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Case Report

On pump coronary surgical revascularization in a patient with chronic immune thrombocytopenic purpura

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Abstract

We performed on-pump coronary artery bypass graft surgery on a 54-year-old female, known case of chronic Idiopathic Thrombocytopenic Purpura (ITP), hypertension and dyslipidaemia who had presented to us with progressive exertional shortness of breath and chest pain. The decision of going on with CABG was made after two weeks of preoperative treatment with prednisolone. Her platelet counts pre-operatively and on the 4th post-operative day were $135 \times 10^9/L$ and $32 \times 10^9/L$. She had an unremarkable post-operative recovery, without requiring whole blood or platelet transfusions. We recommend preoperative steroid treatment in patients with chronic ITP undergoing CABG.

Introduction

Immune thrombocytopenic purpura (ITP) patients are at high risk for bleeding complications, during and after cardiac surgeries involving cardiopulmonary bypass. Every year 58-66 per million new cases of adult chronic ITP are diagnosed in the U.S.¹ Comparable statistics for developing regions are not available. About 30% of these patients have antiphospholipid antibodies in their blood.² We describe the case of a 58 year old female with chronic ITP who underwent a successful surgical revascularization after medical optimization with steroids.

Case Report

A 58-year-old female who was a known case of ITP, presented with progressive exertional shortness of breath and chest pain. She had a 25 year history of ITP, hypertension and dyslipidaemia. She had previously tested positive for anti-cardiolipin antibodies but the diagnosis of antiphospholipid syndrome was not established due to the absence of clinical findings. She did not have any successful pregnancy. She had previously been treated with steroids and her platelet counts were managed between $3 \times 10^9/L$ and $150 \times 10^9/L$. With steroid treatment, angiography was performed which showed 3 vessel coronary artery disease (RCA 70%, LCX 80% and LAD 90%), requiring bypass surgery. Her ITP was a major hindrance in proceeding with CABG as she had a previous history of massive bleeding requiring blood and platelet transfusions following tooth extraction, 22 years ago. She was kept on 10 mg BD

prednisolone for two weeks and her platelet count was stabilized above $100 \times 10^9/L$. Her preoperative platelet count was $135 \times 10^9/L$ and she had an unremarkable clinical examination. After this optimization with steroid therapy she underwent surgical revascularization with cardiopulmonary bypass support. Three vascular bypass grafts were established using the internal mammary artery and the saphenous vein. Heparinization was maintained during the grafting. The aortic cross clamp time was 30 minutes and total cardiopulmonary bypass time was 50 minutes. At the end of the procedure her platelet count was $33 \times 10^9/L$. On the first post operative day the platelets dropped to $15 \times 10^9/L$. Prednisolone dose was increased to 30 mg but platelets were not transfused as there was no evidence of active internal or external bleeding. She had a prolonged ICU stay of three days, without major complications. Her platelet count gradually improved to $32 \times 10^9/L$, and on fourth postoperative day she was shifted out of the ICU. She had an uneventful post-operative stay and was discharged from the service without requiring blood or platelet transfusions.

Discussion

Idiopathic thrombocytopenic purpura is described as persistent thrombocytopenia with mucocutaneous bleeding due to autoimmune destruction of the IgG coated platelets by the reticuloendothelial system, predominantly in the spleen and liver. Although antiphospholipid antibodies may be present in these individuals but they are of less significance in the absence of clinical findings.³ There are conflicting results regarding the significance of anticardiolipin antibody as an independent risk factor for coronary heart disease but one of the recent study in this respect has shown that high anticardiolipin antibody titers are an independent risk factor for recurrent cardiac events.⁴

To date very few cases of patients with ITP undergoing CABG have been reported, with a significant part of the literature being in Japanese and no clear guidelines exist for preoperative management of such patients. Inoue and co-workers reported an ITP patient who underwent off-pump CABG with pre-operative IgG therapy.⁵ The patient did not require any platelet transfusion post-operatively. Mathew and associates reported three

cases of ITP undergoing CABG using cardiopulmonary bypass with preoperative IgG therapy.⁶ Platelet transfusion was required in two out of the three patients operated. A study by Christiansen has suggested the use of IgG in patients with ITP undergoing cardiac surgery with platelet counts below $80 \times 10^9/l$.⁷ But it did not significantly affect the postoperative platelet transfusion requirement. Splenectomy is the traditional second line therapy in patients who fail to respond to steroids and IgG therapy.¹ This has been described as a treatment option along with cardiac surgery in such patients.⁸ Response to splenectomy takes several days and failure of treatment is reported in about one-third of the patients. Moreover, this is a high risk procedure in such patients. Jubelirer⁹ has described two patients who underwent successful surgical revascularization without undergoing splenectomy. Bleeding was managed using platelet transfusions only.

Our patient had a good response to prednisolone treatment and therefore it was selected as the pre-operative treatment to raise her platelet counts. Platelet transfusion was not required perioperatively. She was splenectomized 12 years ago but it had not improved her condition. IgG therapy is very expensive in this part of the world. It is difficult for the patients to afford due to the health care system setting of Pakistan and that the response to IgG therapy is transient and varies.

Therefore we recommend preoperative steroid treatment as an effective alternative to IgG therapy in patients with chronic ITP undergoing CABG and that the use of the off-pump technique should be practiced only if it is workable.

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