

Case Report

Dilemma of Surgical Abdomen with Pulmonary Infiltrates on Chest Radiograph: Suspected Cases in COVID-19 Pandemic

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Abstract

We report two cases of children presenting with surgical abdomen who had no respiratory symptoms and their chest x-ray revealed bilateral infiltrations, findings seen in patients suffering from Covid 19, despite having negative or inconclusive COVID 19 PCR report. The median time from onset of illness to diagnosis was 2 days. Both patients were explored with the provisional diagnosis of peritonitis and per-operative findings showed that one child had sub-hepatic abscess and the other had duodenal perforation. Postoperatively, both children needed ventilation and support. Child with sub-hepatic abscess expired. The purpose for this case report is to reveal the possibility of unusual abdominal features and extra pulmonary presentation of COVID 19 in children, even when tests are negative or inconclusive.

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Introduction

Novel corona virus disease, named Covid 19 by the World Health Organization (WHO) and caused by SARS CoV-2 was first reported in December 2019 and now more than 7400000 infective cases worldwide have been reported on June 11, 2020 according to Johns Hopkins Corona Virus Resource Center.¹⁻⁵

Though main presenting features are respiratory, yet in children varieties of presentation have been reported ranging from myocarditis, Kawasaki disease to involvement of Gastrointestinal (GI) system. GI symptoms may be associated with poor clinical outcomes and higher risk of mortality.^{6,7}

We report two cases of children who presented with GI symptoms and were labeled as surgical abdomen, yet were treated as suspected cases of COVID 19 due to their chest X-ray findings.

Case report

Two patients were referred to pediatric surgery department, Mayo Hospital in month of April 2020, with a combination of symptoms and in state of shock. Both patients were aggressively resuscitated. One recovered completely and was discharged, the other did not survive.

Case One: A five years old boy was operated in a private hospital after he presented with generalized abdominal pain for 5 days, fever for 3 days, vomiting for 2 days, and constipation for 2 days. He was diagnosed as a case of perforated appendix, and underwent laparotomy. Per-operatively surgeon couldn't localize appendix due to dense adhesion and subhepatic abscess. After placing peritoneal drain, child was referred to our department. At time of presentation, child was cold and clammy, in altered state of consciousness, and had feeble pulses. His weight was 14 kg, and oxygen saturation was 80% in

room air. He was resuscitated with crystalloids, broad spectrum antibiotics, and supplemental oxygen. After ER resuscitation, he was shifted directly to pediatric intensive care with mechanical ventilation and inotropic support. He suffered from one episode of bleeding per rectum. At that time his chest X-ray revealed bilateral infiltration (see figure 1), so his throat swabs were sent for Covid 19 PCR testing. After blood transfusion, he was rushed to theatre but expired on table. His PCR report came out to be inconclusive.

Case two: An Eight years old girl, with 20 kg body weight, presented with history of fever for 14 days, abdominal pain for 3 days, vomiting for 2 days, and constipation for 2 days. She was resuscitated in our emergency and underwent exploratory laparotomy for peritonitis. Her Chest X-ray revealed bilateral pulmonary infiltrates and free air under the diaphragm (figure 2a). Her throat swab was sent for Covid 19 PCR. Her operative findings revealed single duodenal perforation in 2nd part (figure 2b), which was repaired primarily. Peritoneal lavage and margins of perforation were sent for viral PCR and histopathology. After surgical intervention, she was shifted to intensive care corona ward for mechanical ventilation and inotropes support. After 48 hours, her PCR report came as negative and she was extubated. Post-operatively she developed fever and dry cough. She was nebulized with mucolater, kept in an isolated room, and given 5-10 liters of oxygen as her saturation fluctuated between 82-92% for 3 days. On 5th day post-operatively, she started improving and her chest Xray on day 6, was clear. Oral was started on day 6 and she was discharged on day 9.

Although SARS-CoV-2 PCR was negative or inconclusive in both cases, they were suspected to have COVID-19 because of the similarity of their atypical clinical presentation and chest radiograph. Peritoneal fluid was sent in case 2, but the samples were returned as it is not possible in Pakistan. Treating surgeon of patient one developed unusual cough, and fever and was isolated however no test was done. He recovered well afterwards.

Discussion

Despite the worldwide spread, the epidemiological and clinical patterns of COVID-19 remain largely

unclear, particularly among children. Children of all ages appeared susceptible to COVID-19, and there is no significant sex difference. Although clinical manifestations of children's COVID-19 cases are generally less severe than those of adult patients, young children, particularly infants, are more vulnerable to get infection. Moreover very little is known regarding the long term outcome of COVID 19 positive children undergoing surgery.²⁻⁵

Latest data reported from the Chinese Centers for Diseases Control and Prevention indicate that among the 44,672 confirmed cases of COVID-19 as of February 11, 2020, 0.9% aged 0–10 years and 1.2% aged 10–19 years. The probable rationale for lower rate of infection in children is lesser outdoor activities of children and less international travel.^{8,9}

The sensitivity of PCR test for COVID 19 is only 71%. Because of low sensitivity rate and false negative results, it is suggested that patients with positive imaging findings but negative PCR results should be isolated and PCR repeated. Also CT Scan chest is suggested in all patients who have typical pulmonary infiltrates on chest radiographs, as CT Scan chest is 98% diagnostic. However in our setup in Pakistan, it is not possible to perform CT chest of every suspected patient or even repeat test, which puts clinician in dilemma of diagnosis.¹⁰

We are concerned about children presenting in pediatric surgery emergency with clinical picture of fever and abdominal pain, who might be mistaken for surgical abdomen like in our case, and may have Covid 19.



Fig 1: *Chest X-ray of Case one Showing Bilateral Pulmonary Infiltrations.*

We conclude that children suffering from corona

virus may present with gastrointestinal symptoms and no respiratory symptoms. Even when tests are inconclusive or negative, children should be aggressively treated and full protocols to avoid the spread of infection should be followed.



Fig 2a: *Chest X-ray of Case Two showing Respiratory Infiltration and Free Air under the Diaphragm*



Fig 2b: *Single Duodenal Perforation Noted Per-Operatively.*

References

1. Wang S, Guo L, Chen L, Liu W, Cao Y, Zhang J, et al. A case report of neonatal COVID-19 infection in China. *Clin Infect Dis*. 2020.
2. Dong Y, Mo X, Hu Y, Qi X, Jiang F, Jiang Z, et al. Epidemiology of COVID-19 among children in China. *Pediatrics*. 2020;145(6):e20200702.
3. Ma H, Hu J, Tian J, Zhou X, Li H, Laws MT, et al. A single-center, retrospective study of Covid-19 features in children: a descriptive investigation. *BMC Med*. 2020;18(1):123.
4. Murray KF, Gold BD, Shamir R, Agostoni C, Pierre-Alvarez R, Kolacek S, et al. COVID-19 and the Pediatric Gastroenterologist. *J Pediatr Gastr Nutr*. 2020; 70(6):720-726.
5. Lee PI, Hu YL, Chen PY, Huang YC, Hsueh PR. Are children less susceptible to COVID-19? *J Microbiol Immunol Infect*. 2020;53(3):371-372.
6. Sultan S, Lim JK, Altayar O, Davitkov P, Feuerstein JD, Siddique SM, et al. AGA Institute rapid recommendations for gastrointestinal procedures during the COVID-19 pandemic. *Gastroenterology*. 2020; 159(1):739-758.
7. Pan L, Mu M, Yang P, Sun Y, Wang R, Yan J, et al. Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei, China: a descriptive, cross-sectional, multicenter study. *Am J Gastroenterol*. 2020;115(5):766-773.
8. Novel CP. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China. *Zhonghua Liu Xing Bing Xue Za Zhi*. 2020;41(2):145-151.
9. Yu H, Shao J, Guo Y, Xiang Y, Sun C, Zhang HT, et al. Data-driven discovery of clinical routes for severity detection in COVID-19 pediatric cases. *medRxiv*. 2020.
10. Fang Y, Zhang H, Xie J, Lin M, Ying L, Pang P, et al. Sensitivity of chest CT for COVID-19: comparison to RT-PCR. *Radiology*. 2020;296(2):200432.