

SPECIAL ARTICLE

The “misfortune” of being a COVID-19 negative patient during the coronavirus pandemic

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Summary

COVID-19 pandemic has obviously affected patients' behavior towards seeking medical help as well as physicians' decision in the management of emergencies. Our recent experience as surgeons at a COVID-19 referral hospital revealed cases which share an alerting characteristic: the delay in appropriate management. Unfortunately for COVID-19 negative patients a “coronacentric” health system has been adopted. In view of measures applied to avoid spread of the disease, a significant delay in patients' presentation as well

as in their in-hospital management is observed. We present cases where delay in appropriate management affected the patients' outcome and underline the fact that balancing between COVID-19 safety measures and a patient who needs urgent treatment can be very challenging and stressful.

Key words: COVID-19, decision making, diagnostic and management delay, surgical emergencies

Our experience in detail

The current COVID-19 pandemic has already disrupted the social and medical balances across the globe, demonstrating an astonishing dynamics, causing constant and rapid behavioural readjustments among the healthy population, the patients and the medical staff and interfering with basic problem solving and decision making in several sectors, including everyday clinical practice.

The massive need for human and material resources at the service of COVID-19 affected patients gave birth to a “coronacentric” health system, which, however, is still much needed by majority of patients which are COVID-19 negative. Serving those two patient groups equally while keeping them separated would theoretically be manageable, apart from the fact that this separation is not always easy, thus posing the question: is our health system still fully accessible and efficient regarding COVID-19 negative patients?

Our recent experience as surgeons at a COVID-19 referral hospital revealed a less obvious side effect of the pandemic. During the confinement period we encountered a significant number of cases that shared one common alerting characteristic: delay in appropriate management. We hereby present four of these cases which were admitted in our COVID-19 referral hospital in a two-month period and encountered this problem.

The first case regards a 33 year old otherwise healthy, nulliparous female patient who reached our emergency department complaining about low grade fever for the previous 4 consecutive days. She also reported anorexia and an episode of initially epigastric pain lasting a few hours and then migrating to the lower abdomen 4 days ago. She decided to stay at home in order to refrain from possible coronavirus transmission and finally sought medical advice when the fever rose. On presentation her

temperature was 39°C, she had increased white blood cells and neutrophils but her chest and abdomen examination were unremarkable. A COVID-19 sample was obtained. Following a negative result, the day after she had an abdominal ultrasound and CT scan which revealed a 7.2 x 3.8 cm abscess adjacent to the right adnexa. The appendix was not identified and therefore she was admitted to the obstetrics and gynecology department for further management. Her clinical status and laboratory tests deteriorated and she underwent laparotomy, where appendicitis complicated with an abscess was identified. The abscess along with the inflamed appendix were removed, but, unfortunately, a right oophorectomy and salpingectomy were simultaneously performed as these organs were also affected. The patient had an uneventful recovery and was discharged three days later. It is reasonable to assume that had not been for the four-day waiting at home before presentation, this nulliparous patient could have spared her adnexa.

Another case concerns an 87 year old female patient with a history of hypertension, diabetes mellitus and choledocholithiasis treated with ERCP five months ago, who presented with fever (up to 38.5°C) and rigors, accompanied by mild right upper quadrant abdominal pain, back pain and multiple vomiting episodes which started 10 days ago. Despite the severity of her symptoms she decided, in view of the COVID-19 situation, to avoid visiting a hospital. She therefore contacted her GP and was prescribed oral ciprofloxacin and metronidazole as an empirical treatment. Her condition deteriorated and finally presented at our hospital with significant right upper quadrant tenderness and a temperature of 39°C. COVID-19 testing was negative and CT imaging of the upper abdomen showed an intrahepatic abscess that was treated with percutaneous transhepatic drainage and organism specific antibiotic therapy. The patient had a prolonged hospital stay and was finally discharged three weeks later. The significant delay in this patient's presentation definitely accounted for her increased hospitalization.

The third case was a 47 year old male patient with a history of rectal cancer treated with low anterior resection, adjuvant chemotherapy and radiotherapy six years ago. He visited the emergen-

cy department after an episode of sudden, diffuse abdominal pain followed by syncope. He reported inability to pass gas and no bowel movements during the last two days, but since he was included in a high risk group of people for coronavirus infection he remained at home. On examination, he was hemodynamically stable but tachypnoic and the abdominal examination revealed distention, rigidity, diffuse tenderness and absence of bowel sounds. COVID-19 testing result was awaited in order to perform an abdominal CT scan, which was performed nine hours later and confirmed the diagnosis of bowel obstruction as well as free abdominal air. The patient underwent urgent exploratory laparotomy. Megacolon with perforation of the ascending colon and multiple diffuse colonic microperforations were found, leading to subtotal colectomy and end ileostomy. The patient was transferred to the ICU, recovered and returned to the ward after nine days. In this case an attributable to COVID-19 pandemic delay in both the patient's presentation and the in-hospital workup is noted. This may have increased the severity of the patient's condition and affected the need for ICU treatment.

The last, but with the worst outcome case, concerns a 86 year old female patient who visited the emergency department of our hospital complaining about multiple vomiting episodes and flatulence starting one week before, which gradually turned into inability to receive food three days before presentation. On examination she was tachycardic, tachypnoic, confused and her abdomen was significantly distended and tender. CT scan showed a large cecal mass which totally occluded the lumen causing small bowel distention and insipient ischemia in jejunal loops. The decision for urgent laparotomy was made but the operative team decided to wait for the COVID-19 result in order to proceed to the operation as safely as possible and to avoid using unnecessary - and uncomfortable - protective measures in case of a negative test. Thus she was admitted to our surgical department and was resuscitated with fluids and antibiotics but further aggravated over the course of eight hours, until the result of COVID-19 which was negative. She underwent an emergent laparotomy and had a partial right hemicolectomy and end ileostomy. The patient was haemodiami-

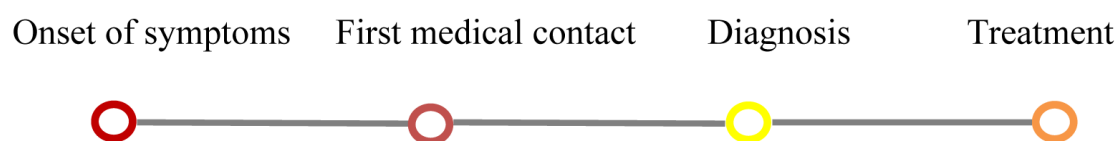


Figure 1. The timeline of a disease from clinical presentation to definitive treatment.

cally unstable intra- and postoperatively and was admitted to the intensive care unit. She developed multi-organ dysfunction syndrome and finally deceased 16 hours after the operation. Had she been operated immediately after admission, her condition might not have been significantly deteriorated and she may had better chances of recovery.

It is obvious that in all of the aforementioned cases there was a significant delay at some point during their clinical course that is attributable to the new conditions established by the COVID-19 pandemic. This resulted in a rise of the number of neglected cases seen at the emergency department and most importantly, in an increase of adverse events due to lingered treatment – two out of four patients needed ICU admission, one of them passed away and a young nulliparous woman had her right adnexa removed. The effect of COVID-19 related delay on parameters such as the length of hospital stay, overall morbidity, mortality and hospitalization costs needs to be evaluated.

The timeline of a patient's clinical course is roughly described as a three stages between four points scheme (Figure 1). Starting from the onset of symptoms to the first medical contact, the first stage includes the time taken by the patient to seek medical advice. Then comes the second stage, the patient's evaluation and workup until the establishment of a diagnosis. The time consumed for the selection and the execution of the definitive treatment corresponds to the third stage. The duration of those periods is highly variable and can be shortened or stretched by multiple factors. The cases we faced taught us how this novel pandemic can affect one or more of these stages, delaying the patients' treatment and putting their prognosis at risk [1].

Regarding the first stage, it appears that the fear of getting coronavirus infected as well as the compliance with the restrictions during the confinement period have raised the threshold of seeking medical help. This has been observed in similar epidemics such as the 2002–2004 SARS outbreak [2]. Indeed, the surgical and overall emergency department visits during March and April 2020 were de-

creased almost by half compared to previous years, as happened in other institutions as well [3]. Assuming that the incidence of acute surgical diseases remained unaffected by the COVID-19 pandemic, we conclude that the surgical patients in need of hospital care did not actually decrease; they just postponed their arrival, in some cases for several days, risking of missing their therapeutic time window.

While stage 1 delay is more of a sociological problem, management of stages 2 and 3 is mostly a matter of medical decisions. Even if the probability of COVID-19 infection is low, the confirmation is necessary, especially when the availability of protective measures is limited. On the other hand it is essential to define each time whether a patient can afford waiting for the test's result. Regarding the treatment options, especially for the surgical patients, therapeutic hesitations often arise, leading to additional delay, since the precautions needed are completely altered when a patient is COVID-19 positive. Moreover, the decision to proceed without a COVID-19 test imposes significant problems in the management involved specialties and paramedical personnel, such as surgeons, anesthetists, ICU doctors, nurses etc. Balancing between safety and a patient who is running out of time can be very challenging and stressful.

We should not forget that the struggle of managing a pandemic also includes the management of the unaffected patients. A fast and accurate diagnosis is always of great importance, particularly for the surgical emergencies and the aim is to provide every patient the optimal solution at the right time, regardless of their COVID-19 status, while ensuring the safety of the community and the preservation of valuable resources.

Conflict of interests

Nikolaos Michalopoulos, Zoe Petropoulou, Nikolaos Danias, Panagiotis Kokoropoulos, Pan-telis Vassiliu and Nikolaos Arkadopoulos declare that there is no conflict of interest.

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