



An underestimated “false negative COVID cholecystitis” in Northern Italy and the contagion of a surgical ward: it can happen everywhere

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A 45-year-old healthy woman was admitted to our Emergency Department (ER) with severe abdominal pain in the right abdominal quadrant and high fever. Blood test showed elevated levels of white blood cells (17,700 per ml) and high C reactive protein level (24,802 mg/ml [range 0–5]), while procalcitonin level was normal. Abdominal ultrasound revealed an acute cholecystitis with no free fluid in the abdomen. Temperature was 37.9° Celsius (C) at admission. The patient was then admitted to our Surgical Department and antibiotic therapy was started with Ceftriaxone 2 g/24. The patient underwent urgent laparoscopic cholecystectomy 10 h after admission in the ER. A bile spilling from the gall bladder occurred during the laparoscopic procedure. Bile was collected and sent for microbiological examination. A surgical drain was placed under the liver.

On the second post-operative day, the patient still showed high temperature. Bile microbiological examination revealed the presence of multi-sensible *Enterococcus faecium* and *Serratia marcescens*. Antibiotic therapy was, therefore, switched to ampicillin and ciprofloxacin. Blood cultures resulted negative for sepsis. Following the onset of dry cough and slight desaturation (sO₂ 96%), the patient underwent the RNA SARS-CoV-2 test. She was transferred to an isolated unit where pharyngeal swab was done twice (immediately and after 24 h). After the double negative result, the patient went back to the surgical ward.

Due to the worsening of the clinical conditions, an abdominal ultrasound was performed without detecting any sign of abdominal complications. Chest radiograph was negative for pneumonia. Eight days after surgery and 4 days after the pharyngeal swab, patient's temperature raised up to

39 °C. Blood examination at this point showed normal white blood cell count, normal procalcitonin level, and slightly normal C reactive protein levels. Oxygen saturation was 96% without subjective dyspnea. The patient underwent a computed tomography (CT) of the chest and abdomen and revealed the presence of bilateral pneumonia with initial acute respiratory distress syndrome (ARDS). Pharyngeal swab was then repeated and showed a positive result, thus the patient was transferred to the Infectious Diseases Unit.

Surgeons and nurses who have been in direct contact with the patient were tested for the SARS-CoV-2. Two surgeons and three nurses turned positive at the RNA SARS-CoV-2 test and were, therefore, sent home for 14 days of quarantine. None of them developed symptoms of infection. On post-operative day 16, patient's pharyngeal swab turned negative and 2 weeks later she was successfully discharged from the Infectious Diseases Unit.

COVID-19 outbreak in Northern Italy has happened with an unexpected intensity [1]. The increase of the contagion forced all the territorial hospitals to rapidly switch from general hospitals to dedicated “COVID facilities”. During this organizational change, almost all the elective surgery has been dramatically postponed and only emergency surgery has been granted [2].

The present case underlines a concerning issue for all the doctors and nurses who are facing this outbreak in the current days. Patients with abdominal pathology requiring urgent surgery could represent a potential cause of nosocomial spread of viral disease. Considering initial vague respiratory symptoms, the potential onset of respiratory distress can be underestimated from both medical and nursing staff. Giving the prolonged incubation period of the SARS-CoV-2 [3], an initial negative result of the pharyngeal swab can turn into a positive result few days later. Moreover, the concomitance of a surgical complication can delay the real understanding of the clinical features. Our initial experience of a false negative result for the RNA SARS-CoV-2 test has led the whole surgical unit to treat an infected patient with

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insufficient precautions causing the contagion of nurses and doctors [3].

In front of this new and little understood viral disease, our suggestion is that every patient undergoing surgery coming from high-risk areas should undergo RNA SARS-CoV-2 test before entering the operating room and should be treated at first as an infected patient. In the same way, all post-operative fevers should be kept in serious consideration and the pharyngeal swab test should be repeated several times unless a clinical explanation of the ongoing high temperature would be found. Since surgical stress could increase the viral load and make the healthy carrier more infectious, our suggestion is to treat every patients as a positive subject for RNA SARS-CoV-2 test to prevent the virus spread [4].

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Compliance with ethical standards

Conflict of interest All authors declare they have nothing to disclose.

Research involving human participants and/or animals The present study complies with the guidelines for human studies.

Informed consent Written informed consent was obtained from patient.

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