Unrecognized Medical Emergencies Admitted to Psychiatric Units

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Alteration of mental status secondary to medical illness may occasionally be incorrectly attributed to a psychiatric problem. The cases of 64 patients with unrecognized medical emergencies inappropriately admitted to psychiatric units from emergency departments were reviewed to determine the cause of the misdiagnoses. Medical diagnoses most often missed included severe intoxication with alcohol or other illicit substance (34.4%), drug or alcohol withdrawal or delirium tremens (12.5%), and prescription drug overdose (12.5%). In none of the cases (0%) was an appropriate mental status examination performed. Other common causes of misdiagnosis included inadequate physical examination (43.8%), failure to obtain indicated laboratory studies (34.4%), and failure to obtain available history (34.4%). A systematic approach is required for patients with altered mental status, including those with psychiatric presentations. (Am J Emerg Med 2000;18:390-393. Copyright © 2000 by W.B. Saunders Company)

Psychiatric disorders frequently are characterized by alteration of behavior. However the presentation of the patient with altered mentation of mental status should not automatically lead to the assumption that the patient's problems are caused by a psychiatric disorder. If a patient with a serious medical problem is erroneously given a psychiatric diagnosis and treatment is based on this incorrect diagnosis, the results may be potentially disastrous.

Many medical problems may have symptoms that appear to be psychiatric in nature.[1-3] In such cases the underlying medical problem may be overlooked, placing the patient at risk. The purpose of this study was to determine what factors contribute to physicians erroneously attributing alteration of mental status to psychiatric illness when the patient actually has a medical problem.

METHODS

The records of 64 patients with alteration of mental status secondary to unrecognized medical emergencies who were inappropriately admitted from emergency departments to psychiatric units were reviewed. In these cases the patients had a serious underlying medical problem causing changes in mentation, but the changes were erroneously assumed to be attributable to a psychiatric problem. For the purposes of this study "medical emergency" was defined as the patient having significant enough medical problems to require rapid therapeutic intervention or transfer to an appropriate medical unit. Each of the patients met DSM-IV criteria for the diagnosis of delirium.[4]

Selected records were reviewed for patients of this type admitted to general psychiatric units at Louisiana State University Medical Center and the Overton Brooks VA Medical Center in Shreveport, Louisiana from January 1992 to December 1998. All cases included in the review required some type of medical intervention within several hours and all were transferred to a medical unit within 24 hours. The patients ranged in age from 20 to 63 years old (average age 36.7 years old).

Records were reviewed to determine whether errors related to misdiagnosis occurred in the evaluation of individual patients. Each case was reviewed to determine whether available historical elements were obtained; whether vital signs were obtained, and if abnormal, addressed; whether an appropriate physical examination was performed; whether indicated laboratory or radiologic studies were obtained; whether indicated neuroimaging studies were obtained; and whether an adequate mental status examination was performed. Results were then tabulated and trends sought.

RESULTS

The missed medical diagnoses in the 64 patients erroneously admitted from emergency departments to psychiatric units are shown in Table 1. The most common missed diagnoses included severe intoxication with alcohol or drugs, withdrawal from drugs or alcohol, and prescription drug overdose. For the purposes of this study "severe intoxication" was defined as occurring when the patient had significant impairment of consciousness, respiratory status, or blood pressure. Other missed diagnoses which occurred less commonly included uremic encephalopathy, hepatic encephalopathy, diabetic ketoacidosis, hypoglycemia, Wernicke's encephalopathy, lithium toxicity, anticonvulsant toxicity, hyperthyroidism, encephalitis, pneumonia, sepsis, urinary tract infection, neurosyphilis, cerebrovascular accident, congestive heart failure, subdural hematoma, and neuroleptic malignant syndrome. The actual incorrect diagnoses under which the patients were admitted to the psychiatric units included schizophrenia (30; 46.9%), psychotic disorder not otherwise specified (17; 26.6%), depression (9; 14.1%), and bipolar disorder (8; 12.5%).

All cases reviewed had one or more errors contributing to misdiagnosis (see Table 2). The single most important error was failure to perform an adequate mental status examination. In none (0%) of the 64 cases was an adequate mental

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TABLE 1. Missed Medical Diagnoses in Patients Inappropriately Admitted to Psychiatric Units (N = 64)

Severe intoxication with alcohol or other illicit substance	22 (34.4%)
Drug or alcohol withdrawal or delirium tremens	8 (12.5%)
Prescription drug overdose	8 (12.5%)
Uremic encephalopathy	4 (6.3%)
Hepatic encephalopathy	2 (3.1%)
Diabetic ketoacidosis	2 (3.1%)
Hypoglycemia	1 (1.6%)
Wernicke's encephalopathy	1 (1.6%)
Lithium toxicity	2 (3.1%)
Anticonvulsant toxicity	2 (3.1%)
Hyperthyroidism	1 (1.6%)
Encephalitis	1 (1.6%)
Pneumonia	2 (3.1%)
Sepsis	1 (1.6%)
Urinary tract infection	1 (1.6%)
Neurosyphilis	1 (1.6%)
Cerebrovascular accident	1 (1.6%)
Congestive heart failure	2 (3.1%)
Subdural hematoma	1 (1.6%)
Neuroleptic malignant syndrome	1 (1.6%)

status examination performed. In fact, in 51 cases (79.7%), documented findings were limited to orientation only (eg, ''OX3'') and the remainder had little additional documentation. The second most commonly occurring source of error was failure to perform an appropriate physical examination (43.8%). In cases where this occurred there was either no physical examination recorded, or only a very cursory examination was documented. Failure to obtain indicated laboratory or radiological studies was a fairly common omission (in 34.4% of cases) contributing to missed diagnoses. Failure to obtain history which would have been readily available was a factor in 22 (34.4%) of the cases. Less common errors included failure to address abnormal vital signs (7.8%; in this series, seen in patients with withdrawal from alcohol or drugs), and failure to obtain indicated neuroimaging (3.1%). It should be noted that multiple errors occurred in some of the patients.

DISCUSSION

These findings demonstrate that unless a practitioner is systematic in his evaluation, he may incorrectly attribute altered mentation to a psychiatric problem when it is in fact caused by an underlying medical problem. Terms used to describe the state of acutely altered mental functioning include delirium, organic brain syndrome, and encephalopathy. The term ''delirium'' will be used in this article.

TABLE 2. Errors Contributing to Missed Medical Diagnosis in Patients Inappropriately Admitted to Psychiatric Units (N = 64)

Failure to obtain available history	22 (34.4%)
Failure to address abnormal vital signs	5 (7.8%)
Inadequate physical examination	28 (43.8%)
Failure to obtain indicated laboratory or radiologic studies	22 (34.4%)
Failure to obtain indicated neuroimaging	2 (3.1%)
Inadequate attention to mental status examination	64 (100%)

Note. Multiple errors occurred in some patients.

Delirium is characterized by disturbance of consciousness, impaired attention, and changes in cognition. Delirium develops over a short period of time with fluctuation during the course of the day. Abnormalities of perception and behavior are common in patients with delirium, but these abnormalities should not cause the practitioner to incorrectly assume that the patient's problem is psychiatric in nature. Psychiatric disorders do not impair consciousness or significantly impair cognitive function.

Disorders which can cause delirium are numerous. The major causes are central nervous system disease, systemic disease, and either intoxication with or withdrawal from pharmacological or toxic agents. Some of the more common disorders which can cause delirium include head trauma, meningitis, encephalitis, brain tumor, vascular disorders of the central nervous system, epilepsy, endocrine dysfunction, hepatic and uremic encephalopathy, carbon dioxide narcosis, hypoxia, cardiac failure, cardiac arrhythmias, hypertension, systemic infections with fever and sepsis, electrolyte imbalance, poisoning with various toxins, and ingestion of or withdrawal from a number of prescription and over-the-counter medications.[5] The three leading causes of delirium are toxic ingestions, infection, and fluid and electrolyte imbalance.[6] Delirium is a medical emergency and must be treated as such.[7,8]

This study suggests that the single factor that is most important in the recognition of delirium is the mental status examination. It appears that many physicians do not proceed beyond questions about the patients orientation when assessing mental status, possibly because they feel the process is too time consuming.[9] However, the essential aspects of cognition can be assessed in less than 5 minutes.[8] Assessments should include orientation, memory, attention, concentration, constructional tasks, spatial discrimination, and writing. A commonly used screening tool is the mini-mental state examination developed by Folstein.[10] This test consists of a short series of questions and has a total possible score of 30 points (see Table 3). The examination is easily administered and may, within a few minutes, provide a gross estimate of the patients global cognitive functioning.

It may be difficult to distinguish changes in mental status secondary to medical causes from those of psychiatric causes. Some clues which may be helpful in distinguishing the two are shown in Table 4.[11] Delirium in any person with no prior psychiatric history requires a search for an underlying medical cause. Onset of illness before age 12 or after age 40 suggests a nonpsychiatric diagnosis. Disorders of extremely sudden onset are more likely caused by medical than to psychiatric causes. In general, a person with a psychiatric disorder may exhibit bizarre thought processes, an inappropriate affect, or unusual behavior, but will not be disoriented. Depressed level of consciousness does not result from primary psychiatric illness and psychiatric patients are usually fully alert unless they have an underlying medical complication or intoxication. Abnormal vital signs do not generally occur secondary to psychiatric disorders. A focal neurological deficit or specific abnormal physical signs are most likely attributable to a medical problem. A patient who shows evidence of exposure to toxins or ingestion of drugs should initially be treated as a medical problem, even if there is a psychiatric history. Visual and tactile hallucinations are

usually secondary to a medical disorder whereas auditory hallucinations are more common in psychiatric disorders.

Many of the misdiagnoses in this study were related to intoxication with or withdrawal from alcohol or other illicit substances. A special situation may occur when a patient has delirium related to substance use. In many facilities, patients intoxicated with alcohol or other substances are admitted to a psychiatric unit and remain there for treatment as indicated. However if an intoxicated patient has significant obtundation or depression of respiration or blood pressure, that patient should be admitted to a medical unit or to a psychiatric unit with special provisions for providing medical care (ie, a medical-psychiatric unit) until stable. Alcohol withdrawal delirium develops within 1 week after cessation or reduction of alcohol consumption. In addition to disorganized thinking, inability to maintain concentration, and hallucinations in some patients, there is marked autonomic instability. Despite optimal therapy, delirium tremens results in mortality in 5% to 10% of cases due to volume depletion, electrolyte imbalance, infection, or cardiac arrhythmias. These patients should be admitted to a medical unit, or possibly to an intensive care unit.[12]

TABLE 3. Mini-Mental State Examination (MMSE)

Maximum Score	Score	
		Orientation
5	( )	What is the (year) (date) (day) (month) (season)?
5	( )	Where are we (state) (county) (town) (hospital) (floor)?
		Registration
3	( )	Name three objects: 1 second to say each. Then ask the patient all three after you have said them. Give 1 point for each correct answer. Then repeat them until he or she learns all three. Count trial and record. Trials
		Attention and calculation
5	( )	Serial 7s: 1 point for each correct. Stop after five answers. Alternately spell "world" backwards.
		Recall
3	( )	Ask for three objects repeated above. Give 1 point for each correct answer.
		Language
2	( )	Name a pencil and watch (2 points)
1	( )	Repeat the following: "no ifs, ands, or buts" (1 point)
3	( )	Follow a three-stage command: "Take a paper in your right hand, fold it in half, and put it on the floor."
1	( )	Read and obey the following: "Close your eyes." (1 point)
1	( )	Write a sentence. Must contain subject and verb and be sensible. (1 point)
		Visual-motor integrity
1	( )	Copy design (two intersecting pentagons. All 10 angles must be present and two must intersect.) (1 point)
30	( )	**Total Score**
		Assess level of consciousness along a continuum. Alert ___ Drowsy ___ Stupor ___ Coma ___

Adapted with permission from Folstein MF, Folstein SE, McHugh PR: "Mini-Mental State: A Practical Method for Grading the Cognitive State of Patients for the Clinician." J Psych Res 12:189-198, 1975.[10]

TABLE 4. Clues Suggesting Medical Illness Rather Than a Psychiatric Diagnoses

No previous psychiatric history
Extremely sudden onset
Onset before age 12 or after age 40
Disorientation
Depression of level of consciousness
Abnormal vital signs
Focal neurological deficits
Presence of specific physical abnormalities
Visual or tactile hallucinations
Evidence of exposure to toxins or suspected ingestion

Data from Schmidt.[11]

CONCLUSIONS

Failing to perform an adequate mental status examination is a major error leading to misdiagnosis or lack of recognition of delirium. Physicians sometimes conclude too quickly that a psychiatric patient's alteration of mental status is due to an exacerbation of his or her psychiatric problem. Of the 64 cases reviewed, 43 (67.1%) carried a previous diagnoses of mental illness, suggesting that some psychiatric patients are given a less detailed evaluation than are other patients, possibly because their changes in mental status are too quickly assumed to be caused by their mental illness. However, having a psychiatric illness does not make one less likely to develop a medical problem, and this bias must be avoided.

This study shows that a systematic approach to the patient with altered mental status is necessary, including the patient with known mental illness. Recently a clinical policy for the initial approach to patients with altered mental status was published by the American College of Emergency Physicians.[13] The protocol presented in this publication provides a comprehensive guideline for assessing and treating the patient with delirium.

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