Case Report

Covid-19 responsible for acute limb ischemia twice at 2 different stages in a patient on anticoagulation: A case report

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ABSTRACT

Introduction: Coronavirus disease-2019 (Covid-19) is a worldwide pandemic not limited to pulmonary dysfunction. It is a systemic infection responsible for serious coagulopathies.

Case presentation: We report the case of a patient who presented an acute ischemia of the left lower limb, after day 5 of (Covid-19) infection, with a second thrombotic localization in the left upper limb at the twentieth day of post covid while he was on anticoagulation.

Clinical discussion: Several studies have shown the involvement of the inflammatory process in the thrombotic state in patients with (Covid-19) infection. The inflammatory process leads to the activation of the thrombotic cascade. Various elevated markers have been identified frequently and described to determine the progression of sepsis-induced prothrombotic disease secondary to Covid-19. Our case remains unique in its kind, since the patient presented twice the acute ischemia of the limbs, the first at the left lower limb, while he was on preventive low molecular weight heparin (LMWH), the second time at the left upper limb, while he was on anticoagulation (RIVAROXABAN 20 mg/jr). Although the efficiency of preventive anticoagulation in Covid-19 patients has not been established, it remains systematic as a prescription in the hospital environment.

Conclusion: All in all, The regular monitoring of vascular markers thrombosis, and preventive anticoagulation remains the only weapon available to any clinician to fight against vascular thrombotic complications in Covid-19 patients, though its reliability has not been proven.

1. Introduction

Coronavirus disease-2019 (Covid-19) is an enveloped RNA β-coronavirus, responsible for a worldwide pandemic, which has resulted in an increasing number of mortality [1]. It is a systemic infection not limited to pulmonary dysfunction [2,3], but also responsible for serious coagulopathies similar to disseminated intravascular coagulation.

We report the case of a patient who presented an acute ischemia of the left lower limb, after day 5 of (Covid-19) infection, with a second thrombotic localization in the left upper limb at the twentieth day of post covid while he was on anticoagulation.

Our case report was written according to SCARE guidelines [4].

2. Presentation of case

A 74-year-old male patient with no relevant past medical history, was admitted to the emergency room, with moderate respiratory symptoms, myalgia and fever (39 °C).

The patient was swabbed for a PCR test, which resulted positive, thus the diagnosis of covid-19 was made. He was put under preventive low molecular weight heparin (LMWH).

Ambient air saturation was estimated at 93%, the other vital signs included a blood pressure of 130/75 mm Hg, heart rate estimated at 105 beats per minute, respiratory rate of 22 breaths per minute.

Blood analysis showed: white blood cells at 12640, C-reactive protein at 34mg/L, hemoglobin at 16 g/dl, serum creatinine at 18, urea at 1,10, LDH at 410.

Transthoracic echocardiography (TEE) was without anomalies.

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At the fifth day of admission, the patient presented an acute ischemia of the left lower limb. On physical examination, the limb was cold, cyanotic with abolition of popliteal, anterior and posterior tibial pulses, without motor and sensitive deficit, therefore the patient was put on therapeutic low molecular weight heparin (LMWH) given the high suspicion for prothrombotic state associated with cytokine release syndrome. Afterwards, he underwent a CT angiography of the aorta and the 02 lower limbs, objectifying thrombosis at the origin of the left common iliac artery (Fig. 1) with resumption at the level of the common femoral artery (Fig. 2), and rethrombosis at the level of the left popliteus without visualization of the leg axes (Fig. 3).

According to the state of emergency, the patient has benefited from an embolectomy using fogarty catheter (3F and 4 F) by approaching the common femoral artery at the level of the scarpa triangle, and selective fogartisation of the leg axes by a low popliteal approach with issue of a fresh fibrinocruoric clot, with a good post operative improvement, and recovery of popliteal and distal pulse.

A treatment based on anticoagulant (Rivaroxaban) and platelet antiaggregant were prescribed on discharge of the patient, with regular follow up at the consultation.

At the twentieth day of post covid, the patient was readmitted to the emergency room with acute ischemia of the upper left limb. On physical examination, the limb was cold, cyanotic with abolition of humeral, radial and ulnar pulse. Thus he benefited from an embolectomy using fogarty catheter (3F) by approaching humeral artery at the elbow crease with good postoperative evolution.

The surgical management of this case was performed by an experienced professor of vascular surgery with the aid of an assistant professor and 2 junior residents in the same speciality.

A complete cardiac workup including a Transthoracic echocardiography (TEE) was performed, returned without abnormalities.

3. Discussion

Several studies have shown the involvement of the inflammatory process in the thrombotic state in patients with (covid-19) infection. Furthermore, published epidemiological data have shown that thromboembolic events, have arisen in these patients [5,6].

The inflammatory process disrupts the anti-thrombotic and anti-inflammatory mechanisms, by damaging the endothelial cells, leading thus to the activation of the thrombotic cascade [7].

The SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) causes the systemic disease through angiotensin-converting enzyme 2 (ACE-2) receptors. It binds directly to endothelial cells via these receptors activating thus the thrombotic cascade. This assault leads to the release of a cytokine storm causing extensive thrombosis similar to disseminated intravascular coagulation. IL-6 plays a key role in this infection by activating the extrinsic pathway of coagulation on the one hand, and simulating the liver to synthesize fibrinogen and thrombopoietin on the other hand [8].

Various elevated markers including D-dimers, partial thromboplastin time (PTT), prothrombin time (PT), fibrinogen, fibrin degradation products (FDP), and IL- 6 have been identified frequently and described to determine the progression of sepsis induced prothrombotic disease secondary to SARS-CoV-2 [9].

In our case, D-dimer, PT, and aPTT were not available. It is interesting to note that several studies have reported cases of acute ischemia related to Covid-19. There is a retrospective study carried out on 20 ill Covid-19 patients who presented variable acute ischemia of the limbs, with a variable revascularization success rate [10].

Our case remains unique in its kind, since, the patient presented twice the acute ischemia of the limbs, the first at the left lower limb, at the fifth day of admission, while he was on preventive low molecular weight heparin (LMWH), the second time at the left upper limb, at the twentieth day of post covid while he was on anticoagulation (Rivaroxaban 20 mg/jr).

Shamsuddin Anwar and al report the case of arterial thrombus formation in a COVID-19 patient despite being on full anti-coagulation,
resulting in limb-threatening limb ischemia [11]. The reliability of routine anticoagulation as prevention of thrombotic pathology in Covid-19 patients has not been established. However Tang and al reported in their study that anticoagulation by LMWH is associated with a better prognosis in 99 patients among 499 COVID 19 patients [12].

As a result, anticoagulation remains systematic in all Covid-19 patients, and the only available way, to prevent vascular thrombotic complications, although its reliability has not been proven.

4. Conclusion

On balance, the SARS-CoV-2 remains a pathology that is the subject of much research at the microscopic level. The involvement of Covid-19 in thrombotic pathology is evident, however the role of anticoagulants in the prevention of arterial thrombotic complications is the subject of hypothesis. Hence the importance of regular monitoring of markers of vascular thrombosis.

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Applicable.

Consent

Obtained.

Author contribution

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Research registration

This is not an original research project involving human participants in an interventional or an observational study but a case report. This registration was is not required.

Guarantor

The Guarantor is the one or more people who accept full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

Declaration of competing interest

There is no conflicts of interest between the authors.

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