Approach to Altered Mental Status in the Pediatric Patient

Guideline developed by Elizabeth Storm, MD, in collaboration with the ANGELS Team. Last revised by Elizabeth Storm, MD, November 26, 2018.

Definitions, Assessment, and Diagnosis

Definitions

- Consciousness: The quality or state of being aware especially of something within oneself; the state or fact of being conscious to an external object, state, or fact
- Alter: To make or become different
- Altered level of consciousness: Not a disease itself but rather a state caused by an underlying disease process
- Coma: State of complete unawareness and unresponsiveness (unconsciousness) and can be modified to deep or light
- Lethargy: Depressed consciousness resembling deep sleep; patient can be aroused but quickly returns to previous state
- Stuporous/Obtunded: Patient not totally asleep but demonstrates diminished responses to external stimuli

Assessment

- Patient history
  - History of altered mental status
    - Acute versus insidious onset
    - Duration of symptoms
    - Family members with similar symptoms
  - Current infectious symptoms and infectious exposures
  - Trauma
    - Accidental versus non-accidental trauma should be considered.

History may not be available.
    - Pertinent past medical history
        - Seizure disorder
        - Ventriculoperitoneal shunt
        - Previous traumatic brain injury
        - Cerebral palsy
        - Psychiatric history
    - Medications
    - Possible toxic ingestions or exposures
- Complete physical exam
    - Glasgow coma scale: Modified for preverbal child
    - Complete neurological testing (age-appropriate): Formal mental status exam may be difficult.

Management

Etiology

Determine etiology if not obvious by history

- Bedside glucose
- Labs
    - Electrolytes, complete blood count, liver function tests, blood gas, coagulation studies, urinalysis, urine pregnancy test
    - Bacterial and/or viral cultures and rapid antigens (flu, monospot)
    - Cerebral spinal fluid studies
        - Toxicology screen
            - Drugs of abuse
            - Alcohol level
            - Acetaminophen, aspirin, lithium, tricyclic antidepressants
            - Anticonvulsant levels
            - Serum osmolality
        - Radiographic studies
            - CT of head to evaluate for evidence of trauma, cerebral edema, bleeding, cerebral spinal fluid shunt malfunction, tumor, and/or mass effect and will need IV contrast if suspect empyema or abscess
            - May need confirmatory or additional imaging by magnetic resonance imaging (MRI)
            - Abdominal ultrasound to rule out intussuception
        - Electroencephalogram: BRAVO or continuous EEG if concerned for status epilepticus
        - Near Infrared Spectroscopy (NIRS) monitoring if available

Treatment

Dependent upon etiology of altered mental status

- Airway protection as indicated (Glasgow Coma Scale < 8): Rapid-sequence intubation with neuroprotective medications (etomidate, lidocaine, etc.)
- Correction of electrolyte abnormalities
    - Glucose infusion

    - Fluid resuscitation
- Antibiotics until cultures negative for 48 hours
- Cessation of seizures: Benzodiazepine or loading with levetiracetam, fosphenytoin, phenobarbital, etc.
- Available antidotes for any suspected or confirmed ingestion
    - Naloxone for opiates or clonidine
    - Flumazenil for benzodiazepine: Contraindicated if history of or suspected seizure or any patient on chronic benzodiazepine therapy
- Neurosurgical consultation/intervention: Immediately treat evidence of increased intracranial pressure
    - Airway protection
    - Mannitol or hypertonic saline infusion
    - Placement of bolt or external ventricular drain

Referrals to Arkansas Children's Hospital or other Tertiary Center

- Etiology unknown despite investigation
- Investigation limited by local resources (unable to get CT, MRI, EEG, etc.)
- Need for admission and primary care physician or hospital bed not available
- Need for pediatric subspecialty consult not locally available (i.e. neurosurgery, neurology, pharmacology/toxicology, psychiatry)
- Need for intensive care monitoring (ventilator management, intracranial pressure measurement)
- Need for continuous EEG monitoring or NIRS
- Concern for child maltreatment syndrome
- Persistent altered mental status despite appropriate intervention
- Referring or primary care physician uncomfortable managing patient at local hospital

Common Errors in Management of Altered Mental Status

- Not considering trauma (especially non-accidental) because no history
- Disregarding toxic ingestion as cause because drug screen negative
- Not establishing airway protection
- Not sedating paralyzed patients on ventilators
- Hyperventilating intubated patients

This guideline was developed to improve health care access in Arkansas and to aid health care providers in making decisions about appropriate patient care. The needs of the individual patient, resources available, and limitations unique to the institution or type of practice may warrant variations.

References

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