CASE REPORT

Successful low-dose spinal anaesthesia for lower segment caesarean section in a patient with Takayasu arteritis

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SUMMARY

Takayasu arteritis is a rare, chronic idiopathic, occlusive inflammation of the aorta and its major branches. It is a rare form of non-specific obliterative panarteritis of unknown aetiology. Anaesthesia for the patient with Takayasu arteritis is complicated by severe uncontrolled hypertension leading to end organ dysfunction, stenosis of major blood vessel affecting regional circulation and difficulties in the monitoring of arterial blood pressure. We report a 26-year-old woman multigravida who was diagnosed with Takayasu arteritis who underwent an emergency caesarean section under spinal anaesthesia. In this case study, the whole course of anaesthesia and operation was uneventful due to thorough systemic evaluation and planned anaesthetic management.

BACKGROUND

Takayasu arteritis¹ is a rare inflammatory panarteritis causing thrombosis and occlusion of systemic and pulmonary arteries. Eighty-five percent of cases involve young women of Oriental age groups commonly in young Asian women. Indian-origin aortoarteritis is a chronic granulomatous, necrotising vasculitis, predominantly affecting the aorta with its branches.² The anaesthetic approach for parturients with Takayasu arteritis has not been standardised in the literature and the use of general as well as regional anaesthesia has been previously reported.^{3–6} We report a successful spinal anaesthesia for emergency caesarean section in a patient of Takayasu arteritis.

CASE PRESENTATION

For a 26-year-old multigravida (weight 46 kg, height 151 cm), a known case of Takayasu arteritis with mild mitral regurgitation, aortic regurgitation was scheduled for emergency lower segment caesarean section due to non-progressing labour and bad obstetric history. She had two still births and was hospitalised 4 years previously for exertion and giddiness and was diagnosed to have Takayasu arteritis with mild mitral regurgitation and mild aortic regurgitation (in two-dimensional (2D) echo). She was treated with Tablet amlong 10 mg twice daily, Tablet labetalol 200 mg twice daily and tablet amlodipine 20 mg thrice daily. During pregnancy, she was advised to take the prescribed medicine, bed rest and admission in hospital at the end of the third trimester for full observation.

Preanaesthetic examination revealed that the patient was alert and oriented. Physical examination

revealed feeble bilateral radial, ulnar, brachial, axillary and carotid artery pulsations. The patient's heart rate was 96 bpm and non-invasive blood pressure in both upper limb was 170/90 mm Hg (mean arterial pressure 116 mm Hg). All peripheral pulses were normally felt in both the lower limb; however, non-invasive blood pressure was measured 180/80 mm Hg (mean arterial pressure 133 mm Hg). In her systemic examination, s1s2s3 were audible and pansystolic murmur was present over mitral area. The patient's respiratory and neurological examinations showed normal results.

Preoperative investigation of the patient including haemogram, renal and liver function test, coagulation profile and ultrasonography of the kidney–ureter and bladder was within normal limits. ECG revealed severe concentric left ventricular hypertrophy with strained pattern, 2D ECHO showed mild mitral regurgitation with aortic regurgitation with left ventricular ejection fraction of 60%. Angiography showed marked stenosis at origin and course of right common carotid and moderate stenosis of left common carotid artery and subclavian artery.

In the operating room, a standard monitor was attached including ECG, pulse oximeter and non-invasive blood pressure cuff over left thigh. Intravenous access was secured with the 18 gauge cannula and the patient was catheterised for urine output monitoring.

Surgery was planned under subarachnoid block. Preloading (20 ml/kg) was carried out using ringer lactate solution⁵ and premedication was carried out by giving injection ondansetron 4 mg intravenously and injection ranitidine 150 mg intravenously for aspiration prophylaxis. Under full aseptic precaution, subarachnoid block was administered with 5 mg of hyperbaric bupivacaine along with 25 µg fentanyl at lumbar 4–5 interspace using a 25 gauge spinal needle (spotte). The patient was then placed in supine position and oxygen (4 litre/min) was administered via a face mask. A small pillow was placed under the patient's head and left lateral tilt was maintained. Surgery was only started after the achievement of T6 dermatomal sensory block.

After the administration of subarachnoid block, a transient fall in the patient's blood pressure treated by increasing the rate of crystalloid and by raising the foot end of operating table. Following the delivery of baby, oxytocin infusion was started (10 units in 500 ml of dextrose normal saline (DNS) at the rate of 8–10 drops/min. After about 10 min, the patient's blood pressure suddenly dropped to 108/

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76 mm Hg (87 mm Hg) and an injection of ephedrine 6 mg was administered to the patient and the table was turned to 15° Trendelenburg position and the mean arterial pressure was corrected. Postoperatively, analgesia was maintained with paracetamol infusion, oxygen was given at 4 litre/min and prescribed antihypertensive drugs were continued. The patient was uneventfully discharged along with a healthy baby on sixth postoperative day.

INVESTIGATIONS

The skeletal radiographs revealed spina bifida at S₁S₂S₃. Echocardiography and ECG were normal. An ultrasound revealed bilateral nephrocalcinosis. CT cranium was normal. Fine needle aspiration cytology of the swelling on the tongue revealed choristoma with lipomatous element. In view of the difficulty in hearing, hearing assessment was conducted which showed moderate conductive deafness along with bilateral B type of tympanogram suggestive of bilateral serous otitis media. Blood and urine investigations performed in view of nephrocalcinosis were all normal. Genetic/molecular analysis was not carried out owing to financial prospects.

DISCUSSION

Takayasu arteritis is a rare, idiopathic, chronic inflammatory disease which causes narrowing, occlusion or aneurysms of blood vessels, preferentially affecting large arteries such as aorta and its branches and hence its alternative names of pulseless disease, occlusive thromboarteropathy or aortic arch syndrome. Classification of Takayasu's disease is dependent on the distribution of lesions.

- ▶ Type 1 affects the aortic arch and/or its branches.
- ▶ Type 2 affects the thoracic and abdominal aorta without involvement of the arch.
- ▶ Type 3 is a mixture of type 1 and type 2.
- ▶ Type 4 includes pulmonary artery involvement.
- ▶ Our patient was included in type 1.

Substantial minorities of patient with Takayasu's arteritis are asymptomatic, but approximately 60% suffer significant disability from complications, particularly hypertension and its sequents. Treatment in the initial phase is with steroids usually for 2–4 years with or without cytotoxic agents. Our patient has given the history of steroid medication, but it was advised to stop before conceiving. The commonest causes of death in Takayasu arteritis are heart failure, myocardial infarction and stroke. Marked haemodynamic changes occurring during pregnancy and cardiac output in particular have a pronounced effect on heart disease. The cardiac failure occurs during pregnancy around 30 weeks of gestation, during labour and mostly soon after delivery, whether vaginal or caesarean.

Anaesthesia in a patient with Takayasu arteritis is complicated by severe uncontrolled hypertension leading to end organ dysfunction, stenosis of major blood vessels affecting regional circulation and difficulties in monitoring blood pressure. A major cause of hypertension is renovascular, but it can also result from an abnormal function of the carotid and aortic sinuses and baroreceptors and marked narrowing of aorta and major arteries.

The anaesthetic goal in a patient with Takayasu arteritis is the maintenance of blood pressure during perioperative period. Regional anaesthesia in conscious patient is the easiest way to monitor cerebral function⁷ and at same time prevent the complication of general anaesthesia such as aspiration, pressure response during intubation and extubation which may lead to

hypertension, tachycardia leading to myocardial infarction, congestive cardiac failure and intracranial haemorrhage as well as hypertensive episodes during laryngoscopy and lighter plane of anaesthesia can lead to cerebral haemorrhage or myocardial infarction⁸ constant monitoring of level of consciousness, ECG, blood pressure, urine output, provides an insight as to adequacy of cerebral perfusion, coronary blood flow. It is imperative to maintain adequate arterial perfusion pressure during intraoperative period. Therefore, any fall in blood pressure should be immediately and aggressively treated with an injection of ephedrine. A dose 5 mg hyperbaric bupivacaine along with 25 µg fentanyl was administered, as larger doses of local anaesthetic are associated with higher levels of autonomic block and consequently more severe hypertension. It is also a known fact that doses of intrathecal bupivacaine 5 and 7 mg are sufficient to provide sufficient anaesthesia for a caesarean section.⁹

A pillow was placed under the patient's head in order to prevent the extension of neck which might have reduced carotid blood flow by stretching the arteries, and left lateral tilt was maintained to prevent aortocaval compression. The administration of epidural anaesthesia was avoided as the procedure would have taken a longer time than subarachnoid block and it was not possible to wait for a longer duration in view of the urgent nature of surgery.

Learning points

- ▶ The anaesthetic goal in a patient with Takayasu arteritis is the maintenance of blood pressure during perioperative period.
- ▶ Regional anaesthesia is best anaesthesia for monitoring of cerebral function.
- ▶ Spinal anaesthesia avoids the complication of general anaesthesia such as aspiration, pressure response during intubation and extubation which may lead to hypertension and tachycardia.

Competing interests None.

Patient consent Obtained.

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