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CASE REPORT

Hemorrhagic shock as a complication of anticoagulant therapy following the mitral valve replacement

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ABSTRACT

This report describes a case of the hemorrhagic shock in a patient on the anticoagulant therapy supplementing implanted mechanical prosthetic heart valve replacing the mitral valve. The association between hemorrhagic shock, mechanical prosthetic heart valve and anticoagulant therapy is briefly discussed.

Key words: hemorrhagic shock, mechanical prosthetic heart valve, anticoagulant therapy

Introduction

It is recommended that all patients with mechanical prosthetic heart valves receive oral anticoagulants (grade 1C+) and that UFH or LMWH be given until the INR is within therapeutic range for 2 consecutive days (grade 2C). In patients with mechanical prosthetic heart valve in mitral position the goal INR is 3.0; range 2.5 to 3.5, alternative goal INR 2.5; range 2.0 to 3.0; and aspirin therapy (80 to 100 mg/d) (grade 2C). (1). Bleeding is the major complication of anticoagulant therapy. (2). The major determinants of bleeding from the use of oral anticoagulants are the intensity of the anticoagulant effect, individual response of the patient, and the extent of therapy. Patient characteristics associated with a major risk of hemorrhage have been identified in a number of randomized studies (3, 4). In selecting therapy, the potential decrease in risk for thromboembolism must be balanced against probability of risk for bleeding. (1).

Hemorrhagic shock is a potentially life-threatening condition that requires immediate treatment. The term shock denotes circulatory failure leading to an inadequate vital organ perfusion and oxygen delivery. The physiologic hallmark of the hypovolemic shock is decreased venous return to the heart and consequently decreased stroke volume, cardiac output, and systemic blood pressure. The mainstay of therapy is intravenous fluid resuscitation and transfusion along with treatment of underlying cause of shock.

Case report

A 59-year-old man presented to the Department of anesthesiology, reanimatology and intensive care with signs of hemorrhagic shock. Prior to his admition, he was hospitalized in the University hospital for infective diseases (24^{th} April- 30^{th} May 2006) for treatment of bacterial endocarditis. From 31^{st} May to 13^{th} June 2006 he was hospitalized in the University Hospital Dubrava for the replacement of insufficient mitral valve with a prosthetic valve. Postoperatively, he received an anticoagulant therapy (heparin). Following this, between the 7 th May and 13^{th}May 2006, in University hospital for infective diseases he received per oral anticoagulant therapy (pelentan) according to INR. On 13^{th} June he was transferred to the Gastroenterology ward of the University Hospital Zagreb because of hematemesis and melena. The bleeding was detected using the emergency esofagogastroduodenos copy (sclerosation and fibrin glue). In following days, he was in few occasions treated applying the same procedure. On the 18^{th} of June, as the heeling of the ulcer was verified, the anticoagulant therapy started with enoxaparin 2*0,6 ml s.c., pantoprazol 2*40 mg iv, special ulcer diet and amoxicillin + clavulonic acid 1,2 g i.v.and gentamicin 80 mg i.v. Next day he presented with nausea, fatigue and melena. Bleeding could not be stopped with emergency esofagog astroduodenoscopy. Therefore he was transferred to the University Hospital of anesthesiology and intensive care. On examination, the patient was in severe distress, with vital signs as follows: temperature 36.0°C, blood pressure 80/50 mmHg, heart rate of 130 beats/ min, respiratory rate of 24 breaths/min and oxygen saturation of 94% on room

air. He was pale, sweating, with cold cyanotic limbs, had delayed capillary refill, diminished pulses, and decreased skin temperature. CVP was 11 mmHg, the urine output was decreased (400 ml) and he had hemi paresis of left side of the body. Findings on respiratory and abdominal examination were unremarkable. Laboratory findings were as following: hematocrit 0,17; hemoglobin 56 g/L; platelets 61; PT 0,53; PTT 50,0. Given the signs and symptoms of hemorrhagic shock the patient was treated with 2260 ml red blood cells, 810 ml fresh frozen plasma, 2000 ml Sol. Ringer, 1000 ml 0,9% NaCl, 500 ml 6% HAES and resection of stomach-Bill Roth II. He was discharged on 24th June 2006 and continued to do well.

Discussion and conclusion

Patients with mechanical prosthetic heart valves, because of their thrombogenicity, need to receive anticoagulants (1). The main complication of this therapy is bleeding occurring in 6% to 39% of patients. (2). In patients with mechanical prosthetic heart valve in mitral position a goal INR is 3.0; range 2.5 to 3.5 (grade 2C) (1). Risk factors for bleeding are: liver or renal disease, alcoholism, malignant disease, age over 75, reduction in number/function of platelets, uncontrolled hypertension, anemia, history of a cerebrovascular insult and genetic factors. This case report describes a case of patient who developed a gastrointestinal bleeding while taking warfarin following the implantation of a mechanical prosthetic valve. His past medical history included hypertension which was poorly controlled because he was not taking any antihypertensive drugs and also had cerebrovascular insult in May 2005. He was taking warfarin after the implantation of mechanical prosthetic valve in the mitral position, but optimization of his international normalized ratio (INR) had been difficult to achieve. Also, he did not receive any anti-ulcer prophylaxis at the same time. In addition to warfarin, his medications included amoxicillin in combination with clavulonic acid. It should be mentioned here that for prophylaxis of the endocarditis he should have received an alternative antibiotic treatment because it is well known that amoxicillin in combination with clavulonic acid prolongs bleeding time and PT. The most interesting issue is optimization of anticoagulant therapy in this case. Because of the bleeding the therapy was stopped, which placed the patient at higher risk of thromboembolic complications. Also, the use of fractioned heparin has advantage in comparison to LMWH (enoxaparin (5)) in way of better control of effect plus possibility of conversion.

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