

Delirium: a common preventable medical disorder in elderly patients

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Delirium is one of the most common unmet medical emergencies in clinical practice however, its role in increasing mortality, hospital admission and institutional placement is very obvious. In addition, a link was found between delirium and development of dementia based on the finding that a significant number of delirious patients developed persistent cognitive impairment thereafter. Several factors can lead to delirium or aggravate it and consequently primary care physician should be aware of these factors keeping in mind that delirium is still a treatable condition if identified and managed appropriately and urgently.

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Introduction

Delirium is an acute cerebral dysfunction characterized by disorder of attention and cognition in elderly people. It is a common, a serious, underrecognized, and often fatal condition. Detection of several environmental factors playing a major role in precipitation of delirium makes the nonpharmacological approaches the most effective in delirium prevention. There is no convincing evidence that pharmacological therapy is effective in prevention or treatment of delirium. Delirium offers opportunities to elucidate brain pathophysiology; it serves both as a marker of brain vulnerability with decreased reserve and as a potent evidence for permanent cognitive damage. Health authorities should help clinicians and people to be aware of the importance of delirium [1].

Definition

Delirium is an acute confusional state characterized by impaired attention, concentration, and memory, with fluctuations of consciousness and disorientation [2].

Subtypes

Delirium is divided into three subtypes: hyperactive, hypoactive, and mixed [3]. Hyperactive delirium shows in addition to the aforementioned criteria hallucinations, agitation, and incoherent speech.

- (1) Hypoactive delirium shows in addition to the aforementioned criteria lethargy, sedation, slow response, and little spontaneous movement.
- (2) Mixed delirium shows in addition to the aforementioned criteria mixed features of hypoactive and hyperactive subtypes.

Prevalence of delirium in elderly

It was found to be in the range of 4–24% during hospital admission, 56% during hospital stay, and 70–87% in ICU [4].

Diagnosis of delirium

It is a medical emergency and independently associated with serious adverse outcomes. It increases the mortality in older people by 35–40% per year and increases hospital admission and institutional placement. In addition, a significant number ($\leq 60\%$) of delirious patients develop persistent cognitive impairment thereafter. However, delirium is still a treatable condition if identified and managed appropriately and urgently [5].

Risk factors of delirium

The risk factors of delirium include nonmodifiable and potentially modifiable factors [3]:

- (1) Nonmodifiable factors include age, male sex, multiple comorbidities, chronic hepatic and renal disease, old CVS, and dementia.
- (2) Potentially modifiable factors include depression, malnutrition, immobility, polypharmacy, and visual and hearing defects (Figs 1–10).

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Figure 1



Urine retention.

Figure 2



Constipation.

Figure 3



Physical restraints.

Precipitating factors

They are usually present and include medical problems such as urine retention, constipation, fracture, severe pain, physical restraints, pneumonia, dehydration, drugs, surgery, hypercalcemia, hypo and hypernatremia, seizure, recent CVS, hypoxia, hypo

Figure 4



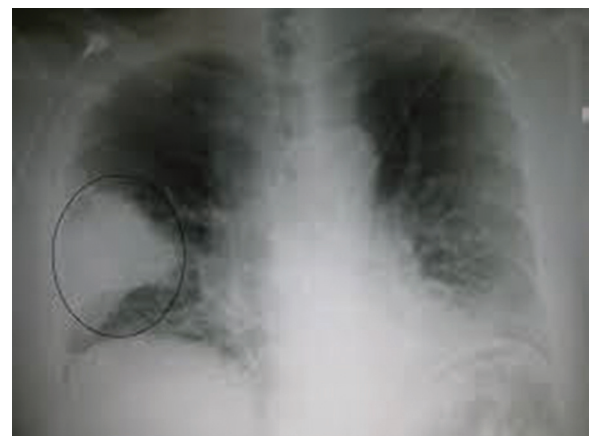
Fracture.

Figure 5



Severe pain.

Figure 6



Pneumonia.

and hyperglycemia, hypo and hyperthyroidism, and B₁ and B₁₂ deficiency [6].

Many drugs have been claimed to induce delirium, especially drugs acting on central nervous system such

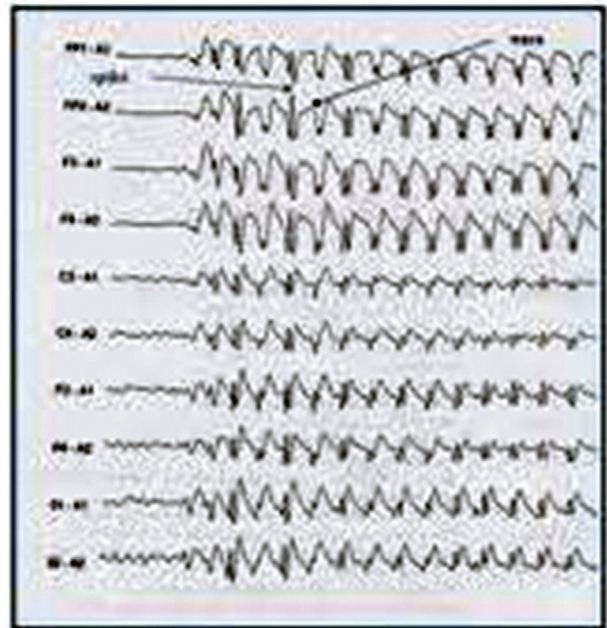
as sedatives, anticonvulsants, drugs to treat PD, narcotics, TAD, lithium, and antihistaminic. Moreover, NSAID, quinolones, digitals, and β -blockers had been added to the list [7].

Figure 7



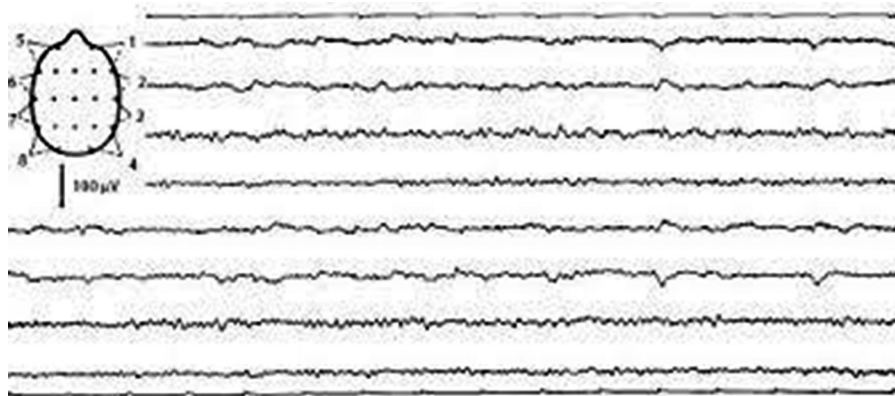
Polypharmacy.

Figure 8



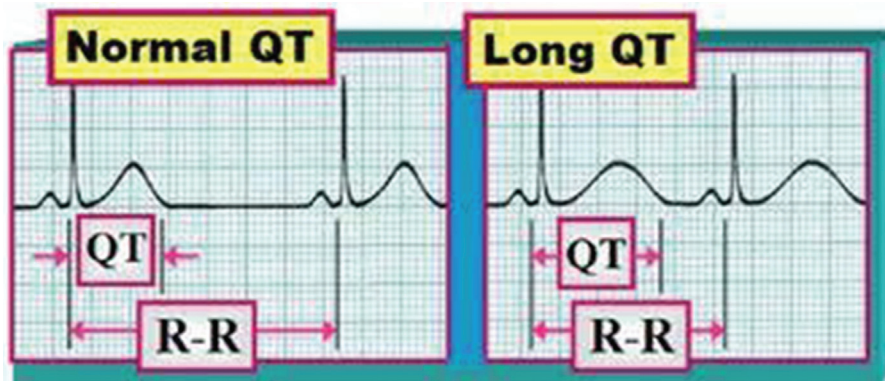
Normal electro-encephalography (EEG).

Figure 9



Generalized slowing in delirious patient.

Figure 10



ECG.

Moreover, some nonmedical problems such as change of environment, loss of hearing aid or glasses, inappropriate noise and lighting, sleep deprivation, and change of staff, ward, or caregiver were considered to be responsible for development of delirium [8].

Pathogenesis of delirium

Researchers of several geriatric studies suggested that alteration of neurotransmission (cholinergic deficiency and dopaminergic excess) is the prime factor for development of delirium. Others considered the change of BBB permeability is the main factor for induction of delirium and explained such change by the increase of IL1, IL2, IL6, TNF α , and interferon in various medical disorders. Endocrinal changes were also raised, based on idea that acute stress stimulates hypothalamic–pituitary–adrenal axis leading to increase in cortisol level that affect hippocampal function. It was also suggested that each of subtypes of delirium has a different mechanism and might carry a different prognosis [6].

Diagnosis

The diagnosis is basically clinical, using diagnostic criteria that comprises disturbance of consciousness, change of cognition, mood, and behavior by an acute onset and fluctuating course [2].

Investigations

It should be ordered to detect etiological factor(s). Laboratory workup such as complete blood count (CBC), serum creatinine, serum sodium, calcium, blood glucose, liver function tests (LFTs), thyroid function, and thyroid function & chest X-ray (CXR) was done. Brain computed tomography (CT) and magnetic resonance imaging (MRI) might be done to detect any underlying brain lesion. Positron emission tomography (PET) and single-photon emission computed tomography (SPECT) can help to assess brain activity and visualize decline in cholinergic and dopaminergic function [1]. Moreover, electro-encephalography (EEG) can be used to detect generalized slowing of cortical background activity and also can detect epileptogenic foci [9].

Delirium prevention

It can be achieved in 30–40% of cases by avoidance of the inducing and precipitating factors [4].

Treatment

It includes nondrug therapy and drug therapy [2]:

(1) Nondrug therapy:

- (a) Proper observation in a suitable environment and sensible communication.
- (b) Encouragement of orientation using visible clocks, calendars, and familiar caregiver. Correction of sensory deficit, providing adequate hydration and good nutrition together with encouraging mobility, medication revision, and avoidance of unnecessary medical tasks, with avoidance of physical restraints and control of medical diseases at maximum greatly help in treatment of delirium.

(2) Drug therapy

- (a) It was greatly debatable, and most geriatricians considered treatment of cause is usually sufficient and limit the use of drugs to certain situations.

Indications for drug therapy

- (b) To carry out essential investigations.
- (c) To prevent self or other harm.
- (d) If all nonpharmacological therapies fail to control the situation.
- (e) Low-dose antipsychotics or benzodiazepines were used.
Antipsychotics:
- (f) The least dose for short time.
- (g) Haloperidol 0.5 orally and can be repeated every 2 h up to 4 mg/day. IM can be used in severely agitated patients.
- (h) ECG should be done to detect adverse effect (prolonged QT interval).

Atypical antipsychotics can be used but still to be evaluated following the concern of increasing stroke risk.

- (1) Benzodiazepines (short acting) are used only if antipsychotics are contraindicated as they lead to oversedation.
- (2) Clonazepam (0.5 mg orally or IM maximum 3 mg/day).

Delirium outcome

It ranges from full recovery to death and in between there is long-term cognitive impairment, prolonged hospitalization, and functional impairment with increase institution and cost [1,2].

Take-home message

- (1) Delirium is one of the major unmet medical problems in clinical practice.
- (2) Delirium strongly predicts future new-onset dementia and accelerates a previously diagnosed dementia.

- (3) Delirium prevention is effective, but implementation in clinical practice is still lacking.
- (4) Higher detection rate of delirium in routine practice is a major priority.
- (5) No drug can prevent delirium.

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Conflicts of interest

There are no conflicts of interest.

References

1 Skarvon K, Rudi G, Jane S. Delirium in elderly people. *Lancet* 2014; 383:911–922.

2 Cole MG. Delirium in elderly. *Am J Geriatr Psychiatry* 2004; 12:7–21.

3 Han JH, Zimmerman EE, Cutler N. Delirium in older emergency department patients: recognition, risk factors & subtypes. *Acad Emerg Med* 2009; 16:193–200.

4 Mohony R, Murthyl L, Kunne A. Synopsis of the national institute of health and clinical excellence guidelines for prevention of delirium. *Ann Intern Med* 2011; 154:746–751.

5 Noggle CA, Dean RS. Delirium. New York, NY: The Neuro-psychology & Psychopathology Book; Springer; 2013. pp. 425–444.

6 Hages CG, Patel MB, Pandhari PP. Pathophysiology of acute brain dysfunction. What is the cause of all this confusion? *Curr Opin Crit Care* 2012; 18:518–526.

7 Lauretani F, Geda GP, Maggio M. Capturing side effects of medications to identify persons at risk of delirium. *Aging Clin Exp Res* 2010; 22:456–488.

8 Inouye SK, Charpentier PA. Precipitating factors for delirium in hospitalized elderly persons. *JAMA* 1996; 275:852–857.

9 Jacobson S, Jerrier H. EEG in delirium. *Semin Clin Neuropsychiatry* 2000; 5:86–92.