Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

CIRUGÍA ESPAÑOLA

www.elsevier.es/cirugia

Scientific letters

Superior mesenteric vein thrombosis as the only manifestation of SARS-CoV-2 infection☆

Trombosis de la vena mesentérica superior como única manifestación de la infección por SARS-CoV-2

In December 2019, the SARS-CoV-2 coronavirus was detected for the first time in the Chinese city of Wuhan[1]. This virus is the cause of the pandemic that has resulted in nearly one million deaths to date, while saturating healthcare systems around the world and modifying surgical activity in our country[2,3]. Despite being a respiratory virus, numerous non-respiratory complications have been reported triggered by SARS-CoV-2 infection and derived from its treatment[4,5]. An increase in venous and arterial thromboembolic events has been demonstrated in these patients, as well as damage to the microvascularization. It has been suggested that endothelial damage is the main factor causing hypercoagulability in coronavirus disease 2019 (COVID-19)[6,7].

We present the case of a 40-year-old man with no history of interest who came to the emergency room due to abdominal pain in the epigastrium that had progressed over several days, with no other associated symptoms. Physical examination was anodyne, and laboratory tests showed: D-dimer 446 ng/mL, fibrinogen 742 mg/dL, and slightly prolonged prothrombin time (PT) and activated partial thromboplastin time (aPTT). SARS-CoV-2 screening was done with a polymerase chain reaction (PCR) test of a nasopharyngeal exudate sample as part of the hospital protocol, and the patient was discharged with a diagnosis of nonspecific abdominal pain. The next day, the patient received a positive PCR result for SARS-CoV-2. After 12 days of home isolation, the patient returned to the emergency room due to worsening abdominal pain and general malaise. He presented a diffusely tender abdomen with guarding and signs of peritoneal irritation in the epigastrium and mesogastrium. He did not present respiratory symptoms. Laboratory tests revealed increased acute-phase reactants. PT and aPTT remained long, fibrinogen elevated, and D-dimer increased to 947 ng/mL. Chest X-ray showed no pathological findings. A computed tomography (CT) scan was requested, which revealed a thrombus in the superior mesenteric vein originating from the confluence of the mesenteric-portal axis and a section of approximately 50 cm of dilated proximal jejunum with a thickened wall due to submucosal edema with low contrast uptake (Fig. 1). No intestinal pneumatosis, pneumoperitoneum or free fluid were observed. Given these findings, we decided to admit the patient in isolation for anticoagulant treatment and close monitoring. The patient had a good evolution, with a progressive decrease in abdominal pain, and was discharged on the sixth day after two negative nasopharyngeal exudate PCR. At discharge, a CT scan showed the resolution of the loop edema and the persistence of the thrombus. Oral anticoagulation was prescribed for six months. Four months later, a coagulopathy study revealed antithrombin III deficiency.

SARS-CoV-2 infection causes predominantly respiratory symptoms. However, since the appearance of this new disease, numerous cases of thromboembolic events have been described in patients with COVID-19. Nevertheless, in our review of the literature, we have not found any cases of isolated thrombosis of the superior mesenteric vein as the first and only symptom associated with SARS-CoV-2 infection, as in our case. The pathogenesis of this hypercoagulable state is not fully understood. It seems that endothelial injury plays a major role in the higher incidence of thromboembolic events in these patients. This is due to the fact that the virus enters the organism through the union of its surface protein to the angiotensin converting enzyme 2 (ACE2)[8]. Other associated factors are the presence of high levels of circulating prothrombotic factors such as fibrinogen or factor VIII and venostasis secondary to less mobilization in hospitalized and/or isolated patients. The most common coagulation abnormalities on lab tests are, as in the present case, a normal or slightly prolonged PT or aPTT, normal or slightly increased

☆ Please cite this article as: Navarro-Martínez S, Diez Ares JÁ, Peris Tomás N, Gonzálvez Guardiola P, Pérez-Rubio Á. Trombosis de la vena mesentérica superior como única manifestación de la infección por SARS-CoV-2. Cir Esp. 2022;100:245–247.

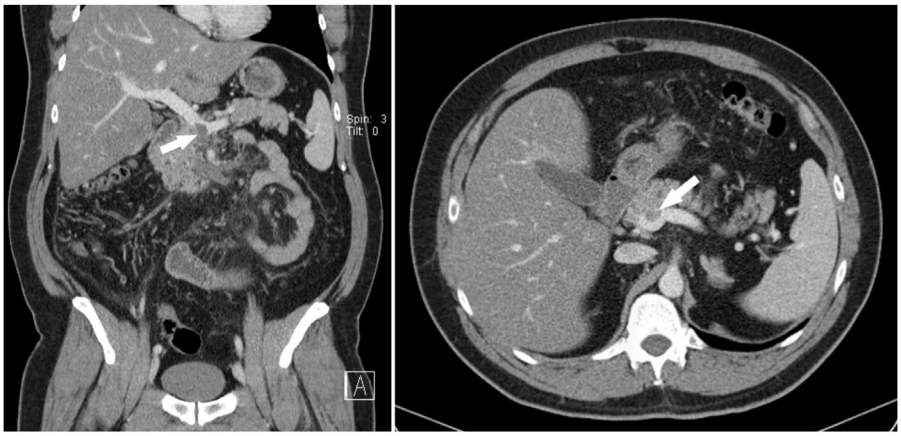

Fig. 1 – Coronal and axial computed tomography images showing the thrombus in the superior mesenteric vein in the confluence of the mesenteric-portal axis (arrow).

platelet count, and an elevated D-dimer[9]. The most frequent thromboembolic manifestations in these patients are deep vein thrombosis (DVT) and pulmonary embolism (PE)[10], and it has even been suggested that many PE are primary thromboses of the pulmonary arteries secondary to endotheliitis. Thromboses of the mesenteric territory associated with SARS-CoV-2 infection are rare and occur mainly in the small vessels. The involvement of the large abdominal vessels is predominantly arterial and in hospitalized patients, while there have been few reported cases of mesenteric venous thrombosis, mostly associated with arterial thrombosis[4].

In this second 'wave' of COVID-19 with more than 30 000 daily diagnoses in Spain, the number of asymptomatic infections or those with mild symptoms represent the majority of new positives. This is because more diagnostic tests are being performed and asymptomatic contacts traced. As a consequence, more and more forms of presentation and non-respiratory symptoms are being recorded in patients with active SARS-CoV-24 infection[4]. We have yet to resolve many unknown factors about the pathophysiology of this disease and its consequences in the medium and long term. Given the current healthcare situation and the constant increase in cases, we should include COVID-19 in the differential diagnoses of patients with abdominal thromboembolic events, especially in young patients with no previous pathology or risk factors. Likewise, we should highlight the need for thrombophilia studies in these patients, where COVID-19 can act as a precipitating factor for thromboembolic events in patients with undiagnosed coagulopathies.

Funding

This study has received no funding of any kind.

Conflict of interests

The authors have no conflict of interests to declare.

REFERENCES

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. N Engl J Med. 2020;382:727–33. http://dx.doi.org/10.1056/NEJMoa2001017.
2. Balibrea JM, Badia JM, Rubio Pérez I, Martín Antona E, Álvarez Peña E, García Botella S, et al. Surgical Management of Patients With COVID-19 Infection. Recommendations of the Spanish Association of Surgeons. Cir Esp. 2020;98:251–9. http://dx.doi.org/10.1016/j.ciresp.2020.03.001.
3. Álvarez Gallego M, Gortázar de Las Casas S, Pascual Migueláñez I, Rubio-Pérez I, Barragán Serrano C, Álvarez Peña E, et al. SARS-CoV-2 pandemic on the activity and professionals of a General Surgery and Digestive Surgery Service in a tertiary hospital. Cir Esp. 2020;98:320–7. http://dx.doi.org/10.1016/j.ciresp.2020.04.001.
4. Gupta A, Madhavan MV, Sehgal K, Nair N, Mahajan S, Sehrawat TS, et al. Extrapulmonary manifestations of COVID-19. Nat Med. 2020;26:1017–32. http://dx.doi.org/10.1038/s41591-020-0968-3.
5. Gonzálvez Guardiola P, Díez Ares J, Peris Tomás N, Sebastián Tomás JC, Navarro Martínez S. Intestinal perforation in patient with COVID-19 infection treated with tocilizumab and corticosteroids. Report of a clinical case. Cir Esp. 2020. http://dx.doi.org/10.1016/j.ciresp.2020.04.030.
6. Libby P, Lüscher T. COVID-19 is, in the end, an endothelial disease. Eur Heart J. 2020;41:3038–44. http://dx.doi.org/10.1093/eurheartj/ehaa623.
7. Lowenstein CJ, Solomon SD. Severe COVID-19 is a Microvascular Disease. Circulation. 2020. http://dx.doi.org/10.1161/circulationaha.120.050354.
8. Patel AB, Verma A. COVID-19 and Angiotensin-Converting Enzyme Inhibitors and Angiotensin Receptor Blockers: What Is the Evidence? JAMA. 2020;323:1769–70. http://dx.doi.org/10.1001/jama.2020.4812.
9. Panigada M, Bottino N, Tagliabue P, Grasselli G, Novembrino C, Chantarangkul V, et al. Hypercoagulability of COVID-19 patients in intensive care unit: A report of thromboelastography findings and other parameters of hemostasis. J Thromb Haemost. 2020;18:1738–42. http://dx.doi.org/10.1111/jth.14850.
10. Bilaloglu S, Aphinyanaphongs Y, Jones S, Iturrate E, Hochman J, Berger JS. Thrombosis in Hospitalized Patients

With COVID-19 in a New York City Health System. JAMA. 2020;324:799–801. http://dx.doi.org/10.1001/jama.2020.13372.

Sergio Navarro-Martínez*, José Ángel Diez Ares, Nuria Peris Tomás, Paula Gonzálvez Guardiola, Álvaro Pérez-Rubio

Servicio de Cirugía General y del Aparato Digestivo, Hospital Universitario Doctor Peset, Valencia, Spain

*Corresponding author.
E-mail address: na.mar.sergio@gmail.com
(S. Navarro-Martínez).

http://dx.doi.org/10.1016/j.cireng.2022.03.011
2173-5077/

Preventing surgical site infection through patients' education: Results from the MEDIPINAS medical mission☆

Prevención de la infección del sitio quirúrgico mediante la educación de los pacientes: resultados de la misión médica MEDIPINAS

In 2018, a group of surgeons and students from the Cardenal Herrera CEU University (UCHCEU) organized the MEDIPINAS2018 medical-surgical mission at the Santa Maria Josefa Hospital Foundation for patients without resources in Iriga City, Philippines. Outpatients were briefly instructed in postoperative care, and nursing staff did not provide wound care. A general surgeon visited the cases with complications. however, 25 (28.8%) of the 87 patients developed surgical wound infection (SSI), which is a very high rate compared to the 11% published by the WHO for low- and moderate-income countries[1].

We reviewed the hospital's infection prevention and surgical material sterilization protocols, which were correct. We found that the factors involved in the unusual rate of infection included the lack of knowledge of the population to correctly care for wounds, as well as the lack of clean water and basic material for wound care. It seemed necessary to adapt our protocols to the country and its social and sanitary conditions[2]. The strategies described in surgical infection prevention guidelines can prevent 60% of SSI[3,4]; therefore, we created an SSI prophylaxis project to apply in MEDIPINAS2019. The MEDIPINAS2019 surgical mission incorporated the ''Recommendations for Zero Surgical Infection'', with the necessary modifications for it to function in a hospital with limited resources. Specifically, these included: intensified handwashing, the use of 2% alcoholic chlorhexidine with a swab to prepare the surgical field, and glycemic control in diabetic patients. Antibiotic prophylaxis was administered in clean-contaminated and contaminated surgery.

We designed a prospective study including patients who agreed to participate after being informed and signing an informed consent from in accordance with the WHO model. We created an information sheet, which was given to each patient after surgery. It explained surgical wound care and the warning signs of SSI. In addition, patients were given material for dressings (Fig. 1), analgesics (paracetamol, ibuprofen) and antibiotics for the treatment of the infection in those cases in which it was necessary, and healthcare education was provided.

An Apple® Numbers® spreadsheet application was used to follow the evolution of the surgical wound, which collected the patients' clinical data as well as photographs of the surgical area before the incision, at the end of the operation and during check-ups. The use of a color code of the final state of the wound completed by Filipino nurses (green: not infected; yellow: resolved infection; red: active infection) (Fig. 2) facilitated the follow-up and treatment of each case. The ability to easily collect patient data and images during the various phases of surgical wound healing has been instrumental in cooperating with our Filipino colleagues. Although the use of the app for surgery and cooperation is not new[5], the MEDIPINAS app stands out for having been created for a specific project, with minimal development cost and complexity. This project was approved by the Ethics Committee of the College of Health Sciences of the UCHCEU.

In MEDIPINAS2019, 108 patients were included, and 10 (9.7%) developed SSI. When we compared the results with MEDIPINAS2018, there were no significant differences in mean age, gender or type of interventions, but there were differences ($P < .001$) for SSI infection with a decrease of 19.1% in MEDIPINAS2019.

☆ Please cite this article as: Merck B, Henarejos Pérez V, Villalonga Morales A, Barrasa Shaw A. Prevención de la infección del sitio quirúrgico mediante la educación de los pacientes: resultados de la misión médica MEDIPINAS. Cir Esp. 2022;100:247–249.