

AUTO RENAL TRANSPLANTATION IN A PATIENT OF AORTOARTERITIS WITH ANEURYSMS OF ABDOMINAL AORTA

C.M. DESHPANDE*, VIDYA TAYDE** AND
RASHMI BHADANGE***

Abstract

Aortoarteritis (Takayasu's Disease) is an inflammatory involvement of Aorta, Pulmonary artery and their large branches and is associated with high perioperative morbidity and mortality. Administration of safe anesthesia to these high risk patients is a challenge and requires knowledge of disease pathophysiology, associated end organ dysfunction, monitoring requirements, potential complications of the disease and medical therapy. We present a case report of a patient posted for auto renal transplantation conducted under combined general and epidural anesthesia and discuss the several advantageous of this technique.

Keywords: Aortoarteritis, Auto Renal Transplant, Anesthesia.

Introduction

Administration of safe anesthesia to patients of Aortoarteritis (Takayasu's Disease) is challenging due to associated renovascular hypertension, end organ dysfunction, requirement of invasive monitoring and high perioperative morbidity and mortality. We present a patient posted for auto renal transplantation conducted under combined general and epidural anesthesia technique which offer several advantages in these patients.

Case Report

A 55 kg, 32 year old female of 150 cm in height presented with dyspnoea on exertion, arthralgia, myalgia, oedema and ↓ urine output since 6 months. Her blood pressure was 180/110 mm of Hg and she had Grade III retinopathy.

She had high ESR, CRP and Antinuclear antibodies levels and low T₃ (38.9ng /dl). Other blood investigations and XRC were normal. ECG showed LVH with strain pattern.

2 D Echo showed Type II diastolic ventricular dysfunction, trivial TR, aortic sclerosis, pulmonary hypertension (50 mmHg) and LVEF- 50%. CT angiography showed focal stenosis of left subclavian artery, two aneurysms of abdominal aorta - one distal to superior mesenteric artery (3.7 cm) and saccular dilation in infrarenal aorta proximal to bifurcation (4.4 cm) with a mural thrombus, complete focal stenosis of right renal artery at origin and left renal artery originating

* Professor, Department of Anaesthesiology, BYL Nair Ch. Hospital, Mumbai.

** Assistant Professor Department of Anaesthesiology, BYL Nair Ch. Hospital, Mumbai.

*** Resident Department of Anaesthesiology, BYL Nair Ch. Hospital, Mumbai.

Corresponding Author: Charulata Deshpande, 2/24, Haji Ali Govt Colony, K. Khadye Marg, Mumbai-400 034. E-mail: desh56@hotmail.com. Tel: 91-22-23542972, 09322655611.

from infrarenal aneurism. The right kidney was small, scarred with poor contrast excretion. Left kidney was normal sized with normal contrast excretion. Renal scan showed suboptimally functioning left kidney (GFR of 24.86 ml/hr) and a non functioning right kidney. Renal Doppler showed right renal artery stenosis.

Diagnosis of Aortoarteritis was made. Treatment was started with oral Amlodipine 5 mg, Frusemide 40 mg, Metoprolol 25 mg, Clonidine 150 µg, Prazocin 10 mg, Losartan 50 mg and Prednisolon 5 mg.

After patient stabilization, bypass grafting of aneurismal aorta, right nephrectomy and autotransplantation of left kidney to the right side was planned. However to prevent insult to the already compromised renal function from cardiopulmonary bypass and aortic cross clamp, only auto renal transplantation was planned as first stage.

On preanaesthetic assessment, patient was short with cushingoid features- puffy face, fat neck, buffalo hump, central obesity and generalized edema. Mouth opening was 3 fingers and Mallampatti Grade was III. Pulse was 64 /min, regular with variable volume in the two upper limbs. B.P. was 150/90 in right while 120/60 in left upper extremity and 150/90 in both lower extremities.

On the day of surgery, high risk consent was taken and NPO status was confirmed. Difficult airway armamentarium was ready. Monitoring included SPO₂, ECG, IBP, CVP, ETCO₂, temperature and urine output. Arterial blood gas, serum electrolytes and blood sugar assessment was done at hourly. IV Hydrocortisone 100mg was given. Inj. Midazolam 1 mg and inj. Fentanyl 100 µg was given as sedation. IV Ranitidine 50 mg and IV Ondansetron 8 mg was given for Aspiration prophylaxis. Right radial artery was cannulated with 20 G catheter. 16 G epidural catheter was introduced in L_{2,3} space with tip at T₈ level. Anesthesia was induced with IV Pentothal sodium (5 mg/kg) and IV Atracurium (1 mg/kg). IV Xylocard 75 mg was given to prevent intubation response. Direct laryngoscopic view was Cormack Lehane III. OTCT No. 7.5 was passed using a stylet. Right IJV was cannulated with No. 7 Fr triple lumen catheter. Anesthesia was maintained with O₂:Air (50:50) with propofol infusion at 10 ml-8 ml-6ml/hr and infusion of midazolam: fentanyl: atracurium 1 mg: 50 mcg: 20 mg/hr. Epidural analgesia was given with 6

cc of 0.125% bupivacaine hourly.

The surgical excision was long and 'W' shaped from left 7th intercostal space to right inguinal region. Right nephrectomy was done but the left kidney was scarred with feeble left renal artery pulsations, so auto transplant was abandoned. The surgery lasted 3 hours and blood loss was 400cc.

6 cc of 0.125% bupivacaine with 90 mcg buprenorphine was given epidurally for postoperative analgesia. Patient was extubated and shifted to PACU. Epidural analgesia was continued for 48 hours. Postoperative course was uneventful.

Discussion

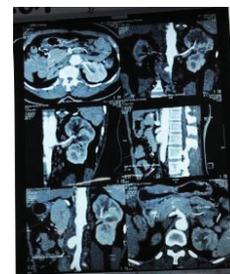
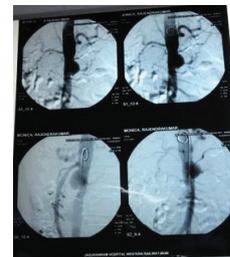
Aortoarteritis is a chronic inflammatory disease of large elastic arteries resulting in stenosis, occlusion and aneurysm formation of aorta and its main branches as well as pulmonary artery and its branches¹. The symptoms are due to end organ ischaemia and range from non-specific symptoms like fever, malaise, arthralgia, myalgia to catastrophic neurological impairment. As the inflammation progresses and stenoses develop, and characteristic features with significant anaesthetic implications become apparent¹:

- Diminished/absent pulses with limb claudication and blood pressure discrepancies
- Hypertension
- Aortic regurgitation and aneurysm
- CCF with dilated cardiomyopathy
- Neurological features secondary to hypertension/ischaemia
- Pulmonary hypertension
- Myocardial ischaemia

Steroids, antihypertensives and prevention/treatment of thrombosis are the mainstay of medical treatment. Hypertension is difficult to treat and worsened by steroids. Immunosuppressive agents are also used.

Surgery is indicated to prevent complications including hypertension with critical renal artery stenosis, aortic regurgitation, cerebrovascular and cardiac ischaemia, thrombosis, and haemorrhage.

The indication in our patient was severe renovascular hypertension and preservation of renal function. The anaesthetic challenges were end-organ dysfunction, invasive monitoring of arterial pressure



to prevent complications such as aneurism rupture/renal ischaemia, effects of chronic steroid therapy and difficult airway.

Invasive monitoring of arterial and central venous pressure was used to monitor and prevent excessive hemodynamic fluctuations. Perioperative supplementation of steroids was given to prevent Addisonian hypotensive crisis. Nephrotoxic drugs were avoided. Nitrous oxide was avoided in view of pulmonary hypotension. An infusion of propofol and fentanyl + Midazolam + Atracurium was used along with intermittent epidural bupivacaine to maintain steady state anesthesia and haemodynamics.

We used combined General and epidural anesthesia technique to maintain stable haemodynamics. There is a large volume of literature supporting the use of combined general and epidural anesthesia and postoperative epidural analgesia in high risk patients²⁻⁷. General anesthesia provides secure

airway, amnesia and excellent operating conditions. Epidural anesthesia attenuates neurohumoral stress response to surgery, decreases intraoperative blood loss, incidence of deep vein thrombosis (DVT), pulmonary embolism and is associated with reduced incidence of respiratory depression and early mortality. Recovery and rehabilitation is faster due to better postoperative analgesia. Unlike spinal anesthesia, epidural blockade leads to gradual onset of sympathetic block and decrease in arterial blood pressure. Adequate preloading, titrated administration of local anesthetics in small aliquots prevents a precipitous decrease in blood pressure and gives enough time to treat the effects of sympathetic block⁴.

With combined general and epidural technique we achieved excellent operative conditions, stable haemodynamics, rapid recovery and post operative analgesia. In conclusion, we present successful management of a case of aortoarteritis using this technique.

References

1. SL JOHNSTON, RJ LOCK AND MM GOMPELS: Takayasu arteritis: a review. *J Clin Pathol*; July, 2002, 55(7):481-486.
2. BARON JF, BERTRAND M, BARRE E, ET AL: Combined epidural and general anesthesia versus general anesthesia for abdominal aortic surgery. *Anesthesiology*; 1991, 75:611-8.
3. W TOHME, H KAFROUNI, S SFEIR: Combined Regional-General Anesthesia: Evaluation of Remifentanyl based General anesthesia and postoperative epidural analgesia. *MEJ Anesthesia*; 2007, 19(1):97-110.
4. SUBRAMANIAM KATHIRVEL, SHIVANAND CHAVAN, VIRENDER K ARYA, IQBAL REHMAN, VENKATESH BABU, ET AL: Anesthetic Management of Patients with Takayasu's Arteritis: A Case Series and Review. *Anesth Analg*; 2001, 93:60-5.
5. BEILIN Y, BERNSTEIN H: Successful epidural anesthesia for a patient with Takayasu's arteritis presenting for caesarean section. *Can J Anaesth*; 1993, 40:64-6.
6. HENDERSON K, FLUDDER P: Epidural anesthesia for caesarean section in a patient with severe Takayasu's disease. *Br J Anaesth*; 1999, 83:956-9.
7. GOZAL Y, GINOSAR Y, GOZAL D: Combined general and epidural anesthesia for a patient with Takayasu's arteritis. *Reg Anesth*; 1995, 20:246-8.