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CRITICAL ISCHEMIA AND COMPLICATIONS ASSOCIATED WITH TREATMENT IN A PATIENT WITH COVID-19

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Abstract

Most cases of arterial thrombosis are noted in critically ill patients in intensive care unit.

Present study aimed to report a case of arterial thrombosis with multiple thrombi involving iliac and femoral arteries and their complications.

A 64-year-old female patient was admitted to the Respiratory Unit of Hospital de Base, with COVID condition and severe pain in the right lower limb with approximately 20 hours of evolution, associated with paresthesia, coldness and decreased motricity in toes. Angiotomography of the abdomen and lower limbs was performed, which showed the presence of multiple thrombi in the common femoral artery, superficial femoral artery and right popliteal artery. Assessed by vascular surgery, she was submitted to right lower limb embolectomy, requiring common femoral artery endarterectomy and common femoral artery repair with Dacron patch and anterior, lateral and posterior compartment fasciotomy. At the end of surgery, she has a palpable distal pulse (anterior tibial). Arterial thrombosis associated with COVID-19 can affect intact native arteries or those associated with previous arteriosclerotic processes. Complications can be inherent to the procedure, but with greater morbidity and mortality.

Keywords: *critical ischemia, treatment, COVID-19, complications*

Introduction

Most cases of arterial thrombosis are noted in critically ill patients in an intensive care unit. However, an increase in arterial adverse events was also observed in cases of asymptomatic or mild forms of COVID-19 [*Khryshchanovich V et al., 2021*]. Several studies have described acute ischemia associated with peripheral arterial disease in critically ill patients with coronavirus disease 2019 (COVID-19), as well as coronary artery disease and ischemic stroke as a manifestation usually associated with respiratory distress [*Borrelli M et al., 2021*].

There is only description of cases and case series in literature. One of them was that six patients were performed emergency embolectomy associated with systemic anticoagulation and three clinical treatments only. There were two in-hospital deaths, and one underwent major bilateral amputations and the other suffered a minor amputation within 1 month of hospital discharge [*Topcu A et al., 2021*]. A study reports that a higher rate of rethrombosis was observed after peripheral arterial revascularization [*Bellosta R et al., 2021*].

D-dimer and clinical status are among the most important tools currently used by physicians to guide anticoagulation therapy and prophylaxis [*Mekheal N et al., 2021*]. However, the management of these patients is challenging due to the various complications that these patients experience. The aim of the present study is to report a case of arterial thrombosis with multiple thrombi involving iliac and femoral arteries and their complications.

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Case Report

A 64-year-old female patient, previously hypertensive, former smoker, was admitted to the Respiratory Unit of Hospital de Base, with COVID condition and severe pain in the right lower limb with approximately 20 hours of evolution, associated with paresthesia, coldness and decreased motricity in toes. On physical examination, all pulses were palpable in the left lower limb and in the right, absence of distal flow, including on portable Upon arrival at the hospital, an angiotomography of the abdomen and lower limbs was performed, which showed the presence of multiple thrombi in the common femoral artery, superficial femoral artery and right popliteal artery, as shown in image 1. Assessed by vascular surgery, she was submitted to right lower limb embolectomy, requiring common femoral artery endarterectomy and common femoral artery repair with Dacron patch and anterior, lateral and posterior compartment fasciotomy. At the end of surgery, she has a palpable distal pulse (anterior tibial) Doppler.

During hospitalization, the patient developed rhabdomyolysis, with increased creatine phosphokinase and creatinine, and hemodialysis was started on the seventh day of hospitalization and continued until the tenth day of hospitalization. On the sixteenth day of hospitalization, she was approached by plastic surgery to approach the fasciotomies with an elastic dressing, on the twenty-fourth day the fasciotomy was closed. She was maintained with full heparinization in an infusion pump until the ninth day of hospitalization, and after that with unfractionated heparin, she was discharged on the twenty-seventh day of hospitalization. She is still being followed up with plastic surgery to follow up on fasciotomies and vascular surgery for anticoagulation, keeping a palpable distal pulse (anterior tibial).

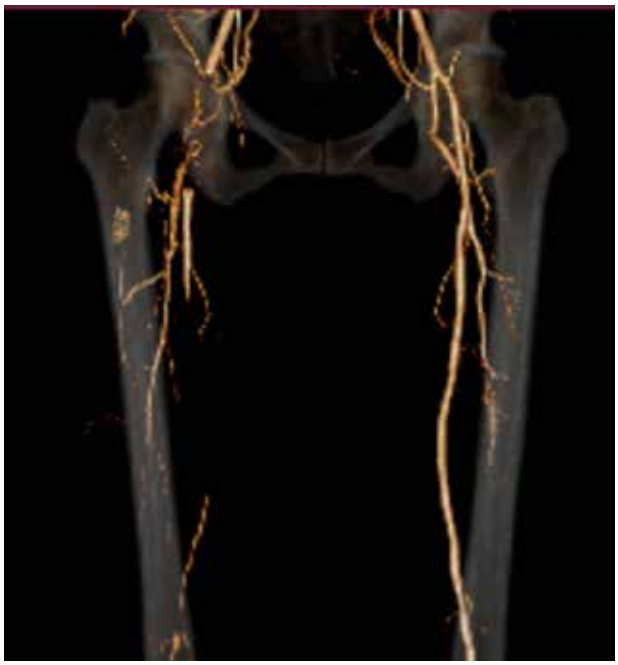

Figure. *Shows multiple thrombi involving deep, superficial and popliteal femoral arteries.*

Discussion

Present study addresses the conduct and challenges faced in relation to acute arterial occlusions in COVID-19. In the literature there are few reports and case series published and there is no consensus on the measures taken [*Khryshchanovich V et al., 2021; Borrelli M et al., 2021; Topcu A et al., 2021; Bellosta R et al., 2021; Mekheal N et al., 2021*]. In present study, the time of ischemia, until the patient has access to a hospital, which performed the procedure, in this case, took 20 hours. Muscles and nerves tolerate about two to six hours of ischemia, so this aspect is already a challenge faced by these patients because hospitals are not always in a position to perform the proper procedure and hospital demands.

The approach taken in a thrombotic event is usually a bypass or endovascular procedure, and in this case embolectomy, therefore, an unusual approach. This is one of 10 cases of arterial thrombosis associated with COVID-19 at the institution to date, but the first with complications such as reperfusion syndrome and compartment syndrome. Fasciotomy was performed in the same surgical procedure and the patient evolved well despite COVID-19. Mortality in these patients is high, and the need for amputation has been common due to the fact that patients arrive at the hospital at a stage where the limb was already disabled in 30% of them.

Multiple thrombotic sites have been observed in normal native ar-

To overcome it is possible, due to the uniting the knowledge and will of all doctors in the world

teries as well as in those with previous arteriosclerosis in COVID-19 and, which often may require additional interventions, such as endarterectomy in this case [*da Silva M et al., 2021*]. Full anticoagulation is suggested, however, there is no maintenance time in the literature due to the few mentioned [*de Godoy J et al., 2021*]. However, rethrombosis has been frequent and in our cases 32 days after the first thrombotic event [*Pereira de Godoy J et al., 2021*]. Therefore, in cases where there was involvement of a normal native artery, anticoagulation for about two to three months. In cases of association with arteriosclerosis, analyze the possibility of associating 100 *mg* aspirin.

Another question is whether the type of anticoagulation maintenance is prophylactic or therapeutic. One of our patients had failed prophylaxis and at 32 days using sodium warfarin in the therapeutic range and had a new thrombotic episode. Another 18-year-old patient had an evolution to stenosis of more than 50% of the iliac and femoral arteries. Therefore, COVID-19 brings new challenges that over time as conducts will be defined.

CONCLUSION

Arterial thrombosis associated with COVID-19 can affect intact native arteries or those associated with previous arteriosclerotic processes. Complications can be inherent to the procedure, but with greater morbidity and mortality.

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