Anaesthetic Management of a Patient with Severe Cardiomyopathy for Intracranial Aneurysm Clipping

Dr. Madhushri Jethliya1, Dr. Hemangi Karnik2, Dr. Deepali Thakur3

LTMMC & LTMGH, SION, Mumbai, Maharashtra, India

1. Introduction

1) Ruptured Intracranial aneurysm →Subarachnoid Hemorrhage.
2) Subarachnoid Hemorrhage (SAH) Induced Cardiac changes are Myocardial Infarction (47%), Arrhythmia (63%), CCF (31%) [1]
3) Cause: stress induced catecholamine release following SAH.
4) Risk of death in those having Cardiomyopathy is 10 times higher. [1]
5) Takotsubo type of cardiomyopathy with apical ballooning seen many times with SAH occurring because of aneurysmal rupture.
6) Anaesthesia is very challenging –
   • Avoiding arrhythmia, myocardial ischemia as well as aggregation of myocardial dysfunction
   • Fine balance of hemodynamic parameters needed for procedure.

2. Case Report

40 y/F: c/o giddiness & fall - 4 days ago
• H/o LOC + multiple vomiting
• Right vertebral A aneurysm +SAH for aneurysm clipping.
• Detected HT, on Nimodipine

GC –Fair, conscious, Pulse rate: 88 bpm, BP: 140/90 mm Hg
GCS – 4/5/6, No deficits
CVS – S1S2+ No murmur
RS - AEBE Clear
ECG: T Wave Inversion in all Leads
2D ECHO: Hypertensive Heart Disease with concentric LVH,
Global LV Hypokinesia, EF: 25 - 30%
Other investigations - WNL

Anaesthesia Management:
• General Endotracheal Anaesthesia, Prone Position
• Monitoring: Standard Noninvasive Monitoring, NMT
• Preinduction Arterial line (Radial) and IJV secured & transduced. IBP, PPV & CVP monitored.
• Transthoracic echocardiography: Pre & Post induction
• Premedication - Midazolam 1 mg & Fentanyl 1µg/kg
• Induction: Etomidate0.2mg/kg. Vecuronium 0.1 mg/kg.
• Intubation Response: Inj. Esmolol 0.2mg/kg
• Post induction - Further reduction in LV contractility with visible apical ballooning

Maintenance: O2+Air+Sevoflurane+Vecuronium.
Scalp Nerve Block
• Fluid management - PPV & CVP guided
• Prevention of hypotension - phenylephrine, ephedrine.
• Extubation Response: Esmolol & NTG spray kept ready
• Patient reversed & extubated, uneventful recovery.
• Post operative day 3: 2D echo showed Increased cardiac contractility & improved EF.

3. Discussion

SAH induced cardiomyopathy

1) Prevention of triggering events Psychological stress – anxiolysis
   • Adequate anaesthesia before surgical stimulation
   • Brief laryngoscopy
   • Use of Regional techniques
   • Opioids and Dexmedetomidine
   • Smooth emergence &extubation
   • Optimal post op analgesia
2) Perioperative use of β blockers
3) Short term anti coagulation

4. Conclusion

• Neurogenic cardiomyopathy causing secondary brain damage can be disastrous.
• Early identification of SAH induced cardiomyopathy - Screening and monitoring of CV functions
• Protection of the patient by vigilant monitoring, careful titrated anaesthesia throughout perioperative period

References


