Chapter

8 Cognitive Disorders

The cognitive disorders are delirium, dementia, and amnestic disorders. Table 8-1 lists the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, classification of cognitive disorders.

DELIRIUM

Delirium is a reversible state of global cortical dysfunction characterized by alterations in **attention** and **cognition** and produced by a definable precipitant. Delirium is categorized by its etiology (see Table 8-1) as due to general medical conditions, substance-related, or multifactorial in origin.

Etiology

Delirium is a syndrome with many causes. Most frequently, delirium is the result of a general medical condition; substance intoxication and withdrawal also are common causes. Structural central nervous system lesions can also lead to delirium. Table 8-2 lists common general medical and substance-related causes of delirium. Delirium is often multifactorial and may be produced by a combination of minor illnesses and minor metabolic derangements (e.g., mild anemia, mild hyponatremia, mild hypoxia, and urinary tract infection, especially in an elderly person). Common medical causes of delirium include metabolic abnormalities such as hyponatremia, hypoxia, hypercapnia, hypoglycemia, and hypercalcemia. Infectious illnesses, especially urinary tract infections, pneumonia, and meningitis, are often implicated. The common substance-induced causes of delirium are alcohol or benzodiazepine withdrawal and benzodiazepine and anticholinergic drug toxicity, although a great number of commonly used medications, prescribed and over the counter, can produce delirium. Other conditions predisposing to delirium include old age, fractures, and preexisting dementia.

Epidemiology

The exact prevalence in the general population is unknown. Delirium occurs in 10% to 15% of general medical patients older than age 65 and is frequently seen postsurgically and in intensive care units. Delirium is equally common in males and females.

Clinical Manifestations

History and Mental Status Examination

History is critical in the diagnosis of delirium, particularly in regard to the time course of development of the delirium and to the prior existence of dementia or other psychiatric illness. Key features of delirium are

1. Disturbance of consciousness, especially attention and level of arousal;
2. Alterations in cognition, especially memory, orientation, language, and perception;
3. Development over a period of hours to days; and
4. Presence of medical or substance-related precipitants.

In addition, sleep-wake cycle disturbances and psychomotor agitation may occur. Delirium is often difficult to separate from dementia, in part because dementia is a risk factor for delirium (and thus they frequently co-occur) and in part because there is a great deal of symptom overlap, as outlined in

TABLE 8-1

Cognitive Disorders

Delirium	Dementia	Amnestic
General medical	Alzheimer's type	General medical
Substance-related	Vascular origin	Substance-related
Multifactorial	HIV-related	
	Head trauma-related	
	\Parkinson's-related	
	Huntington's-related	
	Pick's-related	
	Creutzfeldt-Jakob–related	
	General medical origin	
	Substance-related	
	Multifactorial	

TABLE 8-2

Common Causes of Delirium

General Medical	Substance-Related
Infectious	Intoxication
Urinary tract infections	Alcohol
Meningitis	Hallucinogens
Pneumonia	Opioids
Sepsis	Marijuana
Metabolic	Stimulants
Hyponatremia	Sedatives
Hepatic encephalopathy	Withdrawal
Hypoxia	Alcohol
Hypercarbia	Benzodiazepines
Hypoglycemia	Barbiturates
Fluid imbalance	Medication-induced
Uremia	Anesthetics
Hypercalcemia	Anticholinergics
Postsurgical	Meperidine
Hyper/hypothyroidism	Antibiotics
Ictal/postictal	Toxins
Head trauma	Carbon monoxide
Miscellaneous	Organophosphates
Fat emboli syndrome	
Thiamine deficiency	
Anemia	

Table 8-3. Key differentiating factors are the time course of development of the mental status change (especially if the patient did not have a prior dementia) and the presence of a likely precipitant for the mental status change. Individuals with delirium may also display periods of complete lucidity interspersed with periods of confusion, whereas in dementia, the deficits are generally more stable. In both conditions, there may be nocturnal worsening of symptoms with increased agitation and confusion ("sundowning").

The diagnosis of delirium is complicated by the fact that there are no definitive tests for delirium. The workup for delirium includes a thorough history and mental status examination, a physical examination, and laboratory tests targeted at identifying general medical and substance-related causes. These should include urinalysis, complete chemistry panel, complete blood count, and oxygen saturation. Additional workup might entail chest X ray, arterial blood gas (ABG), neuroimaging, or electroencephalogram (EEG). EEG may reveal nonspecific diffuse slowing. The presence of a delirium is associated with a 1-year mortality rate of 40% to 50%.

Differential Diagnosis

Delirium should be differentiated from dementia (although both can be present at the same time), psychotic or manic disorganization, and status complex partial epilepsy.

Management

The treatment of delirium involves keeping the patient safe from harm while addressing the delirium. In the case of delirium due to a general medical illness, the underlying illness must be treated; in substance-related delirium, treatment involves removing the offending drug (either drugs of abuse or medications) or the appropriate replacement and tapering of a cross-reacting drug to minimize withdrawal. Delirium in the elderly is frequently multifactorial

TABLE 8-3

Delirium versus Dementia

	Delirium	Dementia
Onset	Hours to days	Weeks to years
Course/duration	Fluctuates within a day. May last hours to weeks*	Stable within a day. May be permanent, reversible, or progressive over weeks to years
Attention	Impaired	May be impaired
Cognition	Impaired memory, orientation, language	Impaired memory, orientation, language, executive function
Perception	Hallucinations, delusions, misinterpretations	Hallucinations, delusions
Sleep/wake	Disturbed, may have complete day/night reversal	Disturbed, may have no pattern
Mood/emotion	Labile affect	Labile affect; mood disturbances
Sundowning	Frequent	Frequent
Identified precipitant	Likely precipitant is present	Identifiable precipitant not required

* DSM-IV does not specify a limit for the duration for delirium; clinical experience suggests resolution within days to weeks, in most cases.

and requires correction of a multitude of medical conditions.

In addition to addressing the cause of a delirium, oral, intramuscular, or intravenous haloperidol is of great use in treating agitation. Low doses of short-acting benzodiazepines can be used sparingly. Providing the patient with a brightly lighted room with orienting cues such as names, clocks, and calendars is also useful.

KEY POINTS

1. Delirium is a disorder of attention and cognition.
2. It has an abrupt onset and a variable course.
3. It has an identifiable precipitant.
4. 1-year mortality rate is greater than 40%.

DEMENTIA

Dementia is characterized by the presence of **memory impairment** in the presence of other **cognitive defects**. Dementia is categorized according to its etiology (see Table 8-1). It can arise as a result of a specific disease, for example Alzheimer's disease or HIV infection; a general medical condition; or a substance-related condition; or it can have multiple etiologies. The definitive cause may not be determined until autopsy.

Etiology

Generally, the etiology of dementia is brain neuronal loss that may be due to neuronal degeneration or to cell death secondary to trauma, infarction, hypoxia, infection, or hydrocephalus. Table 8-1 lists the major discrete illnesses known to produce dementia. In addition, there are a large number of general medical, substance-related, and multifactorial causes of dementia.

Epidemiology

The prevalence of dementia of all types is about 2% to 4% after age 65, increasing with age to a prevalence of about 20% after age 85. Specific epidemiologic factors relating to disease-specific causes of dementia are listed in Table 8-4.

Clinical Manifestations

History and Mental Status Examination

Dementia is diagnosed in the presence of multiple cognitive defects not better explained by another diagnosis. The presence of memory loss is required; in addition, one or more cognitive defects in the categories of aphasia, apraxia, agnosia, and disturbance in executive function must be present. Table 8-3 compares characteristics of dementia to those of delirium. Dementia often develops insidiously over the course of weeks to years (although it may be

TABLE 8-4

Specific Diseases Associated with Dementia

Disease	Description
Alzheimer's	Most common cause of dementia, accounts for greater than 50% of all cases. Risk factors are familial, Down syndrome, prior head trauma, increasing age. Clinically, it is a diagnosis of exclusion. Post-mortem pathology reveals cortical atrophy, neurofibrillary tangles, amyloid plaques, granulovacuolar degeneration, loss of basal forebrain cholinergic nuclei. Course is progressive, death occurs 8–10 years after onset.
Vascular	Second most common cause of dementia. Risk factors are cardiovascular and cerebrovascular disease. Neuroimaging reveals multiple areas of neuronal damage. Neurological exam reveals focal findings. Course can be rapid onset or more slowly progressive. Deficits are not reversible, but progress can be halted with appropriate treatment of vascular disease.
HIV	Limited to those cases caused by direct action of HIV on the brain; associated illnesses, such as meningitis, lymphoma, toxoplasmosis producing dementia are categorized under dementia due to general medical conditions. Primarily affects white matter and cortex.
Head trauma	Most common among young males. Extent of dementia is determined by degree of brain damage. Deficits are stable unless there is repeated head trauma.
Parkinson's	Occurs in 20–60% of individuals with Parkinson's disease. The most likely pathological finding on autopsy is Lewy body disease. Bradyphrenia (slowed thinking) is common. Some individuals also have pathology at autopsy consistent with Alzheimer's dementia.
Huntington's	Risk factors are familial, autosomal dominant on chromosome 4. Onset commonly in mid 30s. Emotional lability is prominent. Caudate atrophy is present on autopsy.
Pick's	Onset at age 50–60. Frontal and temporal atrophy are prominent on neuroimaging. The dementia responds poorly to psychotropic medicine.
Creutzfeldt-Jakob	Ten percent of cases are familial. Onset age 40–60. Prion is thought to be agent of transmission. Clinical triad of dementia, myoclonus, and abnormal EEG. Rapidly progressive. Spongiform encephalopathy is present at autopsy.

abrupt after head trauma or vascular insult). Individuals with dementia usually have a stable presentation over brief periods of time, although they may also have nocturnal worsening of symptoms ("sundowning"). Memory impairment is often greatest for short-term memory. Recall of names is frequently impaired, as is recognition of familiar objects. Executive functions of organization and planning may be lost. Paranoia, hallucinations, and delusions are often present. Eventually, individuals with dementia may become mute, incontinent, and bedridden.

Differential Diagnosis

Dementia should be differentiated from delirium. In addition, dementia should be differentiated from those developmental disorders (such as mental retardation) with impaired cognition. Individuals with major depression and psychosis can appear demented; they warrant a diagnosis of dementia only if their cognitive deficits cannot be fully attributed to the primary psychiatric illness.

A critical component of differential diagnosis in dementia is to distinguish pseudodementia associated with depression. Although there are many precise criteria for separating the two disorders, neuropsychological testing may be needed to make an accurate diagnosis. In pseudodementia, mood symptoms are prominent and patients may complain extensively of memory impairment. They characteristically give "I don't know" answers to mental status examination queries but may answer correctly if pressed. Memory is intact with rehearsal in pseudodementia, but not in dementia.

Management

Dementia from reversible, or treatable, causes should be managed first by treating the underlying cause of the dementia; rehabilitation may be required for residual deficits. Reversible (or partially reversible) causes of dementia include normal pressure hydrocephalus; neurosyphilis; HIV infection; and thiamine,

folate, vitamin B_{12}, and niacin deficiencies. Vascular dementias may not be reversible, but their progress can be halted in some cases. Nonreversible dementias are usually managed by placing the patient in a safe environment and by medications targeted at associated symptoms. Tacrine, an acetylcholinesterase inhibitor, has some efficacy in treating memory loss in dementia of the Alzheimer's type. High-potency antipsychotics (in low doses) are used when agitation, paranoia, and hallucinations are present. Low-dose benzodiazepines and trazodone are often used for anxiety, agitation, or insomnia.

KEY POINTS

1. Dementia is a disorder of memory impairment coupled with other cognitive defects.
2. It has a gradual onset and progressive course.
3. It may be caused by a variety of illnesses.
4. Dementia predisposes to delirium.

AMNESTIC DISORDERS

Amnestic disorders are isolated disturbances of memory without impairment of other cognitive functions. They may be due to a general medical condition or substance related.

Etiology

Amnestic disorders are caused by general medical conditions or substance use. Common general medical conditions include head trauma, hypoxia, herpes simplex encephalitis, and posterior cerebral artery infarction. Amnestic disorders often are associated with damage of the mammillary bodies, fornix, and hippocampus. Bilateral damage to these structures produces the most severe deficits. Amnestic disorders due to substance-related causes may be due to substance abuse, prescribed or over-the-counter medications, or accidental exposure to toxins. Alcohol abuse is a leading cause of substance-related amnestic disorder. Persistent alcohol use may lead to thiamine deficiency and induce Wernicke-Korsakoff's syndrome. If properly treated, the acute symptoms of ataxia, abnormal eye movements, and confusion may resolve, leaving a residual amnestic disorder called Korsakoff's psychosis (alcohol-induced persistent amnestic disorder).

Epidemiology

Individuals affected by a general medical condition or alcoholism are at risk for amnestic disorders.

Clinical Manifestations

History and Mental Status Examination

Amnestic disorders present as **deficits in memory**, either in the inability to recall previously learned information or the inability to retain new information. The cognitive defect must be limited to memory alone; if additional cognitive defects are present, a diagnosis of dementia or delirium should be considered. In addition to defect in memory, there must be an identifiable cause for the amnestic disorder (i.e., the presence of a general medical condition or substance use).

Differential Diagnosis

Delirium and dementia are the major differential diagnostic considerations. Amnestic disorders are distinguished from dissociative disorders on the basis of etiology. By definition, amnestic disorders are due to a general medical condition or substance.

Management

The general medical condition is treated whenever possible to prevent further neurologic damage; in the case of a substance-related amnestic disorder, avoiding reexposure to the substance responsible for the amnestic disorder is critical. Pharmacotherapy may be directed at treating associated anxiety or mood difficulties. Patients should be placed in a safe, structured environment with frequent memory cues.

KEY POINTS

1. Amnestic disorders are disorders in memory alone.
2. They are caused by identifiable precipitants.
3. Amnestic disorders are reversible in some cases.