Pediatric Medical Emergencies

Presented by:
Steven Jones, NREMT-P
Fever

- **NOT** a disease, it’s a sign of disease
- Severity is **NOT** indication of severity of underlying disease
- **Usually** good
Fever

- Treat child, not thermometer
  - How do you know he has a fever?
  - How sick does he look?
  - How long has he been listless, weak?
  - Will he tolerate being held on mom’s shoulder?
  - Does he cry even when consoled?
Fever

- Educate parents
  - Tempra, Tylenol
  - Avoid aspirin
  - Sponge with water at 96 - 97°F
    - Do not say “tepid” or “lukewarm”
    - Do not leave child unattended
Fever

- Educate parents
  - Do NOT
    - Use ice water
    - “Bundle”
    - Use alcohol rubs
    - Use tap water enemas
Fever

- Emergency if:
  - >104°F in any child
  - >101°F in infant < 3 months old
Septic Shock

- Peripheral hypoperfusion due to septicemia (blood infection)
- Most common in young infants, debilitated children
Septic Shock

- Pathophysiology
  - Severe peripheral vasodilatation
  - Fluid loss from vessels to interstitial space
Septic Shock

• Signs/Symptoms
  • “Warm” shock
    • Tachycardia, full pulses
    • Slow capillary refill
    • Fever
    • Flushed skin
Septic Shock

- Signs/Symptoms
  - “Cold” shock
    - Tachycardia, weak pulses
    - Slow capillary refill
    - Cool, pale, mottled skin

“COLD” Shock has 90% Mortality Rate
Febrile infant + Won’t tolerate being held to shoulder = Septic Shock
Septic Shock

- **Management**
  - 100% oxygen
  - NaCl - 20cc/kg bolus
    - Fill dilated vascular space
    - Prevent onset of “cold” shock
Meningitis

- Inflammation of meninges
  - Increased CSF production
  - Cerebral /meningeal edema
  - Increased intracranial pressure
Meningitis

• Signs/Symptoms: Older Children
  • Fever
  • Headache
  • Stiff neck (can’t touch chin to chest)
  • Decreased LOC
  • Seizures
Meningitis

- **Signs/Symptoms: Infants**
  - Difficulty feeding
  - Irritability
  - High-pitched cry
  - Bulging fontanel
  - Classic meningeal signs possibly absent
Meningococcemia

- **Meningococcemia** - an acute and potentially life-threatening infection of the bloodstream that commonly leads to inflammation of the blood vessels (vasculitis). Meningococcemia is transmitted from person to person via respiratory secretions.

- **Signs / Symptoms**
  - Petechial rash
  - Septic shock
  - Disseminated Intravascular Coagulation (DIC)
Reyes’ Syndrome

- **Reyes’ Syndrome** - is a potentially fatal disease that causes numerous detrimental effects to many organs, especially the brain and liver, as well as causing hypoglycemia.

- **Non-communicable**

- **Affects ages 2 -19**

- **Mostly toddlers, pre-schoolers**
Reyes’ Syndrome

• Pathophysiology
  • Dysfunction of hepatic urea cycle enzymes
  • Increased protein breakdown leading to rise in blood ammonia levels
  • Diffuse cerebral edema
Reyes’ Syndrome

• History
  • Previously healthy child
  • Recovering from viral illness
  • Frequent influenza or recent chicken pox
  • Frequently received aspirin during illness
Reyes’ Syndrome

• Signs/Symptoms
  • Prolonged, violent vomiting
  • Varying degrees of personality change
  • Unusual behavior
  • Irritability, drowsiness
History of vomiting + Altered LOC + Recovering from virus = Reyes’ Syndrome
Crankiness in infant + Recovering from virus = Reye’s Syndrome
Reyes’ Syndrome

- Management
  - Avoid overstimulation
  - IV’s at TKO
Seizures

- Second most common pediatric complaint after fever
- Can result from same causes as adult seizures
Seizures

- Pedi seizures can also result from fever
  - Most common from 6 months to 3 years
  - Caused by rapid rise in body temperature
  - Short-lived
  - Does not recur during that illness
Seizures

- Potential dangers
  - Aspiration
  - Trauma
  - Missed diagnosis
Seizures

“Febrile seizure” diagnosis risky in field
Seizures

• History
  • Previous seizures?
  • Previous febrile seizures?
  • Number of seizures this episode?
  • What did seizure look like?
Seizures

- History
  - Remote, recent head trauma?
  - Diabetes?
  - Headache, stiff neck?
  - Petechial rash?
Seizures

- History
  - Possible ingestion?
  - Medications?
Seizures

- Physical exam
  - ABC’s
  - Neurological exam
  - Signs of injury?
  - Signs of dehydration?
  - Rash, stiff neck?
  - Bulging, depressed anterior fontanel?
Seizures

• Management--if actively seizing:
  • Place on floor away from furniture
  • Position on side
  • Prevent injury
  • Do NOT restrain
  • Do NOT force anything between teeth
Seizures

- Management—following seizure
  - Check ABC’s, suction PRN
  - Assure good oxygenation, ventilation
  - Vascular access
  - Check blood glucose
    - if < 80, give $D_{25}$
      - 0.5gm/kg
  - If febrile, remove excess clothing, sponge with water to cool patient.
Status Epilepticus

- Diazepam:
  - 0.2 mg/kg q 5min IV or rectal to 20mg max

- Lorazepam – if no IV present
  - 0.1mg/kg IM
Status Epilepticus

- Administer diazepam slowly
- Anticipate respiratory arrest, hypotension
- Rectal route is alternative when vascular access cannot be obtained
Most Common Cause of Seizure Deaths = Anoxia
Hypoglycemia

- More common than in adults, especially in newborns
- Signs/symptoms may mimic hypoxia
Hypoglycemia

- Check blood glucose in any child with:
  - Seizures
  - Decreased LOC
  - Severe dehydration
  - Known hypoglycemia or diabetes
  - Pallor, sweating, tachycardia, tremors
Hypoglycemia

- **Management**
  - Oral sugar if tolerated
  - 0.5gm/kg D_{25} - if oral sugar not possible
  - Consider Glucagon 1 mg IV or IM

- **Reassess every 20 - 30 minutes**
Diabetes Mellitus

- Typically insulin-dependent
- Complications
  - Hypoglycemia
  - Hyperglycemia, DKA
Diabetes Mellitus

- DKA therapy same as for severe dehydration
- Not every diabetic is known diabetic
- Every diabetic must have first hyperglycemic episode
Coma

- Disturbance in consciousness; patient unresponsive to stimuli
- Causes
  - Metabolic
  - Structural
Coma

- Metabolic causes:
  - Anoxia
  - Drug Toxicity
  - Hypoglycemia
  - Epilepsy
  - DKA
  - Reyes’ Syndrome
  - Infections
  - Increased ICP (Edema)
Coma

- Structural causes:
  - Trauma
  - Tumor
  - CVA
Coma
Control ABC’s before worrying about cause!!
Coma

- Airway/Breathing
  - All patients with decreased LOC receive oxygen!!
  - Evaluate for ineffective breathing patterns
Coma

- **Circulation**
  - Control bleeding
  - Give fluid boluses for Hypovolemia

- **Disability**
  - AVPU, pupils
  - Check blood glucose
Coma

- Management
  - Support ABC’s
  - 0.5mg/kg D25 glucose < 80 mg/dL
  - Narcan 0.1 mg/kg IV/IM/SQ/ET
  - Elevate head if C-spine injury not suspected and patient not in shock
  - Rapid transport
  - Reassess, Reassess, Reassess
Poisoning

- Incidence
  - Accidental: 75% children < 5 years old
  - Overdose: School-age, adolescents
Poisoning

- Assessment
  - Remove to safe environment
  - Control airway
  - Support breathing: 100% O2
  - Circulation - vasodilatation, decreasing myocardial tone, hypoxia
  - Blood glucose
Poisoning

- History
  - What?
  - When?
  - How much?
  - Vomiting? Coughing? Seizures? Altered LOC?
Poisoning

- Management
  - Support ABC’s
  - Consider Narcan
  - Transport samples
  - Consult poison control
  - Treat patient, not poison!!
Near-Drowning

- A leading cause of childhood death
- Two major groups
  - Toddlers
  - Adolescents
Near-Drowning

- **Pathophysiology**
  - Hypoxia
  - Acidosis
  - Hypothermia
  - Aspiration, pulmonary edema, atelectasis
Near-Drowning

- **Management**
  - Protect rescuers
  - Assume C-spine injury
  - 100% oxygen
  - Decompress stomach early with gastric tube
Near-Drowning

Mammalian Diving Reflex

Submerging the face into water causes the mammalian diving reflex, which is found in all mammals. This reflex puts the body into energy saving modus to maximize the time that can be spent under water. The effect of this reflex is larger in cold water than in warm water, and includes three factors:

- Bradycardia - of up to 50% in humans.
- Peripheral vasoconstriction
- Blood shift - the shifting of blood to the thoracic cavity

Thus both a conscious and an unconscious person can survive longer without oxygen under water than in a comparable situation on dry land.
Near-Drowning

● Management
  • Remember mammalian diving reflex!!
  • Think about underlying causes
    • Child abuse
  • All near-drownings are transported regardless of how good they look!!