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Case Report

Acute limb ischemia in patients after myocardial infarction

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ABSTRACT

Acute limb ischemia is a sudden onset lower extremity emergency that threatens tissue viability and usually occurs within 14 days of symptom onset. Acute limb ischemia is one of the complications of myocardial infarction. In this case, a 54-year-old male patient came to the ER with the chief complaint of shortness of breath 30 minutes before going to the hospital, accompanied by cold sweat and nausea. The patient was diagnosed with acute pulmonary oedema, non-ST elevation myocardial infarction (NSTEMI), hypertensive heart disease with diastolic dysfunction, heart failure with decreased ejection fraction and type 2 diabetes mellitus. On the 6th day of treatment, the patient complained of right leg pain accompanied by coldness and difficulty moving. The patient was diagnosed with acute limb ischemia. This patient did not undergo endovascular revascularization surgery due to limited facilities and experts. The patient was given pharmacological therapy and the complaints improved. Therefore, it is important to be able to identify acute limb ischemia and be able to provide prompt and appropriate treatment.

Keywords: Acute limb ischemia, Myocardial infarction, Lower extremity emergency

INTRODUCTION

Acute limb ischemia is a vascular emergency of the lower extremities characterized by an abrupt loss of limb perfusion that threatens tissue viability and usually presents within 14 days of symptom onset.[1-5] Myocardial infarction or acute myocardial infarction (AMI) is a term for an event of heart attack that occurs when blood stops flowing properly to a part of the heart, and the heart muscle is injured because of lack of oxygen supply. The symptoms of MI are chest pain, which travels to the left arm or left side of the neck, shortness of breath, sweating, nausea, vomiting, abnormal heart beating, anxiety, fatigue, and other factors.[3] STEMI and acute limb ischemia of atherothrombotic origin share vascular risk factors, and acute MI is a risk factor for embolic acute limb ischemia. Additionally, both STEMI and acute limb ischemia require time-critical treatment, and both account for significant cardiovascular morbidity and mortality.[5]

CASE REPORT

A 54-year-old man came to the emergency room (ER) with the chief complaint of shortness of breath 30 minutes before going to the hospital, accompanied by cold sweat and nausea. The patient has a history of uncontrolled Hypertension. The patient has a weight of 65kg and height of 150cm with a BMI of 28,9 kg/m2 that classifies as class I obesity.

The results of the physical examination in the ER showed Ronchi in all parts of the lung, other physical examination results were within normal limits. Significant laboratory results leukocytes 19.600/ul, random blood glucose 213 mg/dl, creatinine 1.56 u/l, non-reactive SARS-CoV-2 examination, fasting blood sugar 191.8 mg/dl, 2-hour postprandial glucose test 213 mg/dl, uric acid 13.1 mg/dl, Troponin I 1,1. The results of other laboratory tests were within normal limits. The results of echocardiographic examination (09/2/2022),

there was a decrease on global systolic function of the LV by 29% EF, broad apical anteroseptal kinetics, eccentric LVH with grade I diastolic disturbance, mild AR, mild TR, good RV contractility. Based on the anamnesis, physical examination and investigations, the patient's assessment was acute pulmonary oedema, non-ST elevation myocardial infarction (NSTEMI), hypertensive heart disease with diastolic dysfunction, heart failure with reduced ejection fraction and type 2 diabetes mellitus.

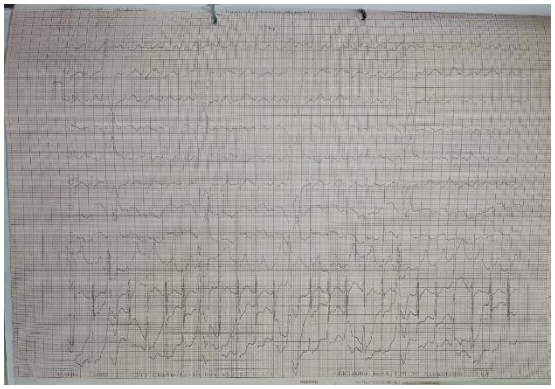

Figure 1: Patient's ECG revealing sinus rhythm, QRS rate 132x/m, normal axis, frequent PVC, T inverted in leads I, aVL, ST segment depression in lead II, III, aVF.

On the 6th day of treatment, the patient complained of right leg pain accompanied by coldness and difficulty moving, from the physical examination we found that the dorsalis pedis and posterior tibial arteries were not palpable, the leg could not be moved, accompanied with numbness and coldness. A vascular Doppler ultrasound examination was performed on the right lower extremity and obtained the following results: multiple aortosclerosis of the distal anterior tibialis, dorsalis pedis, distal posterior tibialis and right peroneal arteries and no visible thrombus in the venous system. From the results of the physical and supporting examinations that were carried out, the patient was diagnosed with acute limb ischemia.

DISCUSSION

Acute limb ischemia is defined as any sudden decrease in limb perfusion causing a potential threat to limb viability. Acute limb ischemia is a critical, potentially end-of-life, clinical condition that presents in patients with multiple medical comorbidities. This critical condition threatens the viability of the extremity and the patient's survival due to systemic acid-base, electrolyte, and other abnormalities.[4] ALI can be the result of thrombotic, embolic, inflammatory, traumatic, anatomic, or iatrogenic causes. Risk factors for atherosclerosis include cigarette smoking, diabetes, dyslipidemia, hypertension, family history, and hyperhomocysteinemia. The clinical features of ALI are colloquially known as the six 'Ps': pain, pallor, paralysis, pulselessness, paresthesias, and poikilothermia. The diagnosis cannot be excluded, however, if all of these features are absent.[6]

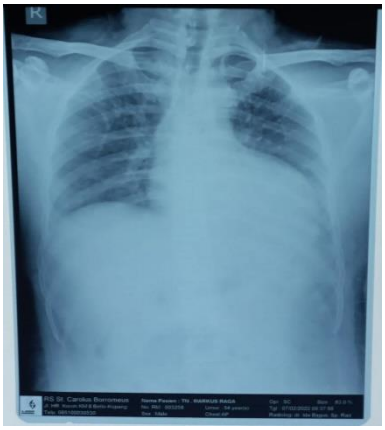

Figure 2: An AP chest X-ray revealed a cardiomegaly and supports the initial picture of acute pulmonary edema.

The diagnosis of ALI in this patient was based on pain felt in the right leg, discoloration of the leg to purple-black, numbness, cold feet and symptoms of intermittent claudication since day 6 of hospitalization. Risk factors for hypertension and BMI 28.9 (obesity class I). Vascular ultrasound showed multiple aortosclerosis of the distal anterior tibial, dorsalis pedis, distal posterior tibial and right peroneal arteries. The occurrence of acute limb ischemia was thought to be due to a thrombus, although vascular doppler ultrasound examination revealed aortosclerosis in the distal anterior tibialis, dorsalis pedis, distal posterior tibial and right peroneal arteries, but no thrombus was found. The patient was planned for CT angiography but was not performed due to limited facilities. ALI is categorized using the Rutherford classification scheme, after stratifying the ischemic limb using the Rutherford scheme, the patient must be rapidly assessed for any contraindications to anticoagulation, thrombolysis, and any major comorbidities that would influence decisions regarding revascularization modality.[2]

A treatment selection factor that is decisive for the treatment of ALI is the Rutherford classification based on the degree of ischemia and limb viability. Other factors guiding further clinical management are the duration of symptoms, surgical risk factors, contraindications for thrombolysis, anatomical location, etiology and overall patient condition.[1] Patients with Rutherford I and II ALI should receive revascularization in an attempt to facilitate limb salvage. Timing and modalities are influenced by available experts and facilities, as well as patient characteristics. In general, the greater the severity of ischemia in clinical presentation, the faster revascularization must be achieved. Current guidelines recommend catheter-directed thrombolysis (CDT) as an effective treatment for ALI. In addition, percutaneous mechanical thrombectomy (PMT) can be used as an addition to CDT in this patient. If CDT is not an option due to the lack of expertise or local resources, surgical options should be considered for rapid restoration of blood flow.[6] The first step in the initial management of

ALI is immediate anticoagulation with heparin. Heparin as an indirect inhibitor is given subcutaneously or intravenously, exhibits direct effects, and is used in the initial management of ALI. On the other hand, platelet aggregation inhibitors prevent platelet clumping and are recommended in patients with underlying peripheral arterial disease to reduce the risk of myocardial infarction, stroke, or chronic critical ischemia.[1] This patient received unfractionated heparin (UFH), pentoxifylline, cilostazol, sodium bicarbonate, allopurinol as a treatment for acute limb ischemia in addition to other therapies for heart failure, DM, and ACS. In this patient, the conditions improved after being given pharmacologies treatment and no revascularization surgery was performed due to limited facilities and experts.

Follow-up

The patient was referred to Bali on 22 February 2022 for further examination and treatment. The patient went to Sanglah Hospital in Bali and further examination was carried out on March 15, 2022, from the results of the examination and catheterization of the blood vessels, the results of small blockages were not recommended for further action.

CONCLUSION

It is important to be able to identify complications of acute coronary syndrome such as acute limb ischemia. In addition, prompt and appropriate treatment is needed to improve patient's condition and their quality of life. In this patient the complaints were completely resolved, the complaints of right leg pain and shortness of breath were no more. Revascularization surgery was not performed due to limited facilities and complaints improved after non-surgical treatment. Close monitoring, regular check-up, and further examinations in a more complete health facility are required for this patient.

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