International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

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

Dr. Madhushri Jethliya[1], Dr. Hemangi Karnik[2], Dr. Deepali Thakur[3]

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 arrythmia, 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 – E4V5M6, 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: Etomidate**0.2mg/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: O_2+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

[1] Maile MD, Mathis MR, Jewell ES *et al.* Identification of intraoperative management strategies that have a differential effect on patients with reduced left ventricular ejection fraction: a retrospective cohort study. *BMC Anesthesiol* **22**, 288 (2022).
[2] Hinkelbein, J., Mey, C., Brinker, G. *et al.* Case report of Tako - Tsubo cardiomyopathy associated with repetitive

anaesthesia in a female patient with Tako - Tsubo cardiomyopathy. *BMC Anesthesiol* **15**, 39 (2015).

[3] Muthachen NR, Sethuraman M. Anesthetic management of a patient with Takotsubo cardiomyopathy presenting for surgical clipping of intracranial aneurysm. J Anaesthesiol ClinPharmacol.2017 Oct - Dec; 33 (4): 547 - 548.

[4] Consales G1, Campiglia L, Michelagnoli G, Gallerani E, Rinaldi S, Del Pace S, et al. Acute left ventricular dysfunction due to Tako - tsubo syndrome after induction of general anesthesia. Minerva Anestesiol.2007; 73 (12): 655–8.

[5] Bounhoure JP, Galinier M, Lairez O, Massabuau P, Doazan JP, Marco I, Assoun B, Fondard O. Les cardiomyopathies de stress, unepathologiecardiaqued'actualité [Stress cardiomyopathy, a topical cardiac disorder]. Bull Acad Natl Med.2009 Apr; 193 (4): 895 - 904.

[6] Ahmadian A, Mizzi A, Banasiak M, Downes K, Camporesi EM, Thompson Sullebarger J, Vasan R, Mangar D, van Loveren HR, Agazzi S. Cardiac manifestations of subarachnoid hemorrhage. Heart Lung Vessel.2013; 5 (3): 168 - 78.