Case Report

Anaesthesia Section

Parietal Meningioma Excision Under Hypotensive Anaesthesia in a Patient with a Prosthetic Mitral Valve

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ABSTRACT

Non-cardiac surgeries in cardiac patients and post-valve replacement are increasing these days. The prevention of thromboembolic sequelae in these patients is a major challenge. We report here, a case of parietal lobe meningioma excision in a 70-year-old post mitral valve replacement patient who was on irregular anti-coagulant treatment. Low molecular weight Heparin was given preoperatively in the immediate post-operative period and Warfarin was started with later. INR was maintained within normal limits and patient had uneventful recovery following surgery.

Key Words: Meningioma, mitral valve prosthesis, anticoagulants, hypotensive anaesthesia

BACKGROUND

The anaesthetic management of the patients for non-cardiac surgery and post-valve replacement is increasing these days. Their management involves the cardiac assessment of the valvular function, the residual pathology, infective endocarditis and the functional status; assessment of the status of anticoagulation, any risk of bleeding, preparation for the reversal of anti-coagulants if they are needed intra-operatively; and neurological evaluation for detecting any impairment due to thromboembolism.

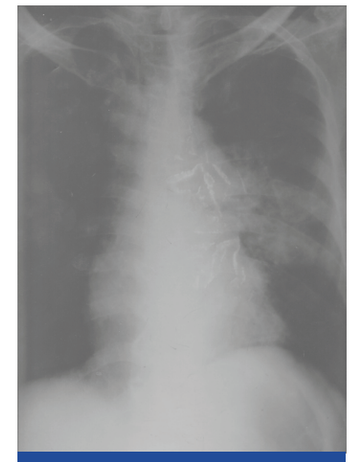
We present here, the successful management of a patient who underwent neurosurgery 9 yrs post mitral valve replacement.

CASE REPORT

A 70 years old male patient presented with a history of seizures and headache since one month. The examination and evaluation confirmed a left parietal lobe space occupying lesion. The previous history showed that he was a known case of rheumatic heart disease. The patient underwent mitral valve replacement 9 years back and is on irregular treatment with anticoagulants.

On examination, the patient was found to be thin built and moderately nourished. His pulse was 68 beats per minute and his blood pressure was 150/90 mm of Hg. On auscultation, it was found that there were diminished breath sounds in all the lung fields and his CVS examination showed an ejection systolic murmur at the mitral area. Other systemic examinations were not significant. ECHO showed that LVEF was 0.35%, with mild mitral regurgitation. His chest X-ray showed mitral valve prosthesis with secondaries in the lung. The pre-operative laboratory investigations are given in [Table/Fig-1].

The patient was on irregular anti-coagulant treatment. He was started on low molecular weight Heparin. Heparin was stopped 12 hours before surgery.On the day of the surgery, the patient was premedicated with midazolam 0.05mg/kg for anxiolysis and with ampicillin 1.5 gm and gentamycin 80 mg intravenously as infective endocarditis prophylaxis, half an hour before the skin incision was made. The patient was shifted to the OT and the monitors were attached ie pulseoximeter, ECG, NIBP, IBP and CVP. The patient was pre-oxygenated with 100% oxygen. He was induced with thiopentone 3mg/kg, fentanyl 2micg/kg and vecuronium 0.1mg/kg. He was intubated with an 8.5 cuffed endotreacheal tube under vision. He was maintained on oxygen: nitrous oxide 40:60, isoflurane 1 MAC and vecuronium intermittently on ¼ th of the loading dose. Intraoperatively, phenytoin 400mg in 500ml saline was infused. His blood pressure was maintained between 90/60mmHg by using a titrated nitroglycerine infusion. His brain was well relaxed and there was no necessity to give mannitol even after opening the dura. The blood loss was around 500ml, which was replaced by giving one unit of blood. The intra-operative period was uneventful. He was reversed with glyopyrolate 0.005 mg/kg and neostigmine 0.05 mg/kg. The patient was extubated at the end of the surgery after thorough suctioning. He was shifted to



[Table/Fig-1]: X-Ray Chest

Hemoglobin	10gm/dl
Hematocrit	28.2
Total leukocyte count	9800;differential count , neutrophils 74%, lymphocytes 16%, monocytes 2%, eosinophils 7%, basophils 1%.
Fasting blood sugar	105mg/dl
Blood urea	30mg/dl
Serum creatinine	0.9mg/dl
Serum electrolytes	Na+ 134 mEq/L, K+ 3.2mEq/L
Coagulation profile	Platelet count 2.5 lakh/mm3, PT 23 (patient) and 16(control) with a INR 1.8, APTT 30(patient) and 28(control)

the NSICU. His vitals were stable. Six hours from the last dose of infective endocarditis prophylaxis administration, a second dose of ampicillin 1.5 g was administered.

Eight hours after the surgery, the drains showed 50ml and so, it was decided to administer the next dose of low molecular weight Heparin. PT and INR were done daily and they were found to be within normal limits. He was changed to Warfarin on the 5th post-operative day. The postoperative 2D-ECHO showed a normally functioning valve with no clots or vegetations. The patient was discharged from the NSICU after 14 days.

DISCUSSION

Mechanical prosthetic heart valve replacements expose the patients to thromboembolism and valve dysfunction. So, anti-coagulation is a must. The new generation prosthetic mechanical mitral valves should receive Warfarin to a target INR of 2.5–3.5 and for older types of valves, the target INR should be 3.5–4.5 [1]. When these valve replacement patients come for a non cardiac surgery later in life, there is a challenge to stop or to continue anti-coagulation. The discontinuation of anti-coagulation in the perioperative period can precipitate life threatening thromboembolism, whereas its continuation may cause significant bleeding during surgery. 1% to 20% of the patients can have thromboembolism after withholding Warfarin [2-6]. Thrombus occlusion of the prosthetic valve can occur in 1–13% of the patients [7]. The INR should be within the normal range before the procedure, to minimize blood loss. The European Society of Cardiology and the Fourth American College of Chest Physicians Consensus Conference on AntithromboticTherapy have recommended pre-operative heparinization to minimize the risk of thrombosis which results from the return to a normal INR [8,9].

Oral anti-coagulation should be discontinued at least three days before any major surgery and as a compromise between no anti-coagulation and intravenous heparin, subcutaneous conventional heparin or low molecular weight heparin in prophylactic doses has to be substituted preoperatively. A dose of heparin should be given 3–6 th pre-operatively in patients who are at a high risk of thromboembolic events and heparin should be restarted as soon as possible, post-operatively (preferably within 12 hrs). Warfarin is restarted 24 hours postoperatively or when the patients can start with oral intake. Heparin should be continued till the INR is in the therapeutic range for at least 48 hrs, to enable a reduction in all the vitamin-K-dependent clotting factors [10,11]. For emergency surgery, FFP is given to neutralize the actions of Warfarin, its dose depending upon the individual. It is titrated till the INR is < 1.5. In addition to this, vitamin K should be given intravenously in small doses (large doses lead to a resistance to Warfarin) and it should be continued even after the surgery.

CONCLUSION

The number of patients with mechanical prosthetic heart valves, who come for non-cardiac elective or emergency surgery, is increasing these days. The management of such patients with respect to thromboembolism is crucial. So, for the elective cases, Warfarin should be changed to unfractionated Heparin at least 4–5 days prior to the surgery and the INR should be maintained at <1.5 before the surgery. Unfractionated heparin should be discontinued 3–6 hrs prior to the surgery and it should be restarted within 6–12 hrs of the completion of the surgery. The prophylaxis for endocarditis should also be followed strictly in prosthetic valve patients.

REFERENCES

[1] Bayliss A, Faber P, Dunning J, Ronald A. What is the optimal level of anti-coagulation in adult patients who were receiving warfarin following the implantation of a mechanical prosthetic mitral valve? *Interact Cardio Vasc Thorac Surg* 2007; 6:390-96.

[2] Kearon C, Hirsh J. Management of anticoagulation before and after elective surgery. *N Engl J Med* 1997; 336:1506-11.

[3] Gohlke-Bärwolf C. Anti-coagulation in valvular heart disease: new aspects and management during non-cardiac surgery. *Heart* 2000; 84:567-72.

[4] Cannegieter SC, Rosendaal FR, Briet E. Thromboembolic and bleeding complications in patients with mechanical heart valve prostheses. *Circulation* 1994; 89:635-41.

[5] Larson BJ, Zumberg MS, Kitchens CS. A feasibility study on continuing dose-reduced warfarin for invasive procedures in patients with a high thromboembolic risk. *Chest* 2005; 127:922-27.

[6] Douketis JD, Crowther MA, Cherian SS, Kearon CB. Physician preferences for pre-operative anti-coagulation inpatients with a mechanical heart valve, who were undergoing elective non-cardiac surgery. *Chest* 1999; 116:1240-46.

[7] Sharma N, Grover A, Radotra BD. Prosthetic cardiac valve replacement: management problems. *Asian Cardiovasc Thorac Ann* 1998; 6:179-82.

[8] Cannegeiter SC, Rosendaal FR, Wintzen AR, Meer FJM, van de Vandenbroucke JP, et al. Optimal anticoagulation therapy in patients with mechanical heart valves. *N Engl J Med* 1995;333:11-17.

[9] Ad Hoc Committee of the Working Group on Valvular Heart Disease. European Society of Cardiology. Guidelines for the prevention of thromboembolic events in valvular heart disease. *J Heart Valve Dis* 1993; 2:398-410.

[10] Webster K, Wilde J. Management of anti-coagulation inpatients with prosthetic heart valves who were undergoing oral and maxillofacial operations. *Br J Oral Maxillofacial Surg* 2000;,38:124-126.

[11] Ansell J, Hirsh J, Dalen J, Bussey H, Anderson D, Poller L, *et al.* Managing oral anticoagulant therapy. *Chest* 2001; 119(1suppl): 22S-38S.

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DECLARATION ON COMPETING INTERESTS:

No competing Interests.

Date of Submission: **Nov 17, 2011**
Date of peer review: **Dec 05, 2011**
Date of acceptance: **Dec 10, 2011**
Date of Publishing: **Dec 25, 2011**