

Regional Anaesthesia in Takayasu Arteritis Patient for Emergency Urosurgery

Uma Hariharan*, Lalita Chaudhary, Reena Chaabada

Anesthesiology & Intensive Care, Dr Ram Manohar Lohia Hospital & Post Graduate Institute of Medical Education and Research, Central Health Services, New Delhi, India

Corresponding author:

Dr. Uma Hariharan (MBBS, DNB, PGDHM, Fellowship Onco-anaesthesia & Advanced Regional Anaesthesia); Assistant Professor, Anesthesiology & Intensive Care, Dr Ram Manohar Lohia Hospital & Post Graduate Institute of Medical Education and Research, Central Health Services, New Delhi, India, Tel: +9198112710931; E-mail: umar708@gmail.com

Abstract

Takayasu arteritis is also known as pulseless disease as it affects the arterial tree and the patient's peripheral pulses become non-palpable. It is a chronic inflammatory disease of unknown aetiology affecting the aorta and its main branches. The inflammatory arteritis can affect any organ system of the body leading to occult or overt multi-organ dysfunction. Anaesthetic management of these patients presenting for emergency surgery can be quite challenging as there may not be enough time available for complete evaluation of every organ system. We hereby present the anaesthetic challenges in a case of emergency urological surgery in a patient of Takayasu's arteritis with obstructive uropathy and fibrotic lung changes.

Keywords: Takayasu arteritis; Chronic inflammation; Pulseless disease; Regional Anesthesia

Letter to Editor

A thirty-six-years-old female patient presented with obstructive uropathy, severe flank pain, intermittent burning micturition, reduced urine output, loss of appetite associated with malaise (for 3-months). She was a diagnosed case of Takayasu arteritis with a small capacity bladder. In addition, she had fibrotic lung changes and reactive airway disease, which was controlled with medications. In the pre-operative assessment, her right radial artery and brachial artery pulse (upper limb) were not palpable. Her vital parameters were as follows: pulse 110/min, BP 110/70 mm of Hg (measured on left upper limb), respiratory rate (RR) 14/min, and oxygen saturation was 98% (on room air). Airway examination was unremarkable. On systemic examination, there were occasional crepitations in the right lung base; mild pallor was visible; and the patient was malnourished.

On pre-anaesthetic investigations, Haemoglobin was 8.2 gm%, WBC count 13500/mm³, Blood Sugar 75 mg/dL, blood urea 66 mg/dL, serum creatinine 3.2 mg/dL, serum Na⁺ 140 mEq/L, K⁺ 3.3 mEq/L, Serum Bilirubin 0.8 mg/dL, with normal liver enzymes. A previously done two-dimensional cardiac echocardiography (2-D echo) showed – normal chamber dimensions, no RWMA (regional wall motion abnormalities), grade-I diastolic dysfunction present, and ejection fraction (LVEF) 60%. Another previous (HRCT-Chest) high-resolution computed tomographic scan report was suggestive of multiple lobular opacities in right upper lobe, patchy fibro-bronchiectatic changes in right superior segment of right upper lobe and medial segment of medial lobe. An old arterial doppler study of upper limb done showed right subclavian artery stenosis.

The patient was taken on a semi-emergent basis for bilateral ureteroscopy with right pyeloplasty and right ureterocolicostomy. Two wide bore peripheral IV lines were secured. She was administered injection ranitidine hydrochloride 50

mg IV and intravenous crystalloids were started. Under all aseptic precautions, combined spinal epidural (CSE) block was given. Subarachnoid block with 2.5 ml of 0.5% hyperbaric bupivacaine and 25 mcg fentanyl was injected intrathecally followed by placement of epidural catheter in the L2-L3 interspace. After administration of 1.5 mg midazolam I.V, left radial artery cannulation was performed using sterile precautions. Dermatome level of anaesthesia of upto T6 was achieved. The pulse oximeter probe was placed on the left upper limb. Intraoperatively, arterial pressure was maintained between 100/70 and 120/70 mm of hg. The total surgical time was 4 hours and the net blood loss was 500 ml. The patient was given 1.5 litre crystalloids, 2 units of packed red cells and 2 units of fresh frozen plasma. The intraoperative period was uneventful and the patient was shifted to the post-anaesthesia care unit for observation and close monitoring. Post-operative vitals were HR- 90/min, BP- 100/70 mmHg, and Spo₂ 100%. Pain management was accomplished with continuous epidural infusion (local anaesthetic plus opioid) in a high dependency unit. Our case highlights the emergency anaesthetic challenges in patients with Takayasu's arteritis.^[1] It is a form of chronic, large vessel granulomatous vasculitis with massive intimal fibrosis and vascular narrowing, with greater female preponderance.

Since there was not enough time available for detailed investigations prior to surgery, a renal and carotid doppler test was not done. This would have guided us regarding the status of renal and cerebral vessels. Arteritis of the renal vessels (renal

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artery stenosis)^[2] can result in perioperative renal failure and may require renal replacement therapy. Facilities must be available for instituting haemodialysis in such patients. For elective surgeries, a detailed cardiac evaluation with angiography or stress echocardiography may be done for coronary symptoms or those with poor functional class.

As regards to the difficulties related to disease status during surgery, there was difficulty in arterial cannulation for invasive blood pressure measurement. Pulse oximeter could not be placed in the right arm as there was no palpable pulse^[3] and patient was malnourished from long-standing disease. Surgical exposure was also difficult due to fibrosis and small capacity bladder. In view of the associated chest condition, general anaesthesia was less preferred.

Takayasu's arteritis can affect the renal vasculature and itself result in uropathy^[4] (from retroperitoneal fibrosis and renovascular hypertension). This may be exacerbated by hypotension and reduced renal blood flow due to anaesthetic agents, surgical handling and blood loss. The described patient already had a uropathy with micro-bladder, which can increase the chances of perioperative renal shut-down. The use of regional anaesthesia in such cases with pulmonary dysfunction is beneficial as it also improves the renal blood and helps in preserving the renal function.

Takayasu's arteritis (also known as "Takayasu's disease, aortic arch syndrome, non-specific aorto-arteritis and pulseless disease"), was first described by Dr Mikito Takayasu,^[5] a Japanese ophthalmologist, who described it a young female with retinal vascular involvement, syncope and absent upper extremity pulses. Though its aetiology is unknown, it is said to be associated with certain human leukocyte antigens (HLA), some autoimmune processes such as sarcoidosis and inflammatory bowel disease, and tubercular infection (past or active infection).^[6] Takayasu's arteritis presents in a pre-pulseless phase with non-specific systemic inflammatory features, such as fever, night sweats, malaise, weight loss, and arthralgias.^[7] Then

pulseless phase develops with vascular insufficiency, vascular occlusion and end organ damage.^[8] The clinical features of this phase are characterised by limb claudication, hypertension from renal artery stenosis, amaurosis fugax, retinopathy, aortic regurgitation, cardiac ischemia, congestive cardiac failure, pulmonary artery hypertension, stroke and seizures (intra and extra-cranial arterial involvement). Glucocorticoids^[9] are the mainstay of treatment, who long term use has various adverse effects. Unresponsive patients are treated with immunomodulators like methotrexate, cyclophosphamide and azathioprine. Our patient was not on any disease-modifying agent. The use of regional anaesthesia was helpful in preserving renal blood flow and preventing renal failure. Maintaining end organ blood flow and perfusion pressure is the main goal.

Conflict of Interest

All authors disclose that there was no conflict of interest.

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