ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 04 | April - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

MULTISYSTEM INFLAMMATORY DISORDER IN CHILDREN AND ADOLESCENTS ASSOCIATED WITH COVID 19 PRESENTING AS ACUTE ABDOMEN

General Medicine

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ABSTRACT

Multisystem inflammatory disorder in children and adolescents associated with COVID 19 is a life threatening and emerging condition now. Our case, a 15 year old boy initially presented with acute abdominal pain mimicking acute appendicitis but later diagnosed with MIS-C and successfully managed with IVIG and methylprednisolone.

KEYWORDS

BACKGROUND

The COVID-19 pandemic has maintained its intensity across many countries and its impact on children and adolescent age group is becoming evident gradually although not fully clear. Apart from the usual viral pneumonia presentation, a rapidly deteriorating multiorgan involving hyperinflammatory conditions like multisystem inflammatory syndrome are coming across the globe in clinical practice. It is having a Kawasaki disease like presentation with rapidly evolving shock and cardiorespiratory failure[1]. The Multisystem inflammatory syndrome (MIS) associated with COVID-19 infection occurring weeks after exposure is a life threatening condition which requires an aggressive management and immunosuppression. Many a times due to pain abdomen and systemic features it simulates with acute abdomen as commonly associated with fever and other systemic symptoms. Here is a case of similar presentation where prompt diagnosis was lifesaving.

CASE REPORT

A previously healthy 15 years old boy presented to emergency room on 14.06.2021 with high grade intermittent fever for 5 days along with severe acute abdominal pain and vomiting for 1 day duration. On inquiry child's father had COVID positive 4 weeks back but at that time our patient was asymptomatic and his RT-PCR was negative. On physical examination there was gross abdominal tenderness with guarding and no organomegaly. Initial working diagnosis was acute appendicitis for which abdominal ultrasound was performed. It revealed only probe tenderness. Patient was admitted to surgery department. Initial laboratory parameters revealed leucocytosis (TLC 19860/cu mm), raised CRP (70.80 mg/L). As per hospital guidelines routine COVID 19 nasopharyngeal swab PCR was done and found to be negative. Patient was managed conservatively and put on IV antibiotics. Serial abdominal examination overnight remained inconclusive for appendicitis and patient was kept on antibiotics.

Next day child started desaturating with altered sensorium and neck rigidity. CNS infection ruled out by doing CSF analysis. Further child went into shock for which he was shifted to ICU and put under mechanical ventilation and vasopressor therapy. Serum urea and creatinine became high and patient developed acute kidney injury. With these findings we provisionally diagnosed the case as septic shock or MIS-C. Blood culture report showed no growth of microbes. SARS-CoV-2 serology was sent which came positive. Based on linkage of SARS-CoV-2, high CRP, low platelet and hypoalbuminemia, further investigation was done in the line of MIS-C. The detail of parameters are summarized in table 1. 12 – lead ECG was showing sinus tachycardia with ST depression in all leads though troponin and CK-MB was normal.

Based on history, physical examination and investigation our case fulfills the criteria for WHO case definition of MIS-C.

Preliminary case definition Multisystem inflammatory syndrome in children and adolescents with COVID-19 [2].

Children and adolescents 0–19 years of age with fever > 3 days AND two of the following:

a) Rash or bilateral non-purulent conjunctivitis or muco-cutaneous inflammation signs (oral, hands or feet).
b) Hypotension or shock.
c) Features of myocardial dysfunction, pericarditis, valvulitis, or coronary abnormalities (including ECHO findings or elevated Troponin/NT-proBNP),
d) Evidence of coagulopathy (by PT, PTT, elevated d-Dimers).
e) Acute gastrointestinal problems (diarrhoea, vomiting, or abdominal pain).

AND

Elevated markers of inflammation such as ESR, C-reactive protein, or procalcitonin.

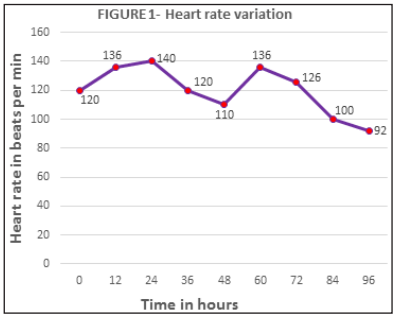
AND

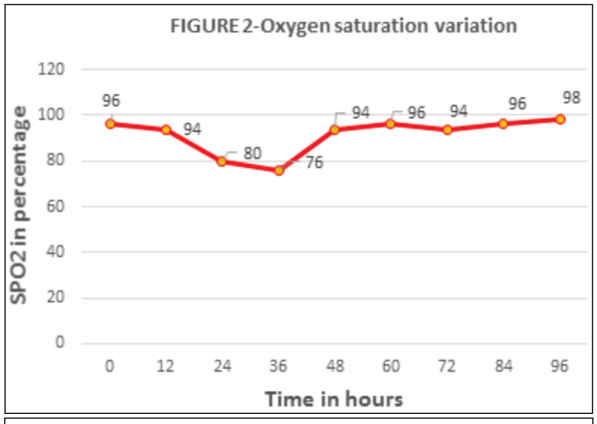
No other obvious microbial cause of inflammation, including bacterial sepsis, staphylococcal or streptococcal shock syndromes.

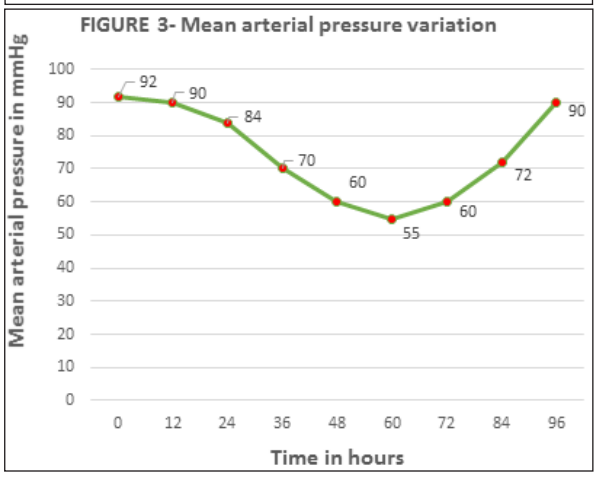
AND

Evidence of COVID-19 (RT-PCR, antigen test or serology positive), or likely contact with patients with COVID-19.

The patient was started with IVIG 2g/kg and methylprednisolone 30 mg/kg for 5 days with aspirin. 2 days after this patient was extubated and maintained MAP without vasopressor. The inflammatory markers started declining and serum creatinine was normal. The detail of variations of heart rate (figure 1), oxygen saturation (fig 2), mean arterial pressure (figure 3) has been demonstrated.







DISCUSSION

MIS is an established entity that is thought to be due to storm of cytokines leading to multiorgan damage and shock. Like in this patient multiple organs were involved and the patient deteriorated in a stormy manner from fever and pain abdomen to ventilatory and vasopressor support. In a challenging situation of COVID-19 pandemic it is very important to be watchful for MIS-C as it requires immunotherapy along with antiviral. COVID-19 virus enters cells via angiotensin converting enzyme 2 which is mainly expressed in lung cell, cardiac myocyte, vascular endothelium. In MIS subsequently there is a surge of proinflammatory cytokines IL-6, IL-8, TNF contributing to a hyperinflammatory state [3]. The features are similar to Kawasaki disease shock syndrome in which mucocutaneous symptoms along with shock and multiorgan damage occurs. Few features like age at onset more than 7 years, diffuse cardiovascular involvement differentiate MIS-C from Kawasaki disease. In a case series reported by Morris SB et all cases of Simillar presentation were found [4]. The diagnostic criteria postulated by WHO is very useful in establishing diagnosis of MIS-C and immunotherapy with IVIG, methyl prednisolone, tocilizumab is life saving in many cases.

Abbreviations: MIS-C: multisystem inflammatory syndrome in children (MIS-C) associated with COVID-19

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