verbal de-escalation as an initial management. Verbal de-escalation may remove the need for invasive management in a substantial number of patients, training in verbal de-escalation skills among HCPs should be considered. Nearly 60% of all cases were physically restrained. Moreover, some patients were physically restrained without sedating medications or verbal de-escalation, which previous researches suggest can result in physical and psychological injuries.[14,26] A recent study showed that a minority of health care providers acknowledged their hospital policy on restraint use.[26] These findings support the need for locked/seclusion rooms, and improved knowledge about proper indications, monitoring and documentation of restraint use. Many physicians resorted to using sedative medications, with most cases receiving intravenous diazepam injection. This is a concern given the long half-life, drowsiness and respiratory-depression effect.[13]

Less than half of patients with delirium were appropriately given antipsychotics, but more than one-third were given benzodiazepines. APs prescribed benzodiazepine to ameliorate agitation in 36.0% of patients with the WD of delirium before psychiatric consultation. This suggests that inappropriate pharmacological intervention was not only due to misdiagnosis, but also due to a deficit in knowledge of delirium management. In this study, 7.3 % of patients diagnosed with AWD, a life-threatening condition, were not prescribed with benzodiazepine which is the gold-standard treatment.[27] These findings are alarming and suggest that agitation management guidelines are needed.

CONCLUSION

We observed that medical conditions, rather than psychiatric conditions, were the source of agitation in the majority of patients. There was significant disagreement between APs and psychiatrists regarding the diagnoses, and an over-reliance on physical restraints and parenteral benzodiazepine injection for management.

Clinical application

These findings highlight a role for education and training on the detection and management of agitation, especially the use of non-coercive measures and appropriate use of sedative medications. We also recommend the construction of seclusion rooms within major inpatient units that currently have a high prevalence of agitated patients so that de-escalation can be done effectively.

Recommendation for further study

Future work should concentrate on the development of guidelines on agitation in general hospitals with limited resources.

Limitations

Our research has several limitations and the results should be interpreted with caution. First, information was drawn from one hospital limiting the generalizability of the research. Given that there are no psychiatric wards or seclusion rooms in the study hospital, there is a possibility that limited resources may have influenced how patients were managed. Second, due to the retrospective methodology, there may be variation in diagnoses or symptoms classification, incomplete documentation of non-pharmacological management, and subjective evaluation. Third, only data of patients referred for a psychiatric consultation were collected. Mildly agitated patients may have been successfully managed without psychiatric consultation.

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Declarations of interest: None

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