Anaesthetic Management Of A Case Of Mycotic Aneurysm Of The Abdominal Aorta With Tuberculosis Of The Spine

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Citation

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Abstract

Compression of the spinal cord by an aortic aneurysm is rare1. We present the management of a 50 yr old male patient with a 6 cms x 7 cms mycotic abdominal aorta aneurysm, which originated from TB spine and was eventually compressing on the spinal cord. Dacron grafting of the aneurysm followed by anterior decompression and fixation of the vertebral column was done under general anesthesia. The surgery lasted for 10 hours with a total blood volume loss of 8000 cc.Adequate fluid management, renal and spinal cord protection and adequate pain relief given epidurally, helped in achieving a smooth intra-operative and post-operative course.

INTRODUCTION

An aortic aneurysm can present from an asymptomatic incidental finding, compression symptoms to a sudden dissecting of the aneurysm warranting immediate surgery.

The peri-operative management of patients undergoing aortic aneurysm repair surgery is complicated by coexisting diseases, hemodynamic & metabolic stress associated with aorta cross clamping & unclamping & the ischemic insults to the vital organs. This case was of particular complexity because the aneurysm was eroding the spinal cord necessitating simultaneous orthopedic manipulation.

CASE REPORT

A 50 year old, 60 kgs, male presented with paraplegia, backache, loss of bowel and bladder functions worsening over 3 months. MRI reported a large 6-cmsX 7-cms pre & para-spinal soft tissue mass extending from T9-L1 vertebrae with compression of the spinal cord & thecal sac. Physical examination showed a swelling over the lower back & grade 0/V power in both the lower limbs. All routine investigations including coronary angiography and prothrombin time were normal. An elective Dacron graft of the aneurysm followed by anterior decompression & fixation of the spinal cord was planned under general anesthesia via a sub diaphragmatic retroperitoneal approach.

We used inj glycopyrrolate (4 microgm/kg) IM, inj midazolam (0.3 mg/kg) IV & inj fentanyl (2 microgm /kg) IV as pre medication. Right IJV was cannulated with a 7.5 Fr triple lumen line. Prior to induction invasive BP monitoring and large bore IV access were secured. General anesthesia was induced using further doses of midazolam (0.1mg/kg) and fentanyl (8 microgm /kg) and titrated doses of sevoflurane with N2O+02 mixtures. After confirming ventilation, inj pancuronium 0.1mg/kg was used for intubation. Trachea was intubated using no9 portex endotracheal tube. The patient was monitored using a 12 lead cardioscope, pulse oximeter, copnometer, and temperature probe, invasive BP and CVP.The patient was given right lateral position.

Before aortic cross clamping (ACC), pulse, BP, CVP, urine output (U/0), ABG & HGT were measured. 1.5 gms Inj methylprednisolone IV, 1 gm/kg 20% inj mannitol & 10mg/kg inj thiopentone sodium IV were given for renal and spinal cord protection.

Infracoeliac ACC was for 32 mins during which BP and CVP increased marginally by 20mmHg to 140/86 mm Hg and 4 cms H2O respectively. U/O was maintained at 1 ml/kg/hr. Inj propofol was used to maintain the BP & depth of anesthesia.

Blood loss through the lumber arteries was 5000 ml replaced with crystalloids, colloids, blood, FFP and platelets.

After the release of the ACC, BP fell to 78/42 mmHg, CVP to6-8 cms H2o that returned to normal with the administration of fluids.

This was followed by the orthopedic instrumentation, which took 3hrs, & blood loss was 3000 ml, which was replaced with blood and crystalloids. The mean arterial blood pressure was maintained at around 80 mmHg.

Core body temperature was maintained using warm IV fluids and a bed warmer.

Before closure, 50 microgm of inj fentanyl was injected in the epidural space through an epidural catheter by the operating surgeon. The catheter was immediately removed to avoid infection at the surgical site.

The patient was shifted to the ICU for ventilatory support. IV analgesia in the form of an infusion of inj fentanyl (1 microgm/kg/hr) was started. He was extubated on day 2 and observed for a further 48 hours.

He was discharged on day 60 with power III/V in both his lower limbs and without any complications.

DISCUSSION

There have been only 41 cases of tuberculous mycotic aneurysm of the aorta (TBAA) reported till 1999.[2]

The annual incidence of rupture is over 20% for a diameter > 7cms[3]. Since the size of the aneurysm was >5.5cms and the patient was symptomatic, it was decided to operate him.

During induction and intubation a combination of fentanyl, midazolam and sevoflurane was used to minimize the CVS response and the stimulation of the sympathetic system to avoid any risk of dissection of the aneurysm[4].

Factors detrimental to spinal cord function are[5] reduced spinal blood flow, rate of neuronal metabolism, post ischemia reperfusion, post reperfusion bloods flow. Maintaining a high proximal blood pressure, keeping the cross-clamping time <30 minutes, avoidance of hyperglycemia and by pharmacological agents such as IV thiopentone Na, and IV mannitol, can minimize this.

Infra renal aortic cross clamp is associated with increased vascular resistance and a 30% reduction in the blood flow[5]. Therefore fluids and mannitol were used to maintain a urine output of at least 1 ml/kg.

During aortic cross clamp, there may be an increase in blood pressure due to increase in the impedance to the aortic outflow[6]. But the blood flow to the tissues below the ACC is dependant on the perfusion pressure rather than the pre-load and cardiac output. Hence we maintained the MAP on the higher side. However ionotropes were not required.

During aortic cross clamp, there may be an increase in the CVP[5] however in our case it was not much because since the ACC was distal to the celiac artery, volume from the distal venous vasculature was redistributed into the splanchnic vasculature without any increase in the pre-load[7]

Since hyperglycemia[8], hypothermia[8] and decrease in end-tidal CO2 greater than 15% during aortic cross-clamping[9] are associated with a poor outcome, these parameters were monitored and kept within normal limits.

The CVP was kept on the higher side using fluids to avoid a fall in the blood pressure during ACC unclamping[7]. The ACC was gradually released to allow time for volume replacement and to slow the washout of the vasoactive and the cardiac depressant mediators from the ischemic tissues.

The MAP was maintained at 70 mmHg during the orthopedic procedure.

The postero-lateral thoracotomy is among the most painful surgical incisions because major muscles are transected and multiple ribs are removed.[10]

Inj fentanly was injected epidurally for pain relief. Local anaesthetics mask the initial signs of post-operative anterior spinal artery syndrome and are hence avoided.[11]

The patient was observed in the port operative period for any complications. The postoperative recovery was uneventful. Physiotherapy was regularly followed.

CONCLUSION

Long duration, major fluid shifts spinal cord and renal protection, changes due to ACC clamping and unclamping, were some of the challenges of the case. Anticipation of these changes, rigorous monitoring and control of BP, CVP, urine output and prompt correction of the blood loss are key to proper case management. The need for postoperative pain relief is extremely important to reduce postoperative ICU stay.

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