

Fat Embolism

Anesthetic Pearls: Anesthetic Implications and Management of Fat Embolism

Diagnosis and Treatment

Fat embolism occurs within 48 hours after traumatic injury in 10-15% of patients. Most commonly it is associated with long bone or pelvic fractures. Fat embolism can present with symptoms ranging from slight dyspnea to frank coma. Associated with males 20-30 years of age status-post traumatic injury with hypovolemic shock having intermedullary instrumentation. Also associated with total hip replacement and bilateral total knee replacement using cement fixation.

Signs and symptoms

1. Increase in temp (can be up to 42° C / 108° F)
2. Tachycardia
3. Tachypnea
4. Hypoxic (PaO₂ of 60 mmHg on FiO₂ of 40%)

Effects of Fat Embolism

- A. Lung: hypoxia, tachypnea, ARDS (injury to lung is associated with severity of trauma to chest)
- B. CNS dysfunction (drowsy / confusion / agitation), Seizures, Coma – secondary to ARDS or embolism to brain

Other

1. Tachycardia
2. Increased Temperature
3. Petechiae - can be transient on neck / shoulders / chest / axilla / conjunctiva
4. Thrombocytopenia - may be secondary to trauma
5. Coagulopathy - rare DIC, may be secondary to trauma
6. Fat globules in urine & sputum
7. Increased erythrocyte sedimentation rate
8. Retinal emboli

Treatment

- A. Prevention of emboli / embolic sequelea
- B. Early repair of fracture simplifies care and decreases incidence of ARDS
- C. Reversal of aggravating factors and acute respiratory support
- D. Corticosteroids - controversial

***** Remember this is not benign. Mortality is 10-20%.

Theory

Mechanical – fractures cause fat droplets to travel intravenously to lung therefore leading to micro emboli

Biochemical – toxic / free fatty acids travel to pneumocytes causing ARDS causing increased catechols which leads to increased fatty acids to pneumocytes therefore worsening the ARDS, repeating vicious cycle.

Biochemical / obstruction – some chemical event leads to a change in lipid solubility which leads to coalescence of lipids and emboli.

