

Pediatric Delirium

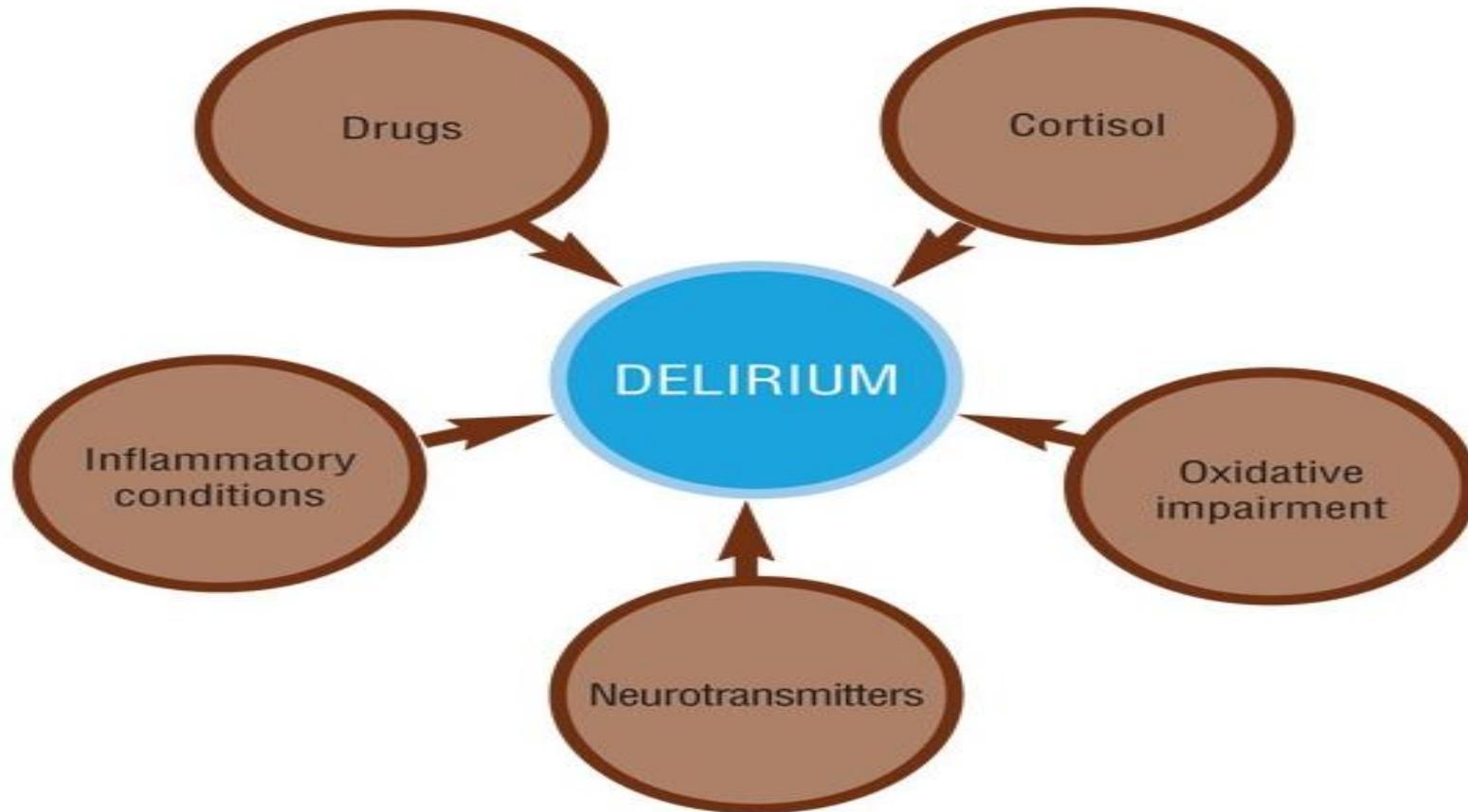
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فوق تخصص روانپزشکی کودک و نوجوان

The core features of delirium

- A. A disturbance in attention (i.e., reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment).
- B. The disturbance develops over a short period of time (usually hours to a few days), represents a change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day.
- C. An additional disturbance in cognition (e.g., memory deficit, disorientation, language, visuospatial ability, or perception).
- D. The disturbances in Criteria A and C are not explained by another preexisting, established, or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal, such as coma.
- E. There is evidence from the history, physical examination, or laboratory findings that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal (i.e., due to a drug of abuse or to a medication), or exposure to a toxin, or is due to multiple etiologies.

the most important theories of pathophysiology of delirium.

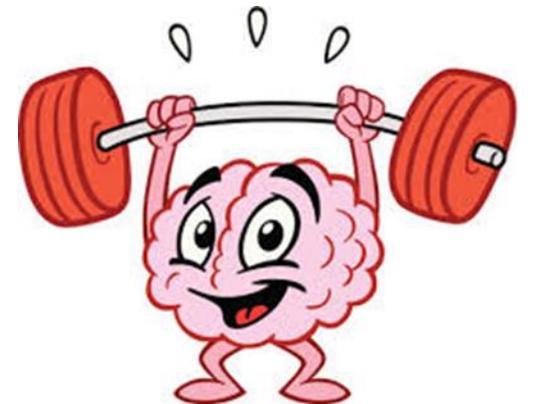


Pathophysiology of Delirium.

widespread brain dysfunction rather than localized disruption.

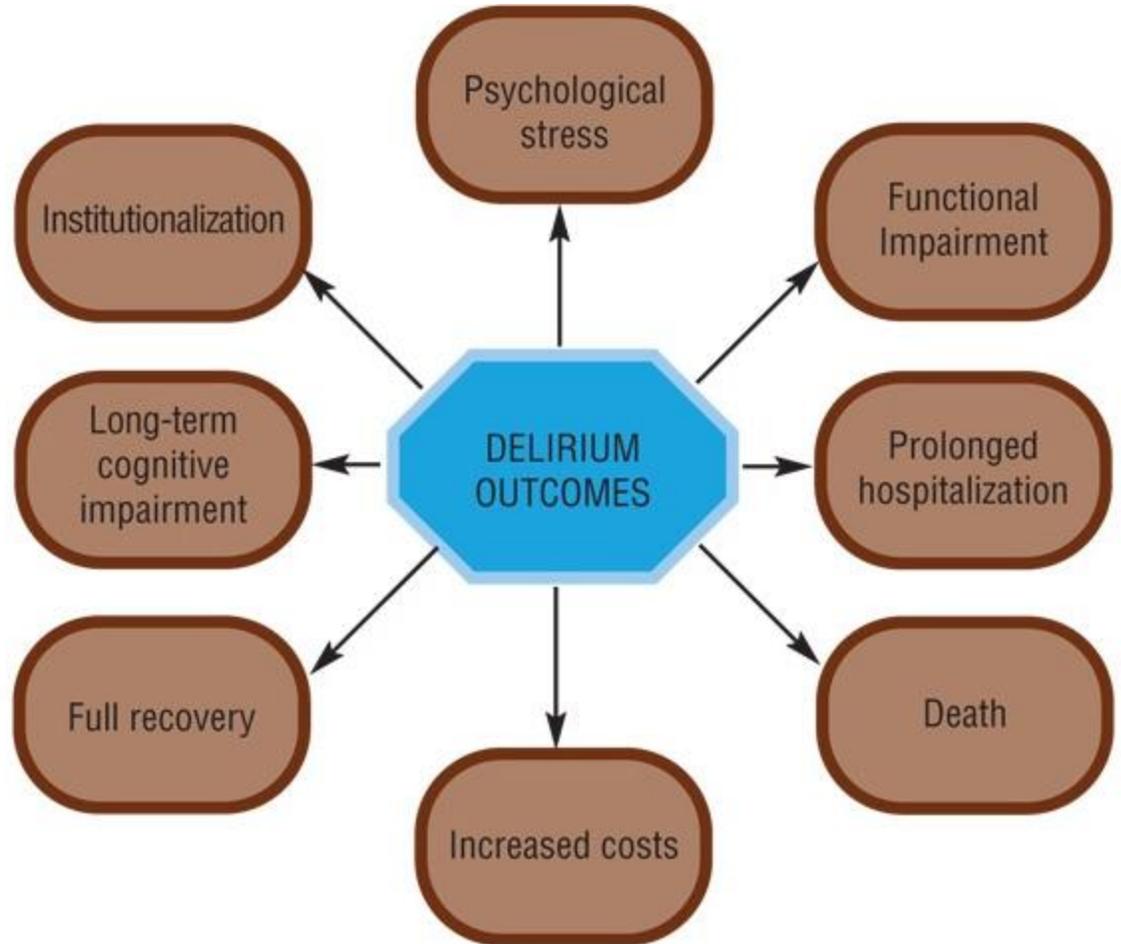
Neuroimaging studies: 42% reduction in CBF/ occipital and subcortical regions have greater decrease in CBF than other regions.

SPECT: frontal and parietal cerebral perfusion abnormalities occur in



Outcome

Delirium can result from multiple etiologies, and outcome is usually unfavorable. Delirium may lead to aspiration pneumonia, inadequate fluid intake, physical injury, permanent cognitive impairment, and electrolyte imbalance. outcome depends on the severity of delirium.



Delirium

Neither DSM-5 nor ICD-10 includes a definition of delirium specific to pediatrics.

With additional diagnostic tools, Pediatric delirium comprises 10% of all pediatric consultation-liaison consults, occurs in up to 29% of critically ill children, and is a marker of serious illness, with an associated mortality rate of 20%.

Timely recognition and treatment of pediatric delirium is necessary because the hypermetabolic state associated with delirium may **impair recovery** from critical illness, agitated behaviors associated with hyperactive delirium **impede care**, and the **psychological effects may be traumatic**.

clinical subtypes of delirium

Based on :arousal disturbance and psychomotor behavior

Hyperactive: hyperaroused, hyperalert, agitated, positive symptoms/ classic form

Hypoactive: hypoaroused, hypoalert, lethargic / quiet form/ miss/poor prognosis.

Mixed: alternating features of hyperactive and hypoactive types

In adults, hyperactive delirium is more common. In contrast, about half of pediatric patients are described as hypoactive, about half as mixed, and less than 10% are classified hyperactive.

Risk factors for developing pediatric delirium

younger age, male gender, preexisting cognitive impairment or developmental delay, previous delirium, positive family history of delirium, and preexisting emotional and behavioral problems, physical restraints, high noise levels, poor lighting, frequent staff changes, and disease entities with high mortality risk are important.

Diagnosis challenges

Remains vastly underdiagnosed both pediatric and psychiatric teams.

Challenges: communication limitations / symptoms can be subtle/ depending on developmental stage / complicated by developmental variability / Involvement of the caregiver, who may not be easily accessible, is necessary to make a diagnosis / many of the symptoms used to make a diagnosis of pediatric delirium overlap with a number of other conditions, such as pain, distress, or drug withdrawal.

Diagnosis

Delirium rating scales: The Pediatric Anesthesia Emergence Delirium Scale, the Pediatric Confusion Assessment Method for the ICU, the Cornell Assessment of Pediatric Delirium, and the Sophia Observation Withdrawal Symptoms-Pediatric Delirium Scale comprise the four validated delirium screening tools for children. there is no clear “best” tool.

The role of adjunctive tests remains limited: EEG shows diffuse slowing in only 65%–86% of pediatric cases / A number of candidate biomarkers, including hemoglobin-beta, S100 calcium-binding protein B, and IL-6 / however, they are not routinely used to make the diagnosis.

Thus, pediatric delirium fundamentally remains a clinical diagnosis.

Clinical Characteristics Of Pediatric Delirium

The diagnosis of delirium in pediatric patients focuses more on behavioral changes rather than cognitive impairment as in adults. Delirium is frequently preceded by “sickness behavior” with reduced appetite, fatigue, sleep disturbance, loss of interest, isolation, and exaggerated responses to pain.

Delirium is usually diagnosed within the first few days of admission to the PICU. Its prevalence increases with PICU stays of 6 days or longer; mechanical ventilation; need for physical restraints; use of benzodiazepines, narcotics, vasopressors, or antiepileptics; or if the patient is younger, no older than 5 years old

Clinical Characteristics Of Pediatric Delirium

In a preverbal child: forgo formal bedside tests of attention and instead assess inattentiveness by observing poor eye contact or difficulty with engagement. Caregiver involvement can prove very helpful in making this diagnosis.

Prominent features: irritability, affective lability, agitation, sleep-wake disturbance, and fluctuations of symptoms.

In contrast, delusions, hallucinations, speech disturbances, and memory deficits are less commonly seen in children.

Unique features: developmental regression with loss of previously acquired skills, inability of the usual caregiver to console the child, and reduced eye contact with the usual caregiver. **“inconsolable child” as a red flag for delirium.**

Sequelae of delirium

Unlike in adults, research has not yet shown that an episode of pediatric delirium increases mortality independently of illness severity.

Increased length of hospital stay.

one-third discharged from a PICU criteria for PTSD 3 months after discharge.

In adult delirium can negative long-term neurocognitive effects; however, it remains unclear whether this holds true for children.

Sequelae of delirium

The postintensive care syndrome: new or worsening problems in physical, cognitive, or mental health status after a critical illness which persist beyond the acute hospitalization.

Risk factors for developing the syndrome include younger age, lower socioeconomic status, increased number of invasive procedures or interventions, type of illness, and increased benzodiazepine and narcotic administration. Postintensive care syndrome in children often resolves over time.

An episode of delirium increases the risk for subsequent delirium, anxiety, depression, delusional memories, and posttraumatic stress disorder. The longer the duration of delirium, the more severe the subsequent cognitive and memory problems.

Management

Firstly, all delirious patients should undergo a thorough assessment to identify the underlying cause of delirium, with special attention to the three most common causes of delirium in children: infection, medication-related factors, and autoimmune-related factors. The most common deliriogenic medications include anticholinergic agents, benzodiazepines, and opioids. These medications should be minimized, substituted, or tapered as medically appropriate.

Secondly, supportive care in delirium includes addressing volume and nutritional status, early mobilization, and deep venous thrombosis prophylaxis.

Finally, delirium symptoms should be managed as they arise. Behavioral strategies can include frequent presence of the caregiver, having a familiar toy or photographs available, avoiding physical restraints, and normalizing the sleep-wake cycle.

Management

Generally, pharmacologic intervention is recommended when the patient is distressed by the symptoms, the symptoms impose a safety concern, or they are impeding advancement of medical care.

Generally, while atypical antipsychotics are favored over typical antipsychotics in children, both are used, and no formal guidelines exist to guide antipsychotic selection. Intramuscular administration is generally avoided in pediatric patients

Management

Benzodiazepines have been shown to precipitate or prolong delirium and agitation, especially in children. They increase hospital length of stay and duration of intubation in the ICU and will exacerbate confusion, agitation, and disordered sleep.

particular subtype of delirium may predict a differential response to antipsychotics, with hyperactive delirium being more responsive to haloperidol and mixed/hypoactive delirium being more responsive to risperidone.

Thank you

