

Orthogeriatrics—Clinical Summary Document

Delirium

Definition

There are four key features that characterize delirium:

- Disturbance of consciousness with reduced ability to focus, sustain, or shift attention
- The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day.
- A change in cognition or the development of a perceptual disturbance that is not better accounted for by a preexisting, established, or evolving dementia.
- There is evidence from the history, physical examination, or laboratory findings that the disturbance is due to a medical condition, substance intoxication, or medication side effects.

Additional features that may accompany delirium include:

- Psychomotor behavioral disturbances such as hypoactivity, and impairment in sleep duration, euphoria, and affect
- Variable emotional disturbances, including fear, depression, euphoria, or perplexity

Prevalence

The prevalence of delirium is strongly correlated to the population and the risk setting. While the rate of delirium is estimated to be 5–55% for elderly general hospital admissions and 16–32% for elderly emergency department attenders, the prevalence rises to 75% postoperatively (hip and vascular surgery). The wide range of results between different studies may be explained by the difficulties in correctly diagnosing delirium. Furthermore, other terms, such as acute brain failure, acute state of confusion, acute organic brain syndrome, cerebral insufficiency, encephalopathy, postoperative psychosis, or toxic psychosis are still used to describe a delirium.

Diagnosis and clinical signs

Up to 70% of patients with delirium are not recognized by clinicians. One reason for this is that delirium has various clinical manifestations. On the one hand, it is straightforward to identify a patient with the hyperactive form of delirium; these patients have increased psychomotor activity, agitation, aggression, mood changes, and in some cases, hallucinations and delusions. On the other hand, it can be very difficult to detect a patient in a hypoactive state. This form is characterized by decreased psychomotor activity, lethargy, drowsiness, apathy, or confusion. Furthermore, the clinical features often change over a period of 24 hours. Conversation with the patient may elicit memory difficulties, disorientation, or speech that is tangential, disorganized, or incoherent. Clinicians should be aware of superficially appropriate conversation that follows social norms but is poor in content. It is important that clinicians are sensitive to the patient's flow of thought and not attribute tangential or disorganized speech to age, dementia, or fatigue.

Standardized tools may help to simply and quickly diagnose delirium. The Confusion Assessment Method (CAM) is a widely used delirium screening instrument based on DSM-III-R criteria. A diagnosis of delirium according to the CAM requires the presence of items 1 or 2 and either 3a or 3b.

Confusion Assessment Method (CAM-score):

- | | | | |
|----|---|----------|--------|
| 1. | Acute onset and fluctuating course | Yes (1)* | No (0) |
| | Is there evidence of an acute change in mental status from the patient's baseline? Did the abnormal behavior fluctuate during the day (did it tend to come and go, or increase and decrease in severity)? | | |
| 2. | Inattention | Yes (1)* | No (0) |
| | Did the patient have difficulty focusing attention (being easily distracted) or have difficulty keeping track of what was being said? | | |
| 3. | Disorganized thinking | Yes (1) | No (0) |
| | Was the patient's thinking disorganized or incoherent; such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject? | | |
| 4. | Altered level of consciousness? | Yes (1) | No (0) |
| | Positive for any answer other than alert: vigilant, lethargic, stuporous, comatose. | | |

Another useful tool is the Delirium Observation Scale (DOS). The DOS scale includes 13 items and must be done three times a day.

Delirium Observation Scale (DOS)

The patient:

Dozes off during conversation or activities	0	1	-
Is easily distracted by stimuli from the environment	0	1	-
Maintains attention to conversation or action	1	0	-
(first row: never, second row: sometimes, always, third row: unable)			
Does not finish question or answer	0	1	-
Gives answers that do not fit the question	0	1	-
Reacts slowly to instructions	0	1	-
Thinks they are somewhere else	0	1	-
Knows which part of the day it is	1	0	-
Remembers recent events	1	0	-
Is picking, disorderly, restless	0	1	-
Pulls intravenous tubing, feeding tubes, catheters, etc.	0	1	-
Is easily or suddenly emotional	0	1	-
Sees/hears things which are not there	0	1	-

The DOS final score is calculated from the three scores per day and divided by three. If the final score is three or higher, delirium is likely.

Risk factors for delirium

Delirium is an independent risk factor for length of hospitalization, an increase in functional impairment, complications (eg, urinary incontinence, falls, decubitus ulcers), and admission to a nursing home. Mortality rate is high, affecting up to 30% of patients. One third recovers from delirium while the rest remains with a decline of cognitive function. Delirium is always an acute medical emergency. It requires an adequate diagnostic process, and treatment should be initiated by experienced physicians. Guidelines for diagnosis and treatment of delirium can be a helpful tool when an experienced clinician is not available.

Causes and risk factors for delirium

Common causes of delirium are:

- Brain disorders (eg, dementia, hematoma, Parkinson's disease)
- Metabolic derangements (eg, hypoglycemia, hyponatremia)
- Systemic organ failure (eg, heart failure, renal failure)
- Toxins (eg, alcohol, prescription medications)
- Physical disorders (eg, trauma with systemic inflammatory response syndrome, hypothermia)

Particularly for the elderly, chronic alcohol abuse is a rare reason for delirium. More common in this age group is benzodiazepine abuse. An immediate withdrawal of this medication can induce delirium. As a consequence of the factors listed above, delirium is one of the most prevalent complications among hospitalized geriatric patients (up to 61% in patients with a hip fracture).

Common risk factors are:

- Older age
- Preexisting cognitive impairment
- Severe comorbidities
- Visual or hearing impairment
- Major fractures (eg, hip fracture)

Triggers may be:

- Physical restraints (eg, extension, bed grids)
- Impaired perception of the environment (eg, glasses, hearing aids)
- Urinary catheters, drainages
- Medical complications
- Taking more than three medications
- Malnutrition
- Dehydration and derangement of electrolytes
- Pain
- Anesthesia
- Withdrawal of benzodiazepines or alcohol

Risk model for delirium [Vochteloo 2011]

Predisposing risk factors for delirium	Points
Delirium during previous hospitalization	5
Dementia	5
Clock drawing test (displaying ten past eleven)	
Small mistakes	1
Big mistakes, unrecognizable, or no attempt	2
Age	
70–85 years	1
Older than 85 years	2
Impaired hearing (patient is not able to hear speech)	1
Impaired vision (< 40%)	1
Problems in activities of daily live	
Domestic help or help with meal preparation	0.5
Help with physical care	0.5
Use of heroin, methadone, or morphine	2
Daily consumption of four or more alcoholic beverages	2
Total score	

Patients with a score of five or more are considered high-risk patients.

Prevention

Treatment strategies are less effective than preventative measures.

Prevention is built on four principles:

- If possible, avoid triggers and worsening factors
- Identify and treat possible causes
- Aim for optimal reactivating care and rehabilitation to avoid further physical/cognitive decline
- Limit and manage dangerous and disturbing behavior and try to control patients to make the other principles possible.

Early surgery and proactive geriatric treatment are crucial. The following should be achieved:

- Early volume and electrolyte repletion (if necessary)
- Avoidance of hypoxemia
- Sufficient pain therapy
- Review of medication; look for inadequate or inappropriate medication use (Beers List)
- Management of bowel and bladder function
- Adequate nutrition
- Early mobilization
- Minimizing the use of physical restraints
- Early detection and treatment of postoperative complications

- Environmental modification and use of nonpharmacological sleeping aids for patients with insomnia
- Orientation protocol and cognitive stimulation for patients with cognitive impairment
- Managing disruptive behavior, particularly agitation and combative behavior
- Monitoring high-risk patients with validated scores, such as the DOS or CAM.

In accordance with the current literature, pharmacological prevention using haloperidol, atypical neuroleptics, or rivastigmine cannot be generally recommended. However, there is some evidence that the use of low-dose haloperidol or atypical neuroleptics preoperatively may reduce the duration and severity of delirium.

Treatment

Symptom control is necessary to prevent harm or to allow evaluation and treatment. There are limited data to guide treatment. Delirium is still managed empirically, and there is no evidence in the literature to support a change in current practice.

While there is no large placebo-controlled randomized controlled trial (RCT) that recommend the use of antipsychotics to treat hyperactive delirium, if nonpharmacological measures fail to keep the agitated patient and treating staff safe, the National Institute for Health and Care Excellence (NICE) guidelines state that the prescription of a low dose of any antipsychotic drug for a short period may be considered. A systematic evidence review of the existing data found no superiority for second-generation antipsychotics over haloperidol (Campbell 2009). A trial of risperidone 0.9 ± 0.6 mg daily versus olanzapine 2.4 ± 1.7 mg daily in 32 subjects showed no improvement in the severity of delirium, although older subjects did not respond as well to risperidone (Kim 2010). A pharmaceutical company-sponsored RCT of quetiapine versus placebo in 42 elderly inpatients found that delirium severity improved more rapidly with quetiapine, with a mean dose of 40 mg (Tahir 2010). No adequately controlled trials could be found to support the use of benzodiazepines in the treatment of nonalcohol withdrawal-related delirium among hospitalized patients, and at this time benzodiazepines cannot be recommended for the control of this condition. However, benzodiazepines are still recommended in some clinical guidelines.

Recommendations:

- If there is any uncertainty, a cerebral CT should be obtained
- Slight or moderate delirium (oral medication is possible)
 - Risperidone 0.5–1 mg ~~and~~ (lorazepam 1 mg orally)
 - Quetiapine 25–100 mg ~~+~~~~and~~ (lorazepam 1 mg orally)
 - Haloperidol 1 mg ~~+~~~~and~~ (lorazepam 1 mg orally)
- Disruptive behavior
 - Haloperidol 5 mg (off label) ~~+~~and lorazepam 2.5 mg (1 Amp) intravenously as a short infusion, followed by oral medication
- Correct any metabolic disturbance where possible
- Improve organ function when possible (renal failure or heart failure)
- Reduce or discontinue medication as soon as possible

Treatment is difficult and may have dangerous side effects, so don't hesitate to consult a geriatrician or psychiatric specialist. Don't forget to evaluate your therapy, eg, by using the Delirium Rating Scale.

Ten signs of delirium:

1. Acute onset
2. Duration is hours, days, or months
3. Fluctuating course (often worse at night)

4. Altered consciousness
5. Impaired attention
6. Impaired memory
7. Impaired orientation
8. Incoherent, slow, or rapid speech
9. Disorganized or incoherent thinking
10. Altered perception

References

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Provided by Markus Gosch, MD, Hospital Hichzirl, Zirl, Austria (January 2014)