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Letter to the Editor

COVID-19 and thrombosis: Beyond a casual association

COVID-19 y trombosis: más que una asociación

Dear Editor:

Despite various therapeutic schemes used since the onset of the SARS-CoV2 pandemic of COVID-19, mortality remains around 3–5% in the different countries that have reported cases.[1] After the knowledge that the virus enters the cell through the union of its protein S with the receptor for ACE2 (angiotensin converting enzyme type 2)[2] has been speculated with the suspension of certain pharmacological groups that due to their mechanism of action increase the presence of these receptors and therefore could increase the passage of virus into the alveolar cells, this point remaining in controversy. On the other hand, in a recently published retrospective series of cases, a frequent elevation of D-dimer has been observed, which has been related to acute pulmonary thrombosis, which has dramatically worsened the prognosis in this subgroup of patients.[3] It is striking that those patients with a higher D-dimer also show more marked desaturations even without observing pneumonia on CTPA (Computarized Tomography Pulmonary Angiography).

Unlike hemorrhagic viruses (Ebola, Marburg...), SARS-Cov-2 could be a highly prothrombotic virus that causes alterations in the coagulation cascade not well characterized at present that would lead to a progressive elevation of D-dimer in function of the severity and extent of microthrombosis. In turn, this hypothesis could explain that these patients have a clearly worse prognosis since in them, orotracheal intubation would provide oxygen to a lung with no microvascular perfusion due to disseminated microthrombotic disease, which would also only be seen in CTPA in very advanced stages and in which little can be done to reverse this situation.[4]

Gradually a therapeutic scheme is being established that would include hydroxychloroquine and azithromycin[5] (or in other cases lopinavir/ritonavir) in the early stages of moderate disease that does not require treatment in ICU (Intensive Care Unit) but given the analytical indication (elevation of D-dimer) and imaging (thrombosis in CTPA) in many cases, should be evaluated the early inclusion of low molecular weight heparin (LMWH) at doses of at least high-risk prophylaxis in all these patients without thrombopenia <20,000 platelets or acute bleeding and manifesting high D-dimer. Given the paucity of prospective studies, the need for urgent effective management, and the relative safety of these LMWH doses, the HAH (hydroxychloroquine–azithromycin–heparin) regimen could be tested in randomized clinical trials to improve the evolution of the disease in cases of torpid evolution.

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Acute pericarditis due to COVID-19 infection: An underdiagnosed disease?

Pericarditis aguda secundaria a COVID-19: ¿una enfermedad infradiagnosticada?

Dear Editor,

The 11th of March of 2020, the World Health Organization declared a pandemic caused by a novel coronavirus, named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The infection mainly causes respiratory tract symptoms.

Acute pericarditis is the inflammatory condition that affects the sac surrounding the heart, which is most often due to viral infections.[1] Currently, to establish the diagnosis, it is essential the use of ultrasound.[1]

We herein report a case of a healthy 35-year-old woman who presented to the emergency department (ED) with dry cough, anosmia, malaise and low-grade fever. A nasopharyngeal swab for SARS-CoV-2 test was done, being positive. Lung Point-of-Care Ultrasonography (POCUS) was performed, showing a thickened pleural line with prominent B-lines and subpleural consolidations in posterior lower lobes. No pleural effusion was detected. Since she had no comorbidities but had lung abnormalities, she was discharged with hydroxichloroquine 200 mg bid during 7 days (off-label use).[2]

On the 6th day of home isolation, she reported a prolonged pleuritic centrothoracic chest pain that improved sitting forward and worsened with supine position. The physicial exam was unremarkable. The pain was attributed to the lung involvement of the disease, and she was advised to monitor her oxygen saturation and step-up pain medication.

As the pain worsened after two days, a POCUS was performed at home showing the presence of a small pericardial effusion. There was a good biventricular function, an absence of valve disease, cavity growth, or ventricular hypertrophy. She was advised to return to the ED to complete the exam.

The electrocardiography (ECG) revealed a sinus rhythm at 89 bpm with T wave inversion in the inferior leads (II, III and aVF). Laboratory tests showed WBC $3.39 \times 10^3/\mu L$ [normal: 3.9–10.2] (62.3% neutrophils; 28.3% lymphocytes), LDH 229 IU/L [100–190], fibrinogen 562 mg/L [150–450], D-dimer 345 ng/mL [0–500], CRP 5.7 mg/dL [0–5], CK 50 IU/L [35–210], troponin 3.5 mg/L [0–34.1] and NT-proBNP < 35 pg/mL [0–125]. The liver and kidney function were within normal values.

With these findings, she was diagnosis of acute pericarditis, meeting 2 of the 4 criteria[1]: typical pain and pericardial effusion. At that moment, she started with colchicine 0.5 mg OD for two weeks. The following day she reported the resolution of the pain.

The etiology of acute pericarditis is highly variable, when no cause is identified, it is usually assumed to be viral or immunomediated,[3] with a good long-term prognosis. In these patients, colchicine has demonstrated to reduce symptoms, decreasing the leukocyte motility and phagocytosis observed in inflammatory responses, and is generally well tolerated.[1] Poor prognostic factors include the presence of a large pericardial effusion, tamponade, myopericarditis, high CRP or lack of response colchicine.[4] Therefore, when acute pericarditis is suspected, it is mandatory to obtain an ECG, a blood test with inflammatory and myocardial injury parameters and a transthoracic echocardiography.[1]

There is growing literature regarding the affection of the cardiovascular system in COVID-19 infection. Cardiac injury (troponin I elevation, ECG and echocardiography abnormalities) across different studies, which is around 7.2%[5] of the patients, arrhythmia was found in 16.7%.[5]

In another study, 83 patients with severe and critical COVID-19 infection underwent a CT scan,[6] chest pain was reported in 6% of the patients and pericardial effusion was found in 4.8%, which suggests that acute pericarditis could be an under diagnosed pathology, and therefore, not correctly managed and treated. Continued observations of the cardiovascular complications of the disease are needed.

POCUS is a fast, cost-effective and safe tool performed by the physician in charge of the patient, which allows diagnosing and monitoring nonspecific symptoms in order to rule out urgent conditions.

As resources become scarce, the findings in this report raise the question as to whether home POCUS, could be effectively established a means of extending hospital capacity in borderline patients as a novel care path, and in these patients diagnosed with acute pericarditis, colchicine could be a potential therapy worth to be initiated.

To our knowledge, this is the first report to describe acute pericarditis due to SARS-CoV-2, which might be an under diagnosed condition in this pandemic. We want to share our findings, given the urgent need for different diagnostic and therapeutic strategies in order to better manage COVID-19 patients, and diminish the SARS-CoV-2 complications.

Relevance

This is the first case report to describe an acute pericarditis episode due to SARS-CoV-2, which might be an under diagnosed condition in this pandemic, and therefore not correctly managed.

Ethics

This work has not been supported by public grants or financial support. No sources of funding were used to assist in the preparation of this case report. The author certifies that he has no commercial associations that might pose a conflict of interest in connection with the submitted article. I certify that the reporting of this case was conducted in conformity with ethical principles of our institution.

We have obtained written informed consent from the patient

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The author certifies that he has no commercial associations that might pose a conflict of interest in connection with this case report.

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