Beware of Too Aggressive Approach in Children With Acute Abdomen During COVID-19 Outbreak!

Ana M. Calinescu, Isabelle Vidal,* Serge Grazioli,† Laurence Lacroix, PD,‡ and Barbara E. Wildhaber, MD§✉*

With great interest, we read the report by Gao et al[1] on emergency surgery in suspected coronavirus disease-19 (COVID-19) patients with acute gastro-intestinal symptoms. The authors describe 4 adult patients presenting with acute abdomen and suspected severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, where laparotomy revealed peritonitis and intestinal necrosis with and without gastrointestinal perforations.

Acute abdomen as a potential presenting symptom of SARS-CoV-2 infection has been mentioned in very few adult case series.[2–4] No report of pediatric ''surgical'' abdominal manifestation of COVID-19 is to be found in the scientific literature, only recent British and French press articles mention the existence of severe abdominal symptoms in children. Over the last weeks we likewise observed an important increase of acute ''surgical'' abdomens in children with suspected and confirmed COVID-19 and we wish to share our experience, which significantly differs from the one in adult patients.

During April 2020, 4 pediatric patients (three 10-, one 13-year-old) presented in the emergency department with severe abdominal pain mainly in the right lower quadrant (3 patients), but also periumbilical. Two patients had signs of septic shock with multiple organ failure. Patients had been febrile 2 to 7 days before consultation. Some children had been seen in the emergency department 2–3 days before the admission, when they only had mild abdominal symptoms and were sent home. All patients had vomiting, 1 had diarrhea. Only 1 patient presented mild respiratory symptoms.

Upon clinical examination, all children had guarding and rebound tenderness compatible with peritonitis and for the attending surgeons the clinical examination was clearly asking for surgery for the most commonly suspected diagnosis of perforated appendicitis. Even more so, since inflammatory parameters were elevated with highly elevated C-reactive protein (min 112 mg/L, max 328 mg/L, normal <10 mg/L), and procalcitonin (min 1.11 ug/L, max 100 ug/L, normal <0.25 ug/L) values. Yet, leucocyte counts were normal. Oropharyngeal swab polymerase chain reaction-tests for SARS-CoV-2 were negative for all patients; secondarily, SARS-CoV-2 serologies were found positive (IgA and IgG). Because of the discrepancy between the clinical exam and absence of evidence of a surgical pathology on abdominal ultrasounds, computed tomography (CT) scans were performed showing free liquid in all without free air, no indirect signs of intestinal perforation, but mesenteric lymphadenitis in 2, ileo-colitis in the other 2 children. Thoracic CT scan showed a typical pattern of SARS-CoV-2 pneumonia in 2.

Despite the surgically appearing clinical examination, but associated with ''contradicting,'' reassuring CT scans, all patients were managed conservatively. All received antibiotic treatment; 3 children were put on hydroxychloroquine; furthermore, 3 got anticoagulant/antiaggregant treatment. The clinical exam of the abdomen continuously improved and no child needed surgery. For 3 of them the general condition steadily ameliorated over days, yet 1 child is still in the pediatric intensive care unit.

Although early studies reported a low proportion of COVID-19 patients presenting with gastrointestinal symptoms (12%),[5] recent reports state that digestive symptoms are somewhat common, with a rather long time from onset to admission and contradictory results about severity.[6–8] Similarly to adults, pediatric patients present mainly diarrhea and vomiting.[9] In the adult population, a few case series show that SARS-CoV-2 infection may indeed manifest with acute gastro-intestinal signs only and with no or few associated respiratory symptoms.[2–4] As reported by Gao et al those adult patients may even need emergency surgery for signs of peritonitis.[1] We herein report on pediatric COVID-19 cases, with similar presentation, yet they improved without any surgical intervention and under conservative treatment only. All attending surgeons confirmed that, based on clinical examination, they clearly would have operated on these children, if the context would not have been so special (COVID-19 period) and they; therefore, asked for additional investigations, which in normal times they would not have considered. Of note, that all children had a serologically confirmed diagnosis of a recent SARS-CoV-2 infection, despite a negative polymerase chain reaction swab test.

The SARS-CoV-2 binds the gastrointestinal tract cells via angiotensin-converting enzyme 2-cell receptor causing cytokine and chemokine release responsible for an acute intestinal inflammation.[6] The CT scans of our patients support this inflammation theory with direct (ileo-colitis) or indirect findings (mesenteric lymphadenitis). Of note, the pediatric literature has not yet reported this type of presentation on abdominal imaging. We believe, that the reason why adults may show disease progress to a point where they need surgery, and children do not, might lay in the supposed pathophysiology of the disease, where local inflammation and COVID-19-associated vasculitis lead to local ischemia, which empirically is better tolerated by children than by adults.

This letter emphasizes that during times of COVID-19, surgeons must beware of a too aggressive approach in children with acute abdomen, presenting with signs of peritonitis and increased inflammatory parameters, mimicking perforated appendicitis. A well-considered, potentially conservative attitude is strongly recommended.

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From the *University Center of Pediatric Surgery of Western Switzerland, Division of Pediatric Surgery; †Pediatric Intensive Care Unit; ‡Division of Pediatric Emergency Medicine; and §University Center of Pediatric Surgery of Western Switzerland, Division of Pediatric Surgery, Geneva University Hospitals, Geneva, Switzerland.

✉Barbara.Wildhaber@hcuge.ch.

The authors report no conflicts of interest.

ISSN: 0003-4932/20/27203-e244

DOI: 10.1097/SLA.0000000000004100

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