

## **CASE REPORT**

# **Indian origin Takayasu's arteritis: A case report with a brief review of clinical management**

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## **SUMMARY**

Indian origin aortoarteritis is a rare variant of Takayasu's arteritis (TA), a chronic progressive panendarteritis involving the aorta and its main branches. Anesthesia for such patients is complicated by their severe uncontrolled hypertension, end-organ dysfunction and stenosis of major blood vessels affecting regional circulation. A case report and its anaesthetic management is presented.

**Key words:** Takayasu's arteritis; Indian origin aortoarteritis; Panendarteritis; Hypertension; End-organ dysfunction

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## **INTRODUCTION**

Takayasu's arteritis (TA) is a rare, chronic progressive panendarteritis involving the aorta and its main branches.<sup>1</sup> Clinical presentation of the disease differs according to geographical distribution.<sup>2</sup> Indian origin aortoarteritis is a rare variant of this disease. Anesthesia for such patients is complicated by their severe uncontrolled hypertension, end-organ dysfunction and stenosis of major blood vessels affecting regional circulation. We present our experience with such a case done under general anesthesia by us and review the perioperative problems and management.

## **CASE REPORT**

We present a case of 35 years old male patient scheduled for excision of bilateral mandibular sinuses in view of chronic osteomyelitis. He had a history of vertigo on exertion and mild weakness in limbs for six months. He had bilateral cataracts. His preanaesthetic evaluation revealed feeble peripheral pulses except in right carotid, right femoral and right popliteal artery. Pulse rate was 82/min; it was regular, of low volume and the condition of vessel walls was normal. BP was

160/90 mmHg measured at the level of right thigh. His airway examination revealed Mallampatti score of 4, mouth opening of 1 cm, patent nasal passages and normal neck movements.

A cardiology opinion was sought for his feeble pulses and history of vertigo on exertion. His echocardiography was suggestive of diastolic dysfunction. Magnetic resonance imaging angiography was done which revealed nonspecific aortoarteritis disease. The patient was labelled as ASA (American Society of Anesthesiologists) classification grade 3.

Intravenous cannulation was done in the left lower limb. Routine monitors in the form of pulse oximeter, electrocardiogram and non invasive blood pressure (NIBP) were attached. NIBP cuff was applied on the right upper limb. A plan of awake fiberoptic intubation was made in view of his restricted mouth opening. His airway was prepared with lignocaine 4% nebulisation, lignocaine viscous gargles and xylometazoline nasal drops. Inj. glycopyrrolate 0.2 mg was given intramuscularly 20 min. prior to induction of anaesthesia. Inj. midazolam 1 mg and fentanyl 60 microgram were given intravenously. Awake fiberoptic

intubation through nasal route was attempted and the airway was secured with size 7 mm ID (Internal Diameter) flexometalic tube.

Anesthesia was maintained with isoflurane in oxygen and nitrous oxide (40:60). During neck extension, the patient developed bradycardia, which was managed with intravenous dose of 0.5 mg atropine. Just prior to extubation the patient's blood pressure rose to 220/120 mm Hg, which was managed with intravenous infusion of nitroglycerine. Patient was extubated at the end of surgery. He was shifted to postoperative room after full control of blood pressure was achieved.

## DISCUSSION

Indian origin aortoarteritis is a chronic granulomatous, necrotizing vasculitis, predominantly affecting the aorta with its branches.<sup>3</sup> Though the exact pathogenesis of the arteritis is still unknown, tuberculosis, *streptococcal* infections, rheumatoid arthritis and other collagen vascular diseases have been debated as its etiology in the past. Recently more emphasis has been given on an immunopathological cause.<sup>4,5</sup>

The disease is classified based on the site of involvement:

Type I: Aortic arch involvement

Type II: Thoracoabdominal involvement

Type III: Diffuse involvement

Type IV: Pulmonary involvement

Type V: Aneurysmal type

The site of arterial disease determines its clinical presentation. There can be dizziness or syncope due to the decreased perfusion to the brain, which can be aggravated by neck movements. This leads to classical drooping position of the head. A classical bruit can be heard over the stenosed carotids. Cardiac involvement in the form of myocardial infarction, valvular pathology, conduction system block or coronary artery involvement can be seen. Pulmonary vasculitis can lead to pulmonary hypertension and ventilation perfusion abnormalities. The other associated findings are renal artery stenosis and musculoskeletal involvement in the form of rheumatoid arthritis and ankylosing spondylitis.<sup>6</sup>

Indian aortoarteritis behaves differently from Takayasu's arteritis and has the following distinguishing features: It is common in males; acute phase is not commonly seen; has a chronic progression phase;

is frequently associated with tuberculosis and often presents as inflammation, obstruction and aneurysm.<sup>6</sup>

Steroids are the mainstay of management in aortoarteritis. These patients require antihypertensives. There is a need of anticoagulants and antiplatelets. Incapacitating arterial occlusion requires surgical intervention.<sup>6</sup> Ishikawa graded TA depending on the presence of four major complications, i.e., hypertension, retinopathy, aneurysm formation and aortic regurgitation.<sup>7</sup>

Hypertension, the major complication affecting anaesthetic management in patients with TA, is commonly renovascular. It could also result from reduced elasticity and marked narrowing of aorta and major arteries and abnormal function of carotid and aortic sinus baroreceptors.<sup>8</sup> We continued vasodilator infusion in our patient from the beginning and its rate was titrated according to the situation. Rate was increased on intubation, first surgical incision and later on recovery and extubation. An additional bolus of inj. fentanyl was given before extubation.

Patients with TA should be assessed for the anatomical pattern of the disease and evaluated for hypertension and its complications. Preoperatively, clinical features suggestive of carotid involvement, such as dizziness, syncope on extension of head and carotid bruit should be evaluated.

General anesthesia has its own advantages and disadvantages. Hypotension occurring during sympathetic block can be avoided. Hypertensive episodes during laryngoscopy and lighter plane of anesthesia can lead to cerebral haemorrhage or myocardial infarction.<sup>9</sup> We had only one option available with us, that of general anesthesia. Patients with renal artery involvement may have features of renal failure during the intraoperative period. Factors affecting cerebral blood flow should also be taken into consideration.

Measurement of blood pressure and proper documentation of all pulses deserves special attention in such patients. NIBP monitoring using the oscillometric method and pulse oximetry can provide simple and reliable blood pressure readings even in patients with pulseless extremities.<sup>10</sup> We avoided invasive monitoring because of the possibility of inflicting trauma to already diseased vessels.

Regional anesthesia is associated with sympathetic block and a subsequent decrease in blood pressure that may be hazardous in a patient with compromised regional circulation because of stenosed arteries.<sup>11,12</sup>

Epidural blockade is generally preferred in suitable patients.<sup>13,14</sup> Adequate administration of crystalloids and step by step titration of the local anesthetic to the desired level of block can avoid a precipitous decrease in blood pressure.

## CONCLUSION

To conclude, the patients with TA should be assessed

for the anatomical pattern of the disease and carefully evaluated. Care should be taken for proper positioning of the patient and selection of the cannulation sites. Factors compromising the cerebral circulation should be avoided. Invasive monitoring be avoided and hypertensive episodes promptly treated.

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