

MANAGEMENT OF A MAXILLOFACIAL TRAUMA PATIENT ON WARFARIN

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ABSTRACT

Maxillofacial trauma patients with prosthetic heart valves are a challenge to treat due to the risk of bacterial endocarditis. These patients are on anticoagulant therapy therefore, they are at a risk of bleeding and thrombosis. A case of 55 year old known epileptic male patient, with mitral valve replacement surgery performed in 1988, who presented to oral and maxillofacial surgery department, Khyber College of Dentistry, with fracture mandible due to fall is reported. The patient was on warfarin with an INR raised to 9.5 and a prothrombin time of 100 seconds. Routine investigations for general anaesthesia were performed and were in the normal range. Open reduction of the fractured mandible was planned under general anaesthesia, and the patient was switched from warfarin to low molecular weight heparin and INR and PT were lowered to 1.9 and 23 seconds respectively a day before surgery. Uneventful surgery was performed and complete recovery was achieved within 3 days.

Key words: Oral and Maxillofacial Surgery, warfarin, prosthetic heart valves.

INTRODUCTION

Patients with mechanical prosthetic heart valve are exposed to significant risk of thromboembolism and valvular dysfunction if proper anticoagulation is not achieved. Patients with new generation prosthetic heart valve should receive warfarin to a target INR of 2.5 to 3.5 and for older types of valve the target INR should be 3.5 to 4.5.¹ When such patients require elective or emergency surgery there is an increased risk of bleeding if the dose of oral anticoagulants is not lowered. However, lowering the drug levels can increase the risk of thromboembolism. Thus, a series of management guidelines are needed in such situations.² We report a case and discuss the perioperative management of a patient with prosthetic heart valve and on warfarin.

CASE REPORT

A 55 years old male patient, reported to Oral and Maxillofacial Surgical Unit, Khyber College of Den-

tistry with fractured mandible left para-symphysis due to fall. The patient had undergone an open heart surgery with mitral valve replacement in 1988. He was a known epileptic patient for the last 15 years and had stroke in 1996 with paralysis of right hand and left leg. The patient was on several drugs. He was taking warfarin since 1988, presently 5 mg twice daily, was taking carbamazepine 200 mg twice a day and a beta-blocker 25 mg once daily. A detailed intra-oral and extra-oral examination was performed. On intraoral examination he had satisfactory oral hygiene, and was partially dentate. There was step between lower left canine and premolar with a disturbed occlusion and hematoma in the floor of the mouth. Mouth opening was within the normal range. Extraoral examination revealed a laceration in the left parasymphysis region. The lower border of the mandible was tender on palpation in this region. On laboratory investigations, INR was 9.5 and prothrombin time was 100 seconds with a control of 13 seconds.

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Other baseline investigations including hepatitis b and hepatitis c were negative. Blood sugar and urea were within the normal range.

The patient was scheduled for open reduction and internal fixation under general anaesthesia. On consultation with the patient's cardiologist, warfarin was stopped and he was switched over to low molecular weight heparin 5000 IU intravenously 6 hourly till the INR was lowered to the normal value for surgery. After discontinuation of warfarin, the PT and INR were repeated they were 48 seconds and INR of 5.13 respectively. A day before surgery an INR of 1.9 and PT of 23 seconds was obtained. According to the cardiologist opinion heparin was stopped 6 hourly before and after surgery. Antibiotic prophylaxis was given, Amoxil 2 gm intravenously was given stat at the time of surgery and 6 hours after surgery for 24 hours. Epival infusion was given during operation and was continued with the usual dose of anti-epileptic afterwards. Pre-existing laceration was used for access to the surgical site. The fracture site was exposed, reduced and after achieving a normal occlusion, two six hole mini-plates with four screws each were placed. Layered closure was done and haemostasis achieved. Warfarin was restarted after 24 hour post operatively.



Fig 1: Fracture fixed with two mini-plates and 4 screws each

DISCUSSION

Warfarin is one of the coumarin groups of drugs and is prescribed for various conditions like atrial fibrillations, deep vein thrombosis, transient ischemic attack, mechanical heart valves, cerebrovascular acci-

dents, myocardial infarction and valvular disease. It blocks the formation of prothrombin and factors II, VII, IX, and X, which are involved in both the extrinsic and common coagulation pathways, and prevents the metabolism of vitamin K to its active form that is needed for the synthesis of these factors. Other vitamin K-dependent proteins inhibited by warfarin include proteins C and S, which are involved in the fibrinolytic system. Because coumarins bind strongly to plasma proteins, warfarin has a half-life of 36 h and acts slowly. Conversely, its discontinuation results in a prolonged latent effect, which explains advice to discontinue its use 2 to 3 days before surgery³. The activity of warfarin is expressed as the International Normalised Ratio (INR)⁴ which is the standard introduced by the World Health Organization 20 years ago. It is a prothrombin ratio obtained by dividing the prothrombin time by the laboratory control prothrombin time. The therapeutic range is the value of INR or degree of anticoagulation that is required to prevent the development of serious thromboembolism and it is normally maintained between 2.0 and 4.0⁵. The management of patients who take warfarin has varied, and included stopping 2 days before an operation, reduction in the dose, no change in the dose provided the INR was <4.0, and changing from the normal regular dose of warfarin to one of low molecular weight heparin preoperatively³. In patients with heart valves, both the European Society of Cardiology and the Fourth American College of Chest Physicians Consensus Conference on Anti-thrombotic Therapy have recommended perioperative heparinization to minimize the risk of thrombosis resulting from the return to a normal INR.^{6,7} A dose of heparin should be given 3–6 h preoperatively in patients at high risk of thromboembolic events and heparin should be restarted as soon as possible post operatively (preferably within 12 h). Warfarin is restarted 24 hours postoperatively or when patients can start oral intake. Heparin should be continued till the INR is in the therapeutic range for at least 48 h, to enable a reduction in all the vitamin-K-dependent clotting factors.^{8,9}

The risk of developing infective endocarditis remains higher in patients with prosthetic heart valve and in patients who has or a history of endocarditis. Invasive treatment in which bacteraemia is more likely to occur (such as periodontal scaling and sur-

TABLE 1: ANTIBIOTIC PROPHYLAXIS FOR CERTAIN DENTAL AND SURGICAL PROCEDURES¹²

Situation	Antibiotic	Regimen
Standard prophylaxis	Amoxicillin	Adults, 2.0 grams; children, 50 milligrams/kilogram orally one hour before procedure
Cannot use oral medications	Ampicillin	Adults, 2.0 g IM§ or IV§; children, 50 mg/kg IM or IV within 30 minutes before procedure
Allergic to Penicillin one	Clindamycin	Adults, 600 mg; children, 20 mg/kg orally one hour before procedure
	Cephalexin or cefadroxil	Adults, 2.0 g; children, 50 mg/kg orally one hour before procedure
one	Azithromycin or clarithromycin	Adults, 500 mg; children, 15 mg/kg orally one hour before procedure
Allergic to penicillin and cannot take oral medications	Clindamycin	Adults, 600 mg; children, 15 mg/kg IV one hour before procedure
	Cefazolin	Adults, 1.0 g; children, 25 mg/kg IM or IV within 30 minutes before procedure

† Cephalosporins should not be used in patients with immediate-type hypersensitivity reaction (urticaria, angioedema or anaphylaxis) to penicillin.

‡ Total children's dose should not exceed adult dose.

§ IM: Intramuscular; IV: Intravenous.

gery) warrant the use of antibiotic coverage in patients with such conditions.¹⁰ Dajani and colleagues have reported that 2 g of amoxicillin provides several hours of antibiotic coverage.¹¹ Table 1 shows antibiotic prophylaxis regimen for certain dental procedures.

CONCLUSION

It is concluded that patients with prosthetic heart valves, scheduled for surgery, warfarin should be changed to low molecular weight heparin at least 4 - 5 days prior to surgery. INR should be less than 2 for proceeding with surgery. Due to risk of thrombosis heparin should be discontinued 6 hour before surgery and restarted within 6 hours after completion of surgery. Infective endocarditis prophylaxis should be administered before surgery to patients with prosthetic heart valve.

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