Delirium (DSM-IV-TR #293.0)

Delirium is a syndrome of many different causes characterized by confusion and loss of short-term memory. This syndrome has various synonyms, all of which tend to emphasize different facets of the clinical picture. They include encephalopathy, acute organic brain syndrome, acute confusional state, and, less commonly, acute toxic psychosis.

In most cases delirium exists on a continuum between alertness and stupor. The diseases that are capable of causing delirium do so by compromising, on a global basis, cerebral functioning, and when the disease is severe enough and the compromise sufficiently great, stupor, and eventually coma, may supervene.

As might be expected, the prevalence of delirium is highest among those most likely to have one or more of the diseases that are capable of causing such global compromise of cerebral function. Thus among patients on a general medical-surgical ward, the prevalence ranges from 10 to 30%; however, among elderly inpatients it may rise to as high as 40%.

ONSET

Delirium may occur at any age; however, it tends to be most common among the elderly and the very young. The onset is generally relatively acute; however, in some cases a subacute onset lasting days or weeks may be seen.

CLINICAL FEATURES

The hallmark of delirium is confusion, or, as it also has been called, clouding of the sensorium. Patients may appear somewhat dazed and unclear about their surroundings. They have difficulty perceiving correctly what goes on around them, and one may have difficulty capturing and holding their attention—they tend to drift off. Short-term memory is poor, and patients tend to lose grasp of what happened only minutes before; disorientation to time and place are common accompanying features.

Delusions and illusions or hallucinations may occur. Cracks in the ceiling may seem to be alive and moving; the ringing of a telephone is a fire alarm. Hallucinations tend to be visual: the family is gathered about the bed; animals burrow under the blankets; an angel hovers outside the window. They may hear sounds or muffled whispers; a voice may announce the patient's death or impending execution. Delusions tend to be of the persecutory type and are rarely systematized. The syringe is filled with poison; the hospital is an elaborate prison; the physicians wish only to experiment on the patient.

The patient's speech may be circumstantial, tangential, or incoherent. Though not universal, a classic sign is carphologia, wherein the patient repetitively and aimlessly picks at the sheets or bed clothes. Sleep reversal may occur.

Upon formal mental status testing, in addition to confusion, one finds a degree of disorientation to time and/or place, an inability to recall all of three words after 5 minutes, and a decreased attention span, as measured by testing the digit span.

The overall behavior of the delirious patient may tend either toward agitation or quietude. Patients with an overactive or "noisy" delirium may be unable to stay in bed; they may climb over the bed rails, pull out intravenous lines and attempt to escape out the window. Those with delusions of persecution may refuse all care and even may attack those who try to take care of them. Frightening hallucinations may leave the patient terrified and screaming.

On the other hand, patients with a "quiet" or underactive delirium may not draw any clinical attention at all. They may lie listless and uncomplaining and do whatever they are told. All the while, however, they may have no sense of what is going on around them or why they are where they are.

Typically, though not universally, the symptoms of delirium tend to fluctuate over time. "Sundowning" is often seen as the patient's confusion worsens with the coming of night. In some cases, especially in the morning, patients may display a "lucid interval" wherein they appear quite clear and alert. Such morning lucid intervals may mislead diagnosticians as they make morning rounds.

Upon recovery from the delirium, patients have at best a patchy recall for the experience.

COURSE

The course of delirium is determined by the course of the underlying disease and by the effectiveness of any treatment given for that disease. In some cases recovery is prompt and complete, as for example when the delirium of hypoglycemia is promptly corrected by a glucose infusion. In other cases delirium may subside to leave the patient with a dementia. For example, a large ischemic cerebral infarction, with prominent surrounding edema, may cause a delirium which then subsides as the edema resolves, only to leave the patient with a dementia related to the loss of cerebral tissue.

With some diseases one may find patients with a chronic dementia with "superimposed" episodes of delirium. Multiple sclerosis is an example. Here a multiplicity of old, mature plaques may leave the patient demented; however, as new areas of inflammation appear, delirium may ensue that resolves as the inflammation subsides.

COMPLICATIONS

With a “quiet” delirium, patients may have no complications at all. In an agitated, “noisy” delirium, however, patients may be unable to cooperate with their care. Medicines may be refused, premature extubations may occur, and patients may fall and injure themselves as they attempt to flee.

ETIOLOGY

As noted earlier, delirium stems from a global disturbance in cerebral functioning. This disturbance may result from a truly “global” cause, for example when hypoglycemia deprives every neuron of its necessary supply of glucose. On the other hand, at times a localized lesion may exert “distant” effects, thus causing global compromise. An example would be a mass lesion that causes herniation, or perhaps a lesion strategically placed in a structure that in turn has “global” connections, for example an infarction of the thalamus. Table 155–1 lists most causes of delirium; almost all of these are covered in detail in their respective chapters.

When, after a thorough history and physical, the cause of the delirium is not apparent, one should “screen” for some of the more common causes with the following tests: CBC, sodium, potassium, calcium, glucose, BUN, creatinine, bilirubin, ammonia, and liver enzymes. A urine drug screen for illicit drugs may also be ordered in selected cases. If these are unrevealing or if one suspects a mass lesion, a CT or, preferably, MRI scan of the head may be obtained. EEGs are generally not necessary, unless one suspects complex partial status epilepticus. Arterial blood gases are obtained whenever one suspects respiratory failure.

Any given delirium may have multiple etiologies. Common examples include the alcoholic with a combination of delirium tremens and Wernicke’s encephalopathy, and “post-operative” delirium. This last entity is seen in a substantial minority of patients post-operatively and is generally related to multiple factors, including medications (particularly those with anticholinergic effect), metabolic disturbances, hypoxia, decreased cerebral perfusion due to myocardial ischemia, and various infectious processes. Also, certain phenomena, although innocuous in young, healthy individuals, may be quite capable of producing delirium in the elderly or those with other illnesses. For example, dextromethorphan, taken with impunity by adults, may, in an elderly patient, cause considerable confusion. A temporal correlation between starting or increasing the dose of a drug and the occurrence of delirium should arouse suspicion.

DIFFERENTIAL DIAGNOSIS

Dementia is distinguished from delirium by the absence of confusion.

At the height of a manic episode (i.e., stage III mania), patients may become confused and disoriented; such symptoms, however, are a natural part of the mania and do not indicate a separate syndrome. The same holds true for a patient with stuporous

TABLE 155-1 -- Causes of Delirium

Substance Intoxication	**Heavy Metal Poisoning**
cannabis	lead
phencyclidine	thallium
inhalants	arsenic
stimulants (including cocaine)	**Vitamin Deficiency**
methanol	Wernicke’s encephalopathy (thiamine)
Substance Withdrawal	pellagra (niacin)
alcohol (delirium tremens)	**Infectious Disorders Directly Involving the Central Nervous System**
sedative-hypnotics	neurosyphilis
Medication Induced	tuberculosis
anticholinergics	subacute measles encephalitis
serotonin syndrome	infectious mononucleosis
neuroleptic malignant syndrome	mumps
lithium	acute viral meningoencephalitis
levodopa	zoster
bromocriptine	herpes simplex encephalitis
amantadine	HIV
baclofen	cytomegalovirus encephalopathy
prednisone	mycoses
digoxin	toxoplasmosis
cimetidine	**Metabolic Disorders**
theophylline	dehydration
beta-blockers	hyperglycemia
isoniazid	hypoglycemia
Seizures	hypernatremia
complex partial seizures	hyponatremia
petit mal seizures	hypokalemia
post-ictal state (after complex partial or grand mal seizures)	hypermagnesemia
Heredodegenerative Disorders	hypomagnesemia
diffuse Lewy body dementia	hypercalcemia
Alzheimer’s disease (terminally)	hypocalcemia
Vascular Disorders	uremia
multi-infarct dementia	dialysis dysequilibrium syndrome

large or strategically placed infarctions (e.g., thalamic)	hepatic encephalopathy
lacunar dementia	hepatic porphyria
Binswanger's disease	respiratory failure
polyarteritis nodosa	**Others**
cranial arteritis	high fever
granulomatous angiitis	severe hypotension (e.g., as in shock or grossly reduced cardiac output due to congestive heart failure, infarction or arrythmia)
hypertensive encephalopathy	severe anemia
Behcet's syndrome	infectious processes that do not directly involve the central nervous system (e.g., sepsis, pneumonia, or, in the elderly, even trivial infections, such as a urinary tract infection)
Immune-Related Disorders	disseminated intravascular coagulation
limbic encephalitis	thrombotic thombocytopenic purpura
systemic lupus erythematosus	Sydenham's chorea
Hashimoto's encephalopathy	chorea gravidarum
Brain Injury	
carbon monoxide poisoning	
subdural hematoma	
delayed radiation encephalopathy	
delayed post-anoxic encephalopathy	
Mass Lesions and Hydrocephalus	
brain tumor	
brain abscess	
acute hydrocephalus	
Endocrinologic Disorders	
Cushing's syndrome	
adrenocortical insufficiency	
hyperthyroidism ("thyroid storm")	

catatonic schizophrenia or a patient with undifferentiated schizophrenia in the midst of a severe exacerbation.

TREATMENT

Concurrent with pursuing symptomatic treatment as outlined below, discovering the cause of the delirium and treating that cause are essential.

Efforts should be made to help patients remain in contact with their surroundings. Large clocks and calendars are kept in full view, as are familiar pictures. The importance of having a window in the room cannot be overstated. At night the room should be quiet and bed rails kept up; a call button should be close at hand and a night light left on. In some cases around-the-clock attendance by sitters or family members (presuming there is not intense conflict within the family) may be helpful. Nursing procedures that can be delayed until daylight hours should be.

For patients with a "quiet" delirium, the foregoing symptomatic measures may suffice. Additional measures, however, are often required for the agitated, "noisy" patient. Antipsychotics constitute the mainstay of symptomatic pharmacologic treatment of delirium; however, it should be noted that there has been, remarkably, only one double-blinded study of their use in delirium. In this study of delirium in patients hospitalized with AIDS, both haloperidol and chlorpromazine were more effective than placebo. Of these two, chlorpromazine is not in common use, whereas haloperidol has become a standard. Haloperidol may be given in a dose of from 0.5 to 5 mg im, or 1 to 10 mg po, with repeat doses every hour if given intramuscularly or every two hours when given po, with the size of the repeat dose adjusted according to the patient's response. Treatment is continued until the patient is manageable and out of danger, limiting side effects occur or a maximum dose of 50 mg is reached. Once acute treatment has been effective, the patient may be continued on a regular daily dose roughly equivalent to three-quarters of the total dose needed during acute treatment, with provision for prn doses should there be a significant "breakthrough" of symptoms. Once the underlying cause of the delirium has resolved, the dose of the antipsychotic may be tapered over two or three days and then discontinued. Secondgeneration antipsychotics, such as risperidone, olanzapine, quetiapine, and ziprasidone, are also used in the treatment of delirium, and anecdotally have been successful; if risperidone is used, the ratio of risperidone dose to oral haloperidol dose is roughly 1:4.

Lorazepam or other benzodiazepines have no place in the treatment of delirium with the important exception of alcohol or sedative-hypnotic withdrawal. Small doses of lorazepam (e.g., 0.5 to 1.0 mg) may, however, be used at night to promote sleep.

At times, around-the-clock nursing care may be required; furthermore, restraints, either soft or leather, may likewise be required, and one should not hesitate in ordering them when the patient's delirious behavior becomes dangerous.

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