

Challenges and Strategies in Anaesthesia Management for Takayasu Arteritis with Severe Hypertension: A Case Study of a High - Risk Pregnancy

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Abstract: *Takayasu's arteritis (TA) is a rare, chronic progressive pan-endarteritis involving the aorta and its main branches. Anesthesia for patients with TA is complicated by severe uncontrolled hypertension, end-organ dysfunction, stenosis of major blood vessels. We present a 26-year-old woman, a known case of TA since childhood, who underwent coarctoplasty at the age of 13 years for emergency cesarean section. She was a chronic hypertensive, on tablet enalapril. During 1st trimester of pregnancy, she was admitted in view of raised Blood Pressure of 220/110 mmHg, so she was put on high doses of multiple antihypertensive drugs namely tablet Nicardia, Labetalol, Isosorbidedinitrate, Hydralazine, Prazosin, Clonidine and was advised termination of pregnancy but she took discharge against medical advice and came back for delivery at 37 weeks of pregnancy. Rheumatologist had started her on high dose steroids 45 mg and Azathioprine 50 mg. Her MRI angiography showed severe luminal narrowing of entire abdominal aorta, stenosis of celiac artery, proximal SMA and left renal artery stenosis. Her left kidney was small and shrunken. Her 2 D echo showed Hypertensive Heart Disease with concentric Left Ventricular Hypertrophy and grade 2 diastolic dysfunction. She had Cushingoidfacies due to chronic steroids. We successfully managed her under sequential spinal and epidural anesthesia.*

Keywords: Takayasu's disease, Hypertension, Anaesthesia, vascular stenosis, emergency LSCS

1. Introduction

Takayasu Arteritis (TA) is a rare, syndromic, granulomatous inflammatory vasculitis of unknown etiology, associated with HLABw52, autoimmunity, reproductive hormone, infections like Tuberculosis. Women of child bearing age are most commonly affected. The disease mainly affects the aorta & its branches.

2. Case Report

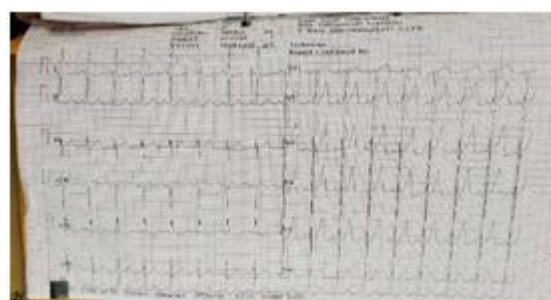
We present a 26-year-old primigravida with Type III TA who underwent coarctoplasty at the age of 13. She was a chronic hypertensive on tab Enalapril. She presented during her 1st trimester of pregnancy with raised Blood Pressure of 220/110 mmHg. She was put on a high dose of anti-hypertensive drugs namely tab. Nicardia, Labetalol, IsosorbideDinitrate, Hydralazine, Prazosin, Clonidine and was advised termination of pregnancy but she continued against medical advice. Rheumatologists started her on high dose steroids 45 mg and Azathioprine 50 mg which were the cause of her Cushingoidfacies. She presented at 37 weeks of gestation for emergency Lower Section Caesarean Section (LSCS). Preoperatively,

- Her peripheral pulses were palpable except for bilateral dorsalis pedis. Blood Pressure readings were RUE-100/70, LUE-190/70, RLE- 110/70, LLE- 120/70mmHg. Her mouth opening was 3 finger breadths and Mallampati-class 3.
- Systolic murmur was heard in the pulmonic area with a carotid bruit. Rest of the systemic examination was normal.

- Her hemogram, renal and liver function tests, and electrolytes were all within normal limits.

a) Aortogram-

- The mid and distal arch of aorta and proximal descending aorta showed mild luminal narrowing.
- The proximal parts of arch branches showed diffuse circumferential thickened intimo- medial complex without luminal narrowing.
- The entire abdominal aorta showed diffuse irregular asymmetric circumferential wall thickening, moderate to severe luminal narrowing. measuring 5 mm in the renal region.
- Moderate ostial stenosis of coeliac artery.
- Severe narrowing of the proximal part of SMA. Prominent arch of Riolan and artery of Drummond seen between coeliac artery, SMA and IMA - prominent.
- Left renal artery showed severe narrowing.
- Left kidney -small & shrunken.
- ECG-



Volume 12 Issue 10, October 2023

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b) 2D echo-

Hypertensive heart disease with concentric Left Ventricular Hypertrophy with. Left ventricular ejection fraction of 60%. Mild MR. Grade 2 diastolic dysfunction. Preductal CoA seen restricted by gradient of 40 mm PSG.

3. Discussion

TA is a chronic panarteritis involving the aorta and its main branches as well as coronary and pulmonary arteries, thereby progressing to vital organ ischemia. First described in 1908 by Japanese ophthalmologists, MikitoTakayasu and Onishi, TA is most commonly seen in oriental countries with an incidence of 2.6/million/year and a male:female ratio of 1:9. Its etiology is unknown, although its association with HLABw52 gene, autoimmunity, reproductive hormones and infections has been suggested. Isolated cases of TA co-existing with latent and active tuberculosis have been described.

Four types of TA are identified;

- Type I - Involves the aortic arch and its main branches
- Type II - Involves descending thoracic and abdominal aorta
- Type III - Has features of both type I and II
- Type IV - Additional involvement of pulmonary artery

Anesthesia in TA is complicated by uncontrolled hypertension leading to end organ dysfunction, stenosis of major blood vessels affecting regional circulation, and difficulties in monitoring BP.

Hence pre-operative assessment should aim to understand distribution of arteritis and degree of vital organ involvement. Regardless of the choice of anaesthetic technique, goal should be to maintain adequate arterial perfusion pressures.

Decision was taken to conduct LSCS under sequential Spinal Epidural Anesthesia to maintain stable hemodynamics and to avoid severe hypotension with single shot Spinal Anesthesia; and gradually achieving needed T6 level with graded Epidural Anesthesia.

General Anesthesia (GA) was avoided

- 1) To prevent hypertensive response with intubation with its consequences like hypertensive encephalopathy, heart failure.
- 2) Anticipated difficult intubation.

Standard ASA monitors were attached. Invasive BP monitoring was avoided due to the short duration of procedure. BP was monitored with non invasive BP in the left upper and left lower extremity and overinflation of cuff was taken care of to avoid compromise in capillary perfusion.

Preoperatively prednisolone was given as she was on high dose steroids chronically.

Intra operatively she was supplemented with 100 mg Hydrocortisone till she went back on her oral usual dose.

Left lateral tilt was given to prevent aortocaval compression.

Inj. pitocin 10 IU in 100 ml Normal saline was given after baby delivery.

Baby cried immediately after birth

Level of anaesthesia was achieved with spinal at T6, requiring a single dose of phenylephrine 50 mcg for hypotension to 90 mm of Hg, otherwise BP was maintained in the upper limb around 120-130mmHg with mean around 70 mm of Hg.

Intraoperative monitoring included temperature, fluid and urine output.

Epidural catheter was removed after giving top up analgesia for post -op pain relief because post up analgesia is important as it can lead to hypertensive crisis. Post operatively, she was started on her regular anti-hypertensive drugs with strict monitoring of blood pressure. Post operative analgesia was given with injection paracetamol 1 gm tds.

4. Conclusion

The case of this 26-year old woman with Takayasu arteritis underscores the intricate challenges posted by this rare condition during pregnancy. Through meticulous planning and specialized anesthesia techniques, we were able to navigate the complexities of hypertension, vascular stenosis, and end-organ dysfunction, ensuring a safe delivery for the patient. This case highlights the multidisciplinary approach involving rheumatologists, obstetricians, and anaesthesiologists to provide optimal care for TA patients in high risk pregnancy scenarios. Sequential spinal epidural anaesthesia with low dose of spinal drug is a safe option in cases of TA with severe hypertension for cesarean section to maintain stable hemodynamics and avoid complications.

Acknowledgement

I would like to thank my teacher, Dr.Jyoti Magar (Professor), for bringing the weight of her considerable experience and knowledge in the management of this obstetrics case.

I am sincerely grateful to Dr.Shalaka Nellore (Associate Professor) for her valuable piece guidance in management of cardiac issues in this case.

Author's Contribution-

1. US- Conduct of case, writing case report.
2. JM- Conduct of case, writing case report.
3. SN- Conduct of case, writing case report.

Conflict of interest- nil

Financial support- nil

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