

CASE REPORT

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Treatment of the left and the right coronary arteries' ostial lesions by stenting in a patient with immune thrombocytopenic purpura

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Abstract

Immune thrombocytopenic purpura is an autoimmune disease which is characterized with a decrease in number of platelets in blood. Gathering ITP and coronary artery disease are a rare situation. These patients are treated with percutaneous, surgery or medical therapy. Our patient is 61 years old female who resting angina pectoris (Canada classification class 4). She has immun thrombocytopenic purpura for 5 years. Her hematological investigation showed thrombocyte counts $40 \times 10^9/L$. We performed coronary angiography after hematology consultation. Coronary angiography showed left main coronary artery ostial 99% stenosis, right coronary artery ostial 90% stenosis. At the same section, we implanted bare metal stent 4.0×12 mm for right coronary artery and 4.5×15 mm for left main coronary artery ostial lesions, respectively. Angina of the patient disappeared and she was discharged next day. There was no any problems at 6th month outpatient control.

Keywords: Immune thrombocytopenic purpura, coronary artery disease, percutaneous coronary intervention

Introduction

Immune thrombocytopenic purpura (ITP) is an autoimmune disease characterized by decrease platelet count in blood. Autoantibodies are formed against patients' platelet membrane antigens and these platelets are subjected to phagocytosis by mononuclear macrophage system in spleen. As a result of shortened life span of thrombocytes in blood and failure of bone marrow, megakaryocytes producing thrombocytes, the number of thrombocytes is decreased by time [1]. Development of atherosclerosis and myocardial infarction in patients with ITP are quite low. In addition, the application of percutaneous coronary intervention in these patients is lower than other patients due to concerns with bleeding risk [2].

We report an ITP patient with refractory, whose ostial lesions of Left Main Coronary Artery (LMCA) and Right Coronary Artery (RCA) were treated with stent.

Case Report

A 61-years-old female patient who was diagnosed with ITP five years ago. She was admitted to our hospital with complaints of chest pain. From the patient's history it was learned that she has been suffering from Diabetes Mellitus for 15 years, ITP for 5 years and coronary artery disease for 4 years. On physical examination, she was anaemic and had dullness in upper left quadrant due to splenomegaly. Her blood pressure was 90/60 mmHg, and heart rate was 108 beats / min. Laboratory examinations revealed hemoglobin (HB) 5.9 g / dL, platelet $40 \times 10^9 / L$.

The patient was hospitalized and up on the Hematology Department's recommendations two units of fresh whole blood were given. In post-transfusion blood control, hemoglobin increased to 8.1 g / dL and platelet to $42 \times 10^9/L$. Coronary angiography was performed. There were 99% ostial lesion in LMCA and 90% ostial lesion in RCA (Figure 1). According syntax score coronary artery bypass grafting was planned but according to recommendation of hematology it may have high risk of bleeding and on the other hand patient did not accept cardiac surgery, because of that we opt PCI. Intervention started first to RCA and then to LMCA. 48 hours before the procedure the patient was started on ASA 100 mg / day and Clopidogrel 75 mg / day as anti-aggregate treatment. It

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was adjusted in RCA ostium with JR4 side hole guiding catheter passing through 6F femoral sheath.

After giving 5,000 units unfractionated heparin intracoronary, a soft wire was passed through RCA ostial lesion and then dilated with 3.0x12mm N / C balloon (Sprinter). After that to align the stent in proximal part of aorta, a second soft wire was sent to aorta through the catheter. After that, 4.0x12mm bare metal stents (Integrity) at 20 atmospheres was transferred to aorta 3mm and was implanted in RCA ostium. Providing a complete restoration in right coronary (Figure 2), intervention started to LMCA. JL4 was adjusted in LMCA ostium with side hole guiding catheter half selectively. A soft wire was sent to LAD and a second soft wire was sent to CX. Then a balloon sent over the wire which had been sent to LAD and then LMCA lesion dilated with 3.5x12 mm N/C balloon (Sprinter), after that 4.5x15 mm bare metal stents (Integrity) at 18 atmospheres was implanted in LMCA ostium (Figure 3). Femoral artery sheath was removed 4 hours after the procedure and 20 minutes femoral artery compression applied by hand to make sure bleeding has fully stopped. Patient with Angina completely recovered and was discharged the next day. In follow-up after six months angiography done, it showed the stents were open (Figure 4) and there were no additional problems.

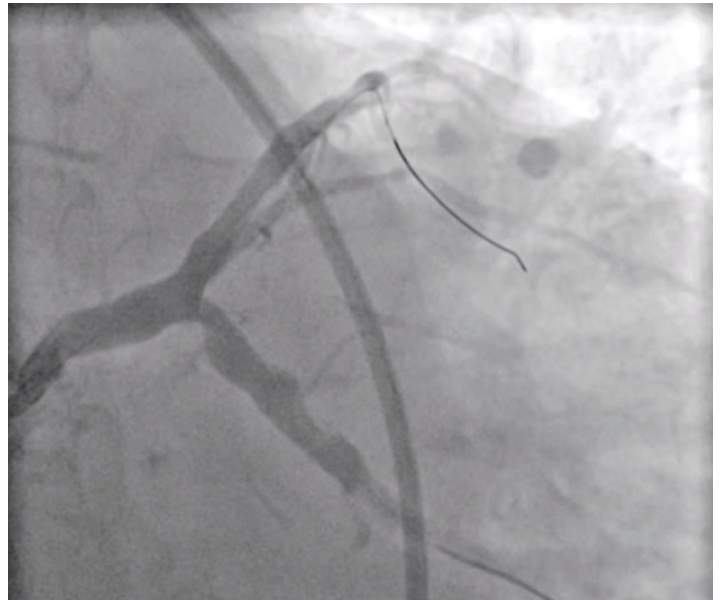


Figure 3. Ostium of left main coronary artery after stenting

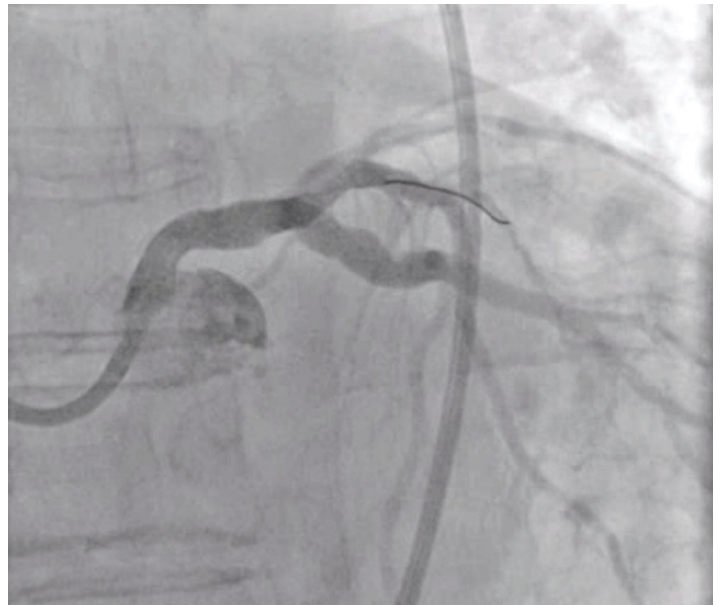


Figure 4. The final view of left main coronary artery

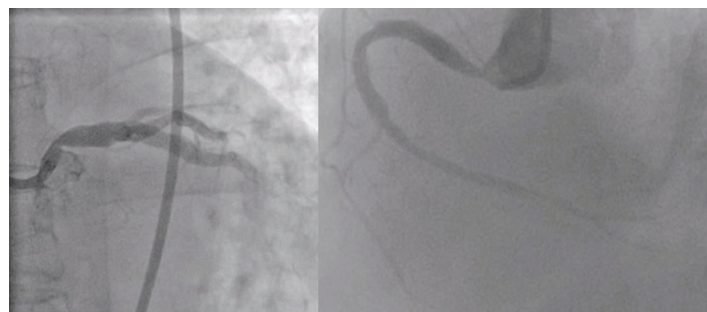


Figure 1. Ostial lesions of left main coronary artery and right coronary artery

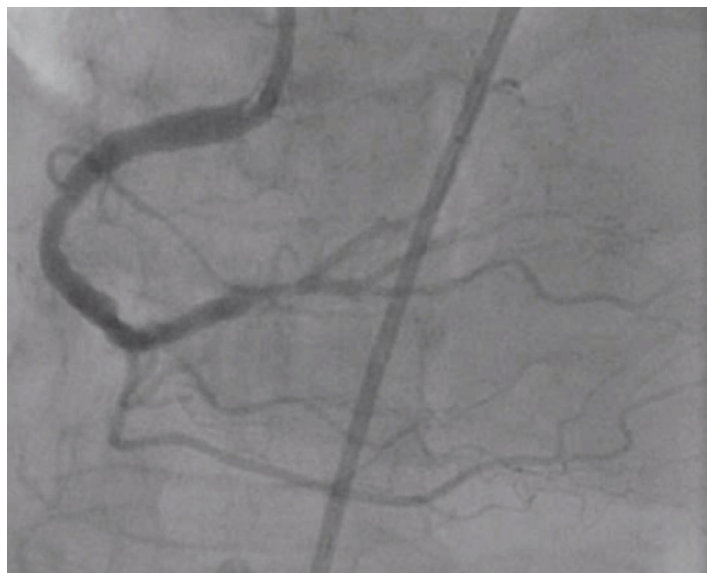


Figure 2. Ostium of right coronary artery after stenting

Discussion

Application of percutaneous coronary intervention for the treatment of coronary artery disease in a patient with hematological problem and then taking of antiplatelet therapy regimes leads to some difficulties due to increased bleeding and risk of thrombosis (ITP) is an autoimmune disease in which autoantibodies are formed against patients' platelet membrane antigens. As a result, platelets are destroyed rapidly by the immune system and the numbers of platelets are reduced in blood. It is well known that in patients diagnosed with ITP there is not only decrease in platelet counts but also function disorders [1]. There is no common consensus about percutaneous coronary intervention or bypass surgery in ITP patients with coronary artery disease. In literature, there is no clear limit regarding the safe platelet number in terms of bleeding

complications after percutaneous coronary intervention. In this subject, the most important studies done by Park and colleagues on 22 patients who undergone PCI was reviewed. The patients average thrombocyte was $66 \pm 83 \times 10^9/L$, 80 % of the patients' approach were femoral, 87 % of the patients' have received unfractionated heparin during procedure, and 83 % of the patient' have received mono or dual antiplatelet therapy. They showed that bleeding can be controlled by hand compression after percutaneous coronary intervention and after 6 months follow up any major complication was seen [1].

Rossi et al in another study on this subject $> 50 \times 10^9/L$ platelets from patients with wigs or surgical intervention can be applied safely showed [1]. There is another study by Rossu and colleagues showing that PCI and surgical intervention can be done safely in patients who has $> 50 \times 10^9/L$ platelets. Our patient's platelet count before the operation was $42 \times 10^9/L$ and no pre-treatment was given in order to increase the platelet count. 48 hours before the procedure Clopidogrel 75 mg / day and ASA 100 mg / day was started. In this way we aimed to reduce the risk of bleeding by avoiding giving Clopidogrel-loading dose. The operation was planned to perform from radial artery but it was failed, because of that we performed on the right femoral artery using a 6F sheath. 100 U/kg (5,000 units) UFH anticoagulation was given intracoronary and then the stent procedure performed. Following that antiplatelet therapy was dual oral antiplatelet therapy Clopidogrel 75 mg / day and ASA 100 mg / day) in the first month, after that it was continued only with ASA 100 mg / day. There was no development of complications associated with bleeding. Coronary artery disease (in a patient with ITP) can be seen in form of stable angina or acute coronary syndrome (ACS). This issue is related to the case reports of patients with ACS and ITP [6,7]. The basic mechanisms for ACS development is the growth of platelet or fibrin plug over a ruptured or eroded atherosclerotic plaque to develop an acute occlusion in coronary artery. Besides high count of platelet being responsible for acute coronary events, there are also many other factors effective for. Rituximab and IVIG therapy in patients with ITP due to anti-IIb / IIIa antibodies, highness of anti-phospholipid antibodies and other different factors the thrombotic events are more frequent comparing to normal population. Therefore, in ITP patients we should not ignore the high risk of thrombosis as well as bleeding complications after PCI. Especially patients treated with IVIG and rituximab are noted at higher risk in terms of developing thrombotic events. Our patient did not receive any of these treatments.

Some points should be considered to reduce the risk of developing complications during and after the CAG process in patients with ITP. The most important one is the location of the operation. To provide a better compression the radial artery is preferred more than the femoral artery. However, due to good application of compression a good haemostasis has been achieved by patients who have preferred the femoral artery in some cases [5,7]. Another important point is the size of the sheath being used. The use of the smallest sheath can reduce the development of bleeding complications. The other important point, as our patient has, is that, if more than one vascular intervention is needed that should be done at one scene We preferred 6F sheath and applied stents in RCA and LMCA lesions at once. During PCI, antiplatelet and anticoagulant therapy management is one of the important points

of bleeding. Unfractionated heparin has been safely used [8]. There are case reports showing that the dose of heparin in patients with high risk of bleeding has been reduced. Neskovic and colleagues have showed that half-dose heparin and fondaparinux can be used together by over 80 years for the treatment of acute coronary syndrome without any complications. Regarding Glycoprotein IIb IIIA, Stouffer and colleagues have used Eptifibatide and Clopidogrel together for treatment of ACS in patients with ITP and no bleeding complications have developed. Yagmur and colleagues have used Tirofiban for treatment of ACS in patients with ITP. It has been reported that the number of platelets was steady, furthermore, there was no bleeding.

The third important point is the selection of the stent. Bare metal stents in order to shorten the time of dual anti-platelet could be preferred than the drug-coated stents. In 2 cases, Estelle and colleagues have applied drug-coated stents and have followed with Asetilsalisilik Acid and Clopidogrel. They have not seen any bleeding complications during the follow-up [9].

In another case study drug coated stents have been implanted in 2 patients. As a result of early stopping of antiplatelet therapy there was the need to repeat revascularization due to acute stent thrombosis [9]. Bleeding risk is high in these patients and there is a possible need to discontinue antiplatelet therapy. Therefore, (bare metal stent) should be considered as a priority for these patients. In our case, both in RCA and LMCA bare metal stents have been implanted. Afterward, in first month the antiplatelet therapy continued with two medication and then only with Aspirin 100 mg / day. At six months follow-up, angiography showed that both stents are open and there were no bleeding complications. As a result, PCI can be performed safely in patients with ITP whose platelet count is $> 30 \times 10^9/L$.

Conclusion

To reduce the risks of procedure-related complications, the operators could be careful about using of small sheaths, operation area and individualizing of the antiplatelet therapy.

Competing interests

The authors declare that they have no competing interest.

Financial Disclosure

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