Protocol for Pediatric Acute Liver Failure Care

Ramathibodi Poison Center
Division of Pediatric Gastroenterology
Division of Pediatric Critical Care Medicine
Faculty of Medicine Ramathibodi Hospital, Mahidol University

1. Admit Intensive care unit and investigations for causes (especially the treatable causes) should be initiated upon arrival.

2. Respiratory system

2.1 Airway management: Endotracheal intubation if significant altered mental status

2.2 Mechanical ventilator adjustment for balance of neuroprotective strategies (keep normocapnia and avoid hypoxemia). Sustained hyperventilation should be avoided.

2.3 If ARDS is diagnosed, low tidal volume (5 – 8 ml/kg predicted body weight) with moderately elevated PEEP level for maintaining normal oxygenation and hemodynamic response

3. Cardiovascular system

3.1 Adequate fluid management, restricted total fluid intake to 80% to 90% of the maintenance fluid

3.2 Vasopressor if indicated

3.3 Echocardiography for assess both systolic and diastolic function if available

3.4 If fluid refractory and not responsive to vasopressor: corticosteroid supplementation for relative adrenal insufficiency

4. Nutrition, electrolyte, endocrine and kidney

4.1 Serial BUN, Cr, Electrolyte, Ca, Mg, P, lactate level, ammonia level, blood sugar every 4 – 6 hours

4.2 Monitor intake and urine output every 4-6 hours (depend on severity)

4.3 Nutrition (Enteral is the first choice unless contraindication): Total caloric may be increase by about 20% of total caloric requirement, protein 0.5 - 1 g/kg/day, glucose with GIR of 4-6 mg/kg/minute and titrate to keep BS 90 – 120 mg/dL, sodium 2 – 3 mEq/kg/day, BCAA is not found to benefit

4.4 Avoid IV radiocontrast, over diuresis or nephrotoxic agent, correct prerenal azotemia

4.5 Renal replacement therapy if indicated (e.g., volume overload, severe electrolyte imbalance that cannot be corrected with medications).

5. Infection and SIRS: If there is some evidence of infection, septic work up and empirical antibiotics should be considered

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6. Hematologic

6.1 Bleeding precaution

6.2 Plasma (FFP or others) transfusion before invasive procedure or active bleeding

6.3 Platelet transfusion in who with platelet count < 10,000 or bleeding with platelet count < 50,000

7. Hepatic encephalopathy and intracranial hypertension

7.1 Keep head in midline position with elevated 20 – 30 degree, hyperventilation should be done but sustained hyperventilation should be avoided.

7.2 Neuroimaging should be done for altered mental status in which intracranial bleeding cannot be excluded.

7.3 If signs of increased intracranial pressure or impending brain herniation are shown, 3% NaCl or mannitol should be given.

7.4 Lactulose 0.5-1 mL/kg per dose up to 30-45 mL/dose; adjust to produce 2–4 stools/day.

7.5 Temperature control: keep targeted temperature management

7.6 Seizure control and sedation should be given only if needed and considered a drug with minimal hepatic metabolism

7.7 Liver support system: consult nephrologist/intensivist to consider for high-volume plasma exchange (HVPE) or CRRT or single plasma albumin dialysis (SPAD), any if available but these strategies should NOT delay the transfer for liver transplantation.

8. Referral system for liver transplantation (Ramathibodi Hospital and King Chulalongkorn Memorial Hospital)

8.1 Telephone consultation by each referral system and record referral form

8.2 Modes of transfer

- Aeromedical transport: Contact via emergency department
- If aeromedical system has limitation or risk: Land transportation