



Perioperative anticoagulation: An anaesthetic dilemma

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Abstract

Rheumatic heart disease (RHD) is usually associated with mitral valve disease and arrhythmias like atrial fibrillation. These patients are chronically anticoagulated. Planning for surgery in such patient may require temporary interruption of long acting anticoagulants and bridging therapy. This case report highlights the successful management of middle age female who was known case of RHD and presented for breast surgery.

Keywords: rheumatic heart disease, atrial fibrillation, anticoagulation

1. Introduction

Rheumatic Heart Disease (RHD) prevalence varies from 4.54 to 6 per 1000 [1]. The commonest lesion is mitral regurgitation followed by mixed alular lesions [2]. Mitral stenosis (MS) if present significantly increases risk of atrial fibrillation (AF) and stroke. RHD along with AF pose special challenge to anaesthesiologist due to associated perioperative risk e.g. embolic phenomenon, endocarditis, bleeding, dysarrhythmias and heart failure. These patients are chronically anticoagulated and may require temporary interruption based on assessment of periprocedural risk of major haemorrhage and thromboembolism. Periprocedural bridging is a recent term which includes administration of parenteral short acting anticoagulant during interruption of long acting anticoagulants for major surgery.

2. Case report

A 60 year female with carcinoma breast presented for modified radical mastectomy at preanaesthetic clinic. Patient had history of RHD and AF. Patient suffered left middle cerebral artery (MCA) infarct 3 year back with persistent right sided hemiplegia and aphonia. Echo revealed moderate MS (Mitral Valve Area =1.4 cm²), moderate MR, pulmonary hypertension with ejection fraction of 35%. On examination she has heart rate of 110, blood pressure 102/60, saturation of arterial blood 96%; on auscultation fine crepts were present. ECG showed irregular R-R interval. Patient was taking tablets Aspirin/atrovastatin 75/20, warfarin 5mg, digoxin 0.25 mg, Enalapril 1.25 mg and furosemide/spironolactone 20/50. Baseline international normalized ratio (INR) was 2.2 on warfarin. Rest investigations were within normal limits. Aspirin was continued throughout the perioperative procedure and Warfarin was stopped 5 days prior to surgery. After discussion with surgeon and considering modified radical mastectomy to be relatively less invasive surgery, patient was put on low molecular weight heparin (LMWH), inj Enoxaparin 60mg subcutaneous once a day. INR was

repeated every day and maintained in a range of 2-2.5. On the morning of surgery preoperative INR was 1.7. General anaesthesia was induced using fentanyl (3 mcg/kg) and sevoflurane 6%. Airway was maintained with Laryngeal Mask Airway (LMA) and patient was kept on spontaneous respiration (100% oxygen) and sevoflurane. Ultrasound guided pectoral nerve (PEC) block was given with 30 ml 0.25% ropivacaine. Hemodynamic remained stable throughout the procedure. Surgery was done using minimum possible incision. Harmonic cautery was used to dissect the specimen to reduce blood loss. Fresh frozen plasma was arranged for backup. Intraoperative euthermia was maintained. Total of 500 ml of crystalloids were given intraoperatively and estimated blood loss was 200ml. Patient was put on LMWH 12hrs postoperatively after ensuring adequate hemostasis (no blood in drain) and warfarin was restarted after 24 hours with INR monitoring. Tight pressure bandage was used postoperatively. Patient had uneventful recovery and was discharged in satisfactory condition later on.

3. Discussion

Patients with RHD and AF are exposed to significant threat of thromboembolism if anticoagulation goals are not achieved. They should receive anticoagulants to target INR of 2.5-3.5. Class I indications for use of oral warfarin in patients with mitral stenosis are paroxysmal or chronic atrial fibrillation or a prior thromboembolic event in a patient with sinus rhythm with an International Normalized Ratio (INR) maintained between 2.0 to 3.0 or a left atrial thrombus with the INR maintained between 2.5 to 3.5 [3].

Discontinuation of anticoagulants during perioperative period can precipitate life threatening thromboembolism whereas continuation may cause significant bleeding during surgery [4]. So a fine balance is essential which can be achieved using bridging anticoagulation. The major challenge in warfarin therapy is its narrow therapeutic range [5]. Bleeding occurring in the setting of warfarin may

difficult to monitor and manage so it may be advisable to use intravenous heparin with its antidote protamine available in cases where higher vascularity and bleeding is anticipated.

As patient was hypertensive, in AF, and has history of pulmonary edema and stroke and surgery was supposed to be less invasive^[5], hence bridging therapy was planned. Haemodynamic stability and perioperative pain relief are another important issues that need to be addressed. Fluid are also to be used judiciously as overloading can lead to pulmonary edema. Major concerns in haemodynamics are to maintain sinus rhythm and to avoid tachycardia^[6]. Tachycardia is usually poorly tolerated as it can lead to reduced diastolic filling resulting. Digoxin needs to be continued preoperatively and if needed short acting beta blockers can be used to control the heart rate. Sympathetic stimulation due to any reason eg pain can be detrimental as it can increase the pressure gradient across the valve. For effective pain relief multimodal regimen including PEC block was chosen.

Ensuring postoperative pain relief is also of utmost importance as undermanaged pain may result in hypertension, arrhythmias and other associated problems. Intravenous opioids although good agents but may result in other side effects like nausea which may be detrimental especially when early mobilization is the goal to achieve. PEC block as described by Blanco *et al.*^[7, 8] is an effective and proven method for perioperative pain relief in breast surgeries. It has been used successfully in combination with general anaesthesia/ sedation for effective pain relief during breast surgery.

Stress response to intubation could also prove dangerous so LMA was used. Moreover as patient was already having aphonia so intubation was avoided. Hypercarbia and hypoxia may prove hazardous in setting of pulmonary hypertension so airway was secured with LMA. The current American Heart Association guidelines no longer recommend routine bacterial endocarditis prophylaxis for persons with rheumatic mitral stenosis^[9].

Appropriate surgical technique as minimum possible incision, use of harmonic cautery and tight pressure bandage was used to minimize blood loss. Strict euthermia was maintained throughout the procedure as hypothermia may be another ignored cause of uncontrolled bleeding.

4. Conclusion

Anaesthetising patients with above co morbidities demands high emphasis on maintaining stable vitals, meticulous perioperative pain relief, and early postoperative ambulation, fine modifications of anticoagulant and appropriate surgical techniques. We emphasise proper coordination between surgeon and anaesthesiologist in such cases to use appropriate techniques for better patient outcome.

5. References

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