Randomized controlled trial comparing cerebral perfusion pressure (CPP) targeted therapy versus intracranial pressure (ICP) targeted therapy for raised ICP due to acute central nervous system infections in children

Appendix – 1

Appendix-1: Intervention protocol in the two study groups

CPP targeted protocol	**ICP targeted protocol**
Goal: CPP ≥ 60 mm Hg.	**Goal**: ICP < 20 mm Hg.
Steps: **1.** If MABP < 90th centile, dopamine was started at 10–20 microgram/kg/min to achieve higher MABP between 90-95th percentile. If CPP <60 mm Hg, and MABP was still < 95th centile then nor-epinephrine was given at 0.05–0.4 microgram/kg/min. **2**. If MABP > 95th percentile and CPP < 60 mm Hg and ICP >20 mm Hg then acute hyperventilation was given for few minutes and EITHER, mannitol (0.25–1 gm/kg/dose by infusion over 20 minutes) was administered and repeated every 4 hours if required OR 3% saline (10 ml/kg bolus over 30 minutes followed by 0.1–1 ml/kg/hr at	**Steps:** **1.** Minimum MABP acceptable was above 5th centile. If low, vasopressor were used to increase it. **2.** If ICP > 20 mm Hg, acute hyperventilation was used to decreased ICP < 20 mm Hg for few minutes and EITHER, 20% mannitol (0.25–1 g/kg/dose by infusion over 20 minutes) was administered and repeated every 4 hours if required OR 3% saline (10 ml/kg bolus over 30 minutes followed by 0.1–1 ml/kg/hour infusion at sliding scale infusion) was used.

sliding scale infusion) was used.	

1. After mannitol infusion urine volume in excess of 2 ml/kg/hr was replaced with isotonic fluids with extend to maintain stable hemodynamics.
2. Serum osmolarity (mOsmol/L) and Osmolar gap (OG) was measured every 6 hourly and before–after osmotherapy bolus. Maximum serum osmolarity tolerated was 320 mOsmol/L in case of mannitol and 360 mOsmol/L in case of 3% saline infusion.
3. Serum sodium was measured every 6 hourly and before–after osmotherapy bolus. Maximum serum sodium tolerated was 160 mEq/L.
4. During hyperventilation lowest tolerated $PaCO_2$ and/or $EtCO_2$ was ≈ 30 to 32 mmHg.
5. If raised ICP remained refractory barbiturate coma (thiopentone 3 mg/kg loading followed by 1–5 mg/kg/hr at sliding scale infusion and /or neuromuscular paralysis (pancuronium 0.03–0.1 or vecuronium 0.01–0.1 or atracurium 0.6–1.2 mg/kg/hr) was used.