CASE REPORT

Acute severe thrombocytopenia after treatment with ReoPro (abciximab)

R Butler, P J B Hubner

Abstract

ReoPro (abciximab) is an extremely potent inhibitor of the glycoprotein IIb/IIIa receptor, the final common pathway of platelet activation and aggregation. Its main role is the maintenance of coronary patency after suboptimal results with coronary intervention. However, one of the complications of this treatment is excessive bleeding, a problem which may be compounded by a rare idiosyncratic thrombocytopenic reaction. A severe episode of thrombocytopenia in a 64 year old man is described; he was treated with ReoPro for a right coronary stenosis which had not been resolved by angioplasty. His platelet level dropped quickly and only improved after 20 units of platelets were given.

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Keywords: ReoPro; abciximab; platelets; thrombocytopenia; interventional cardiology

A 64 year old man presented with a three month history of progressive exertional angina. He had a positive exercise tolerance test at three minutes, and coronary angiography showed that he had a proximal 95% right coronary artery (RCA) stenosis. He was treated four weeks later with percutaneous transluminal coronary angioplasty.

This procedure was uncomplicated and the lesion was predilated with a 2.5 mm $\times$ 20 mm balloon, and a 3.5 mm $\times$ 16 mm stent was deployed. However, the proximal and distal filling defects seen on the angiogram were consistent with plaque material extruding beyond the stent. Because of this unsatisfactory result, ReoPro was administered both as a 25 mg bolus and as an infusion (8 mg/hour for 12 hours).

Within the first hour of the ReoPro infusion the patient started to shiver; the shivering lasted for 30 minutes, he also had a short lived period of hypotension, which resolved with conservative treatment. The ReoPro was stopped for one hour and then restarted. After eight hours, a full blood count showed his platelet count was 17×10^9 /litre and the ReoPro was again stopped. However, the patient's platelet count continued to drop and at its lowest point was 1×10^9 /litre (preopera-

tively, his platelet count had been 209×10^9 /litre). True thrombocytopenia was confirmed by microscopy and 10 units of platelets administered, after which the platelet count rose to 56×10^9 /litre.

The patient then developed mild abdominal pain without local signs, and computed tomography showed a mild to moderate retroperitoneal haematoma. There was also spontaneous bruising around the site of the blood pressure cuff and haematuria. The patient was given 10 more units of platelets, and 24 hours later his platelet count had reached 150×10^9 /litre. The arterial sheath was then removed and femoral artery pressure was applied using a FemStop device. The platelet count continued to rise indicating that the patient was again producing his own platelets. When the platelet count reached 190×10^9 /litre, he was started on aspirin (but was not given clopidogrel), and his platelet count has since stabilised at a normal concentration (283×10^9 /litre).

Discussion

Antiplatelet treatment in the form of aspirin is the standard treatment for the prevention of thrombosis in myocardial infarction and coronary intervention. However, aspirin is a relatively weak antiplatelet agent and does not prevent platelet aggregation through other thromboxane A_2 (TxA_2) independent pathways—such as adrenaline (epinephrine), collagen, thrombin, and ADP. Newer agents which act via these other pathways—for example, clopidogrel, reduce the risk of early loss following successful stent placement. However, whichever the mechanism of platelet activation (TxA_2 or ADP), activation of the glycoprotein IIb/IIIa receptor is the final common pathway.

ReoPro is the Fab fragment of the chimeric antibody 7E3. It prevents platelet aggregation by inhibiting the binding of adhesion molecules to the glycoprotein IIb/IIIa receptor. It also produces a dose dependent inhibition of platelet function, which returns to normal over 48 hours after cessation of a ReoPro infusion.

The recent use of ReoPro (abciximab, c7E3 Fab) has significantly reduced the need for emergency surgery operation after suboptimal percutaneous coronary intervention.¹ ReoPro is now also indicated for use in the prevention of ischaemic complications of balloon angioplasty, atherectomy, and stent implantation.

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Furthermore, there is growing evidence for the use of IIb/IIIa antagonists in the management of unstable angina.^{2,3}

Thrombocytopenia is a potential hazard of the use of ReoPro, although it manifests differently from heparin induced thrombocytopenia because it occurs rapidly, recovers once the ReoPro has been stopped, and responds to platelet infusion. Acute profound thrombocytopenia (platelet counts of less than 20×10^9 /litre) occurs in fewer than 1% of cases.⁴⁻⁶

In a recent review,⁷ Ferguson *et al* suggested that the key to effective management of ReoPro treatment was recognition of bleeding due to thrombocytopenia, and that full blood counts should be assessed at both four hours and 24 hours after infusion. If the platelet count begins to fall, ReoPro should be stopped, because the management of the developing thrombocytopenia depends on its severity: a platelet count of 50×10^9 /litre needs monitoring only; between 20 and 50×10^9 /litre, the thrombocytopenia should be observed unless there is spontaneous bleeding as this would necessitate the administration of platelets; platelet levels of less than 20×10^9 /litre need urgent transfusion to bring the count above 50×10^9 /litre—the count should then rise spontaneously by 20×10^9 /litre, providing there is no further loss per day, as megakaryocytes replace platelet stocks.

Conclusion

Thrombocytopenia is a rare complication of ReoPro treatment. Our patient recovered completely and had only minor abdominal discomfort. However, the complication could have been more serious, and measurement of the platelet count four hours after the ReoPro infusion is recommended to detect thrombocytopenia, so that treatment may be promptly initiated.

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