TRAUMATIC BRAIN INJURY (GCS < 13)

EMERGENCY DEPARTMENT

CLINICAL PRACTICE GUIDELINE

Maintain C spine precautions
Keep head midline
Keep HOB at 30 degrees
Consider Reverse Trendelenburg if T&L spine precautions

GCS ≤ 8 or Signs of increased ICP

Airway Management

Rapid Sequence Intubation (RSI):
Refer to Emergency Medication Drug Sheets for weight-based dosing
• Atropine for bradycardia
  ○ Consider Lidocaine (optional)
• Etomidate if ≥ 3 months old OR
  ○ Versed & Fentanyl
• Rocuronium

Ventilation:
• Monitor CO₂ with ETCO₂
  • Maintain CO₂ of 35-45
  • If Signs/Symptoms of Herniation maintain CO₂ of 30-35

Diagnosis

• Head CT scan w/o contrast
• Neurosurgery Consult

Labs:
• CBC
• Chem 7
• DIC Panel
• Blood Gas

Interventions to Manage Increased ICP

• Hyperosmolar Therapy
  • 3% Saline, 5ml/kg bolus over 15 min
• Temperature:
  • Keep normo-thermic 36 – 37.5 degrees Centigrade
• BP/Fluids: Avoid hypotension, maintain CPP threshold of 40 mm Hg for Infants & 50 mm Hg for > 1 year if ICP is monitored
  • NS bolus as clinically indicated otherwise NS at a maintenance rate,
  • No dextrose (monitor glucose)
  • If pressors indicated, use Dopamine or Norepinephrine
• Consider Seizure Prophylaxis:
  • < 1 year Phenobarbital 20 mg/kg loading dose
  • ≥ 1 year Keppra 20mg/kg loading dose
• Sedation/Paralysis: Versed/Fentanyl drips, Rocuronium PRN (avoid PRN Pentobarbital)
• Continuous Reassessment

Evaluate:

• Oxygenation: Avoid Hypoxemia
• BP: Avoid Hypotension
• Maintain Euvolemic State
• Monitor HR
• Labs (CBC, Chem 7, DIC panel)
• Changes in neuro exam

Interventions

• Administer Oxygen to keep O₂ Sats ≥ 94%
• NS fluid bolus to treat Hypotension or at Maintenance Rate

Unable to maintain airway or oxygenation, GCS ≤ 8 or signs of increased ICP*

NO

Diagnosis

• Head CT scan w/o contrast
• Neurosurgery Consult

Admit to PICU Under Neurosurgery or Trauma Service

Positive CT?

NO

Consider observing in ED. If no improvement or concerns, admit to Neurosurgery

YES

Admit to Neurosurgery or Trauma Service

*Signs of Increased ICP

• Pupil Changes
• Bradycardia
• Hypertension
• Irregular Respirations

NO

GCS 9-12

SYMPTOMS

Evaluate:

Admit to PICU if GCS < 8 or Signs of increased ICP

Admit to Neurosurgery or Trauma Service

Developed through the efforts of Children's Healthcare of Atlanta and physicians on Children’s medical staff in the interest of advancing pediatric healthcare. This is a general guideline and does not represent a professional care standard governing providers’ obligation to patients. Ultimately the patient’s physician must determine the most appropriate care.

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