Traumatic Brain Injury (TBI) Updates

Author:

Stanlies D'Souza MD, FRCA, FCARCSI

Associate Professor in Anesthesiology,

University of Massachusetts Medical School (UMASS)

Adjunct Associate Professor in Anesthesiology

Tufts University School of Medicine

Division Chief, Neuroanesthesiology

UMMS-Baystate

Member, Neuroanesthesia committee,

The American Society of Anesthesiology (ASA)

Email: stanlies.d'souza@baystatehealth.org

Content outline

Pathophysiology after TBI:

1. Cerebral autoregulation curve following global TBI
2. Blood flow changes after global cerebral injury after TBI
3. Blood Brain Integrity after TBI
4. Sympathetic discharge and hyperadrenergic state after TBI
5. Release of inflammatory mediators after TBI
6. Systemic involvement of heart and lungs after TBI
7. Management of hypertension: Pharmacological agents of choice.

Target Blood Pressure after TBI

1. Definition of hypotension in Traumatic Brain Injury (TBI) as per recent Brain Trauma Foundation(BTF) guidelines
2. Why BTF raised the parameter of systolic blood pressure in the definition of hypotension?
3. Target cerebral perfusion pressure (CPP) targets in TBI: Why BTF revised the targets for TBI in recent guidelines.

4. The management of CPP: CPP targets for emergency craniotomy in the absence of a intra- ventricular catheter for ICP measurement

PaCO2 Management in a patient with TBI:

1. Target PaCO2 after TBI as per recent guideline
2. Importance of PaCO2 and end-tidal CO2 gradient estimation(physiological dead space estimation) at frequent interval to guide ventilation strategy.

Hyperosmolar agents in TBI

Mannitol vs Hypertonic Saline as per recent guideline on TBI based on neurological outcome measures

Anti- seizure prophylaxis following TBI

Role Anti-seizure prophylaxis as per current evidence.

Elective Decompressive craniectomy

Role of elective decompressive craniectomy as per DECRA (2012) and RESCUEICP(2016) trials: review of the literature

Anesthesia management for emergency craniotomy

1. Role of total intravenous anesthesia(TIVA) vs. volatile inhalational anesthetic agents
2. Limitation of minimum alveolar concentration(MAC) of volatile anesthetic agents as per current concepts
3. Role of remifentanil
4. Role of dexmeditomidine