Left ventricular rupture due to myocardial infarction with nonobstructive coronary arteries in a patient with idiopathic thrombocytopenic purpura

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Myocardial infarction with nonobstructive coronary (MINOCA) is a myocardial infarction without obvious coronary artery occlusion and left ventricular free wall rupture (LVFWR) is an extremely rare complication. We report a case of LVFWR due to MINOCA in a patient with idiopathic thrombocytopenic purpura (ITP).

CASE PRESENTATION

An 83-year-old woman with ITP presented to the emergency department complaining of lightheadedness when walking. She presented with hypotensive shock and echocardiography showed a 10- to 20-mm thick pericardial effusion. Pericardial drainage was performed, a bloody pericardial effusion was drained, and her blood pressure improved. Blood tests showed decreased platelet levels (22,000/μL) and elevated troponin-I level (1.59 ng/mL). Contrast-enhanced computed tomography was performed for further examination. A large amount of pericardial effusion was observed, there was no evidence of aortic dissection, and some areas of myocardium showed poor contrast enhancement (Figure 1). An electrocardiogram showed slight ST-segment elevation in V2 and V3 (Figure E1). LVFWR secondary to acute myocardial infarction was suspected, and coronary angiography was performed, but no obstruction was found in any coronary artery (Figure 2).

The patient underwent emergency surgery to control bleeding. Cardiopulmonary bypass was established via the ascending aortic perfusion and right atrial drainage. A part of the left ventricular lateral wall was necrotic, and an eruptive hemorrhage was observed from the ruptured area. The left anterior descending artery (LAD) was running in the vicinity, and it was inferred that suture hemostasis would entrap the LAD, so the plan was to bypass the LAD first. The great saphenous vein was harvested, and a bypass was performed on the LAD. Hemostasis was obtained by linear suture. In detail, the ventricular tear was closed with a horizontal mattress.

FIGURE 1. Contrast-enhanced computed tomography image depicting cardiac tamponade and areas of poor contrast in the left ventricular myocardium.

CENTRAL MESSAGE

LVFWR in MINOCA is very rare and can be difficult to diagnose.

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suture buttressed with 2 pieces of felt (Figure E2) and a TachoComb (CSL Behring) was applied over it (Figure E3).

The patient had a history of ITP and experienced bleeding complications during the postoperative course. Transfusion of platelets and fresh frozen plasma was performed, but platelet count dropped to 1000 to 3000/μL and gastrointestinal bleeding was observed. Therefore, we administered high-dose dexamethasone, romiplostim (a thrombopoietin receptor agonist) and rituximab in stages, and finally achieved hemostasis. In addition, due to prolonged unconsciousness of unknown cause, a tracheotomy was performed 2 weeks postoperatively and the patient was gradually weaned from the ventilator. Two months after surgery, the patient was transferred to another hospital for rehabilitation. The patients and the family gave written informed consent for surgery and use of data for research purposes. The Ethics Committee of the IMS Katsushika Heart Center approved this research report (IRB No.: HC-100113; July 31, 2023).

DISCUSSION

According to previous reports, MINOCA accounted for 5% to 6% of all acute myocardial infarctions, and compared with myocardial infarction with coronary artery occlusion, patients are younger and more likely to be women. Several pathophysiologic mechanisms have been proposed, including plaque rupture, in situ thrombosis, coronary artery spasm, and thrombophilia disorders; each patient has a different cause and requires an individualized approach.1 Although there have been several reports of MINOCA complicated by ventricular septal perforation,2 reports of LVFWR are very rare.3

ITP is a condition in which autoantibodies against platelets cause abnormal hemostasis, and according to previous reports, increases the risk of cardiovascular disease by 1.4-fold.4 There are no published reports of an association between ITP and MINOCA, but it is possible that some coagulation abnormality or steroid administration may influence the incidence of MINOCA.

In our case, the diagnosis of MINOCA was difficult until myocardial necrosis was confirmed by surgical findings because the patients had no coronary risk, no chest symptoms, minimal electrocardiographic changes, and no obstruction on coronary angiography. Although there was no coronary artery occlusion, the extent of the necrotic area was not small and there was eruptive bleeding that required hemostasis with linear sutures rather than sutureless repair. If the surgery had been scheduled, preoperative steroids and immunosuppressive drugs would have been administered before surgery, as has been reported in the past,5 but in this case, the patient was an emergency case, and this was not possible. Postoperatively, the patient experienced gastrointestinal bleeding. Gastrointestinal endoscopy was not performed because the patient was intubated and there was no significant anemia progression. Aggressive treatment with steroids and immunosuppressive drugs eventually resulted in hemostasis. Postoperatively, platelets and fresh frozen plasma were transfused to hemostat the sutures, but the patient’s platelet count dropped immediately, and gastrointestinal bleeding was observed. We treated aggressively to increase the platelet count, including high-dose steroid therapy, immunoglobulin therapy, thrombopoietin receptor agonist therapy, and monoclonal antibody therapy, and the bleeding was eventually controlled. If the patient had not been an emergency case, preoperative administration of steroids or immunosuppressive drugs might have been recommended, as has been reported in the past.5

CONCLUSIONS

We experienced a very rare case of MINOCA complicated by LVFWR. The patient experienced postoperative gastrointestinal bleeding due to ITP, which was controlled by multidisciplinary treatment.

Conflict of Interest Statement

The authors reported no conflicts of interest.

References


FIGURE E1. An electrocardiogram showed slight ST-segment elevation in V2-3.

FIGURE E2. The bleeding area was liner sutured using felts.

FIGURE E3. Hemostasis was further achieved by supplementing with TachoComb (CSL Behring) on the top.