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Case Report

A Rare Vascular Complication in a COVID-19 Patient: A Case Report of Free-Floating Carotid Thrombus

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Abstract

It is now admitted that Coronavirus is related to vascular complications especially thrombotic ones. Mechanism of thrombotic complications is not fully understood.

Free-floating carotid thrombus is a rare condition and it has been found in numerous cases of COVID-19 patients.

Data related to management of this floating clot is limited. Anticoagulation remains an important pillar of treatment.

We report is this work, a case of a 59-year-old male, hospitalized twice for management of COVID-19 infection in January and March 2021. A free-floating carotid thrombus was discovered and a medical treatment was initiated.

Keywords

COVID-19 Infection; Pneumonia; SARS-Cov2; Re-thrombosis

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Introduction

Since its emergence in March 2020, Coronavirus symptoms and complications are constantly being discovered especially the vascular ones. It can be explained by the inflammation process, the immobilization and excessive activation of coagulation system. These factors lead to thrombi formation in both arterial and venous systems.

The free-floating thrombus in carotid artery is a described complication in COVID-19 patients.

We report the case of a patient hospitalized for the management of a COVID-19 pneumonia with a symptomatic free-floating carotid thrombus.

Case Description

We are reporting the case of a 59-year-old male patient, with cardiovascular risk factors: Weaned tobacco user for four years, Hypertension and Diabetes on insulin.

He contracted COVID-19 in January 2021 and was hospitalized for Oxygen therapy. He was put on Azithromycin and Imipenem for ten days associated to prophylactic anticoagulation therapy. During hospitalization, he presented a Transient Ischemic Attack (TIA): A paresis of the left upper limb.

Brain imaging was normal. It was decided to put the patient on therapeutic dose of anticoagulation.

Ten days after having completed heparin IV, the patient didn't present any new sign of stroke nor ischemic attack. He was discharged.

On March 2021, he was hospitalized for a COVID-19 reinfection with need to oxygen therapy. One week after being hospitalized, he presented a stroke with left hemiplegia and aphasia.

CT scan confirmed the ischemic nature of the stroke.

CT angiography showed a floating thrombus in the right internal carotid artery (Fig. 1).

Our decision was to maintain the therapeutic dose of anticoagulation for two weeks and then reassess for a possible surgical management.

Two weeks after complete anticoagulation, CT angiography was done showing a complete dissolution of the floating clot.

The patient was discharged after few days.

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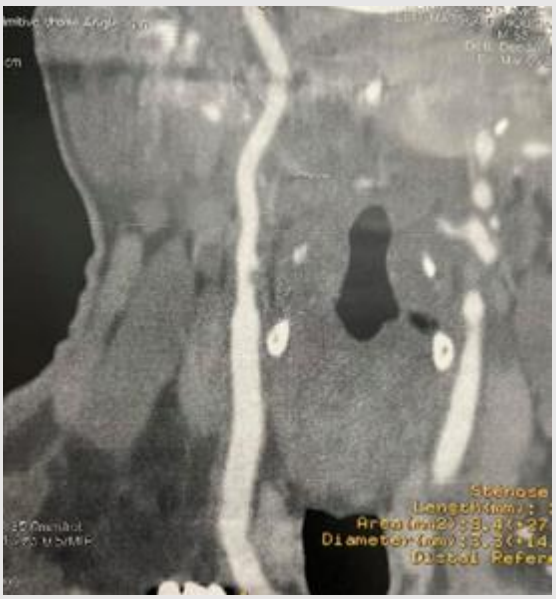

Figure 1: CT angiography showing the free-floating thrombus in the right internal carotid artery.

Discussion

Carotid Free-Floating Thrombus (CFFT) is uncommon [1]. This entity was discovered and described in 1966 by Ehrenfeld. Its occurring in 0,4% of cases in non-COVID-19 patients [2].

Since the emergence of the COVID-19 infection, we are describing the case N-16 of a free-floating clot in the carotid artery complicating SARS-Cov2 infection.

In our knowledge, this is the first described case in Tunisia.

CFFT is defined as a blood clot attached to the arterial wall with blood flow in distality [3]. The main etiology of this state, is migration or rupture of an atherosclerotic plaque. Other etiologies are rare including arterial dissection, aneurysm, prothrombotic factors such as inflammatory and infectious diseases [4].

The internal carotid artery is commonly the most affected with an estimated frequency of 7% [5].

It's now known that COVID-19 infection is related to a hyper inflammation state. Indeed, higher levels of WBC count and neutrophil-to-lymphocyte ratio with important rates of CRP and CPK levels were found in SARS-Cov2 patients compared to other patients.

This hyperinflammation can be explained by an abnormal circulating immune complex formation in response to COVID-19 infection [6].

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This Inflammation state associated with the platelets activation due to infection are probably involved in the pathogenesis of hypercoagulability leading to thrombi formation. Furthermore, disseminated intravascular coagulation is more frequent in COVID-19 patients with a rate of 8,7% [7].

Other hypothesis suggested that there is an endothelial dysfunction caused by invasion of endothelial cells by the virus [8].

This hypercoagulability leads to a higher prothrombotic state in SARS-Cov2 patients explaining the increasing frequency of vessel occlusions even without atherosclerotic disease.

In literature, the COVID-19 patient's with artery thrombosis characteristics are male gender, obesity and less cardiovascular factors compared to other patients [9].

In most cases, CFFT is symptomatic with a history of ischemic stroke [10]. The rate of stroke in COVID-19 patients is about 1% [11].

The feature of this type of thrombus lies in its extreme fragility leading to recurrent cerebral embolism.

CT angiography is the gold standard in the diagnosis of CFFT finding a specific sign called the donut sign [12].

The treatment is either a surgical management or optimal medical strategy. Hosseini, et al., reported a complete resolution of the clot three months after the initiation of the anticoagulation therapy [13].

In a study published in 2013, 24 patients were included with the diagnosis of intraluminal carotid thrombus [14]. All of them had an anticoagulation therapy first, ten of them had a delayed revascularization. The results reported of all patients with the anticoagulation therapy in primary intention were excellent with no ischemic nor hemorrhagic stroke.

When endarterectomy is indicated, the surgery should be done a maximum of two weeks after the patients last symptoms [15].

Endovascular approach can also be considered in CFFT with stenting, aspiration or reversal of flow [10].

The major problem of arterial thrombosis in COVID-19 patients remains the risk of re-thrombosis despite anticoagulation. In fact, cases of recurrence have been reported in literature and even in our daily practice, patients who underwent surgical management for artery thrombosis and then have had an anticoagulation, presented a re-thrombosis.

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Conclusion

COVID-19 is associated with a higher risk of thrombotic events. Free-floating carotid thrombus is uncommon but have been reported in now 16 cases in COVID-19 patients since the virus emergence in March 2020.

The management strategy of this state remains limited and is based on case reports. Anticoagulation in primary intention seems to have good results.

A re-thrombosis should be kept in mind even after full treatment and a prophylactic strategy must be considered.

Conflict of Interest

It is stated that there are no conflicts of interest.

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