Eptifibatide induced thrombocytopenia

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Abstract

Glycoprotein (GP) IIb/IIIa are now being widely used in patients with acute coronary syndrome (ACS) undergoing percutaneous coronary intervention (PCI). With the growing use of these medications, there is an increase in adverse events related to them being reported in the literature, including severe thrombocytopenia.

Case report

Eptifibatide induced thrombocytopenia.

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Key clinical message :

Eptifibatide induced thrombocytopenia is a rare but serious side effect, which is diagnosed clinically after excluding other causes, and warrants close monitoring and observation to prevent more serious complications.

Keywords: Eptifibatide, Glycoprotien (GP) IIb/IIIa, Thrombocytopenia.

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Abstract:

Glycoprotein (GP) IIb/IIIa are now being widely used in patients with acute coronary syndrome (ACS) undergoing percutaneous coronary intervention (PCI) as they have shown to decrease mortality and morbidity in these patients. With the growing use of these medications, there is an increase in adverse events

related to them being reported in the literature, including severe thrombocytopenia. Here, we report a case of a 66-year-old male patient who presented to our hospital with signs and symptoms of heart failure, who then underwent coronary angiography (CAG), which showed two vessel disease, with subsequent PCI and stenting, he was then started on eptifibatide and developed thrombocytopenia, which improved rapidly after discontinuation of the drug.

Case :

Mr. M is a 66 year old male patient, who has a known history of Diabetes mellitus (DM) type 2, on oral hypoglycemic agents, hypertension (HTN) and chronic kidney disease (CKD), he presented to a periphery hospital complaining of shortness of breath of 20 days duration, it was related to exertion and improved with rest. In the emergency department, his electrocardiogram (ECG) was normal and he had normal troponins, and echocardiogram was done which showed severely reduced ejection fraction of 13%, he was then transferred to our facility for coronary artery disease assessment, for which a CAG was scheduled for him. He was kept on his regular home medications and started on unfractionated heparin 5000 units twice a day for venous thrombo-embolism prophylaxis. CAG was done and showed two vessel disease, with distal right coronary artery (RCA) and distal left circumflex artery (LCx) showing 99% stenosis, he was started on aspirin and clopidogrel. At this time, no intervention was done, and the patient was planned for staged PCI for both vessels as he had CKD. Three days later, the patient underwent PCI to RCA with 3 drug-eluting stents and was started on eptifibatide 1 microgram/kilogram/minute for a total of 18 hours after the procedure. Patient was transferred to our high dependency unit and was improving with no active complains. The next day, Complete blood count (CBC) was sent for him and showed a steep decline in his platelets count, dropping from 254 x10ˆ3/uL to 98 x10ˆ3/uL in less than 24 hours. Peripheral smear and manual counting of the platelets were done to rule our Pseudo-thrombocytopenia, which confirmed the previous readings. Heparin induced thrombocytopenia (HIT) assays were sent and came back negative. The patient had no evidence of bleeding. Repeat CBC over the next few days showed rapid improvement of the platelets count, reaching back to normal levels after 4 days from stopping Eptifibatide. Another intervention to the LCx vessel was not done as the interventional cardiologist reviewed the images again and decided that the patient is only for medical management for the remaining lesion. Patients' symptoms improved and he was discharged soon after.

Discussion:

Platelets play a major role in the formation and propagation of a thrombus, which is the key mechanism in developing Acute coronary syndromes(1). GP IIB/IIIA receptors are found on the surface of platelets and play a crucial role in the aggregating platelets by binding to fibrinogen and Von Willebrand factors(2).

Eptifibatide is an antiplatelet medication which reversibly binds and inhibits glycoprotein IIb/IIIa receptor on the surface of platelets (1), which means that it will prevent the binding of fibrinogen and Von Willebrand factors to GP IIb/IIIA receptors, thus inhibiting platelet aggregation and decreasing risk of thrombosis and thrombus propagation (3).

Eptifibatide had been approved by FDA based on three large, randomized trials, the PURSUIT, ESPIRIT, and IMPACT-II trials (5-7), the PURSUIT trial showed benefits in the settings of acute coronary syndrome (unstable angina and Non-ST elevation MI), while both ESPIRIT, and IMPACT-II approved eptifibatide for patients undergoing percutaneous coronary intervention only (PCI).

Profound thrombocytopenia is a rare side effect of GP IIB/IIIA in general. It has been reported with large molecule GPIIB/IIIA inhibitors such as Abciximab (8), but its incidence is quite rare with smaller molecules, specifically with Eptifibatide, with a risk of thrombocytopenia around (0.1 to –1%) (3,10). The data and evidence that are available suggest that Eptifibatide induced thrombocytopenia noticed to be profound within 24 hours of administration of the medication (9).

One of the suggested mechanisms for Eptifibatide induced thrombocytopenia is formation of antibodies against a group of epitopes, called ligand-induced binding sites (LIBSs), which are normally hidden, but

binding of the GP IIb/IIIa to the receptors will expose these (LIBs) and allows the antibodies to bind to them (LIBs) which facilitates the clearance of platelets by the reticuloendothelial system (4)

Other causes of thrombocytopenia needs to be excluded like, Heparin induced thrombocytopenia (HIT) , (HIT)-type 1 is less likely in our case, as it usually develops in the first 2 days of heparin administration and usually is mild, with platelets usually staying within the normal range, and type II which usually develops 5-10 days if no previous heparin exposure, and even within hours if there is a history of heparin exposure (12) . It is usually diagnosed with platelet-factor 4 immunoassays. In our case, the platelet-factor 4 immunoassay for HIT was negative and the drop was acute immediately after starting eptifibatide and improved after stopping it, which makes HIT unlikely.

Eptifibatide induced thrombocytopenia was reported in multiple case reports (4,9-11) which was treated by withholding the eptifibatide, with significant improvement of platelet count, as in our patient.

In summary, we have presented here a case of eptifibatide induced thrombocytopenia in a patient with acute coronary syndrome who underwent PCI. While eptifibatide is a rare cause of thrombocytopenia, it is a serious side effect that warrants careful and close follow up of platelet counts if it happens.

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Consent:

Written informed consent was obtained from the patient to allow the publication of information.

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