ijlpr 2022; doi 10.22376/ijpbs/lpr.2022.12.5.L55-58

International Journal of Life science and Pharma Research

ISSN 2250-0480

Case Report

Intussusception – A Case Study

Intussusception, A Rare Presentation of MIS-C.

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Abstract: Intussusception refers to the invagination of one part of intestine into itself. It is the most common abdominal emergency encountered in children younger than 2 years of age. Multisystem inflammatory syndrome in children or pediatric inflammatory multisystem syndrome temporally associated with covid -19{PIMS-TS} is a relatively rare complication of COVID 19 infection occurring in<1% of children who may have a past history of confirmed covid-19 infection. Many cases of intussusception are reported when a child suffers from acute covid 19 infection. But a case of intussusception which itself is a manifestation of MIS-C is not reported so far. A 7-year-old boy presented with fever, abdomen pain was found to have ileocolic intussusception. It was then successfully reduced pneumatically. But he continued to have high temperatures and later developed mucocutaneous manifestations and shock. Keeping the current pandemic in view, he was investigated and was found to be suffering from MIS-C. He was then treated by our hospital protocol successfully. This is a rare presentation of MIS-C, and so is reported here. This 7year old boy presented with fever, abdomen pain and was found to have ileocolic intussusception. It was then reduced pneumatically. He continued to have high temperature and later developed mucocutaneous manifestations and shock. With the investigations, he was found to be suffering from MIS-C. He was then treated by our hospital MISC-C protocol successfully. This is a rare presentation of MIS-C, which warrants a high index of suspicion.

Keywords: Intussusception, abdominal emergency pneumatic reduction, MIS-C, Covid-19, hyper inflammatory, PIMS-TS

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Received On 16 May, 2022

Revised On 22 June, 2022

Accepted On 6 July, 2022

Published On 1 September, 2022

Funding This research did not receive any specific grant from any funding agencies in the public, commercial or not for profit sectors.

Citation Dr. Jayakanthan S and Dr. Krithika A.P , Intussusception, A Rare Presentation of MIS-C.(2022).Int. J. Life Sci. Pharma Res.12(5), L55-58 http://dx.doi.org/10.22376/ijpbs/lpr.2022.12.5.L55-58

1. INTRODUCTION

Intussusception refers to the invagination of one part of the intestine into itself. It is the most common abdominal emergency encountered in children younger than 2 years of age[1]. Most common cause is idiopathic and the etiology is obvious in only 25% of the cases involving children[2]. The classic triad of intussusception which are severe abdomen colic, vomiting and bloody stool are not so frequently reported. Most often, a child presents with symptoms which are very vague like vomiting, abdomen pain and diarrhoea. Red currant jelly stool occurs only as a late manifestation[2]. As the signs and symptoms are very subtle and overlapping, a high index of suspicion is always warranted to decrease the morbidity and mortality. Non operative procedures like hydrostatic or pneumatic reduction is the treatment of choice in a child or infant who is clinically stable and with no signs of bowel perforation[3].

1.1 Multisystem inflammatory syndrome temporally associated with covid 19{MIS-C}

Multisystem inflammatory syndrome in children or pediatric inflammatory multisystem syndrome temporally associated with covid -19{PIMS-TS} is a relatively rare complication of COVID 19 infection occurring in<1% of children with confirmed covid-19 infection[4]. Fever (100%), fatigue (66%) were reported in the involved children. The Gastrointestinal system is most common to be involved in 37 (90%) cases. The symptoms of loose stools and pain in the abdomen were most common, seen in 32 (78%) cases followed by nausea or vomiting in 23 (56%) cases. Pancreatitis was noted in 2 (5%) cases, and one patient (2%) presented with appendicitis[5]. The case definition of MIS-C based on the WHO guidelines are children and adolescents 0–19 years of age with fever > 3 days with increased inflammation indicators such as erythrocyte sedimentation rate (ESR), procalcitonin or CRP no other exact microbial cause of inflammation, including bacterial sepsis and staphylococcal or streptococcal shock syndrome ; evidence of positive COVID-19 status (RT-PCR, antigen or serologic test) or possible interaction with a COVID-19 patient; and two of the following: (i) rash or non-purulent bilateral conjunctivitis or symptoms of mucocutaneous inflammation (oral, hands or feet), (ii) shock or hypotension, (iii) characteristics of myocardial dysfunction, pericarditis, valvulitis or coronary irregularities (including ECHO echocardiography or elevated troponin/N-terminal-prohormone BNP [NT-proBNP] findings), (iv) evidence of coagulopathy (based on prothrombin time, partial thromboplastin time or elevated D-dimers), and (v) acute gastrointestinal issues (diarrhea, vomiting or abdominal pain)[6]. Pathophysiology of MIS-C is not well known. Postulated mechanisms appear to be post infectious immune dysregulation. There is a lot of recent evidence to suggest that MIS-C is a post-infectious, immune mediated disorder that is related to prior covid 19 exposure or infection. Clinical, demographic and laboratory evidence suggests that Mis-c has close similarity to Kawasaki disease, a vasculitis that affects small children which is immune mediated[7]. There are recent theories to suggest that the mechanism underlying the myocardial involvement is due to the direct attack of the myocytes by the virus, inflammatory response causing myocyte injury, and ischemia of the myocardium from hypotension. But evidence points that with the exaggerated inflammatory response noted by the elevated inflammatory markers, the involvement of multiple organ systems, and the latent period, the most likely mechanism is that of a delayed inflammatory response[8]. The current evidence indicates that many patients with MIS-C improve with only supportive therapy with close monitoring and a very few need immunomodulatory therapy. It is interesting to note that the clinical features of MIS-C often overlap with severe covid 19 infections. However, they can be differentiated by the following manifestations. MIS-C often develops in a previously healthy child, where as severe covid has occurred in children having comorbidities. The children with MIS-C may have a history of SARS-COV infection in weeks prior to MIS-C. There are variations in clinical features too. Children with covid often have severe pulmonary involvement, whereas children with MIS-C have myocardial dysfunction and symptoms involving the gastrointestinal tract. Inflammatory markers are more elevated in MIS-C compared to severe covid 19 and the IgG antibody to SARS-COV is elevated in MIS-C[9,10]. Here we report a boy of 7years who presented with intussusception which occurred as a manifestation of MIS-C.

2. CASE REPORT

7-year-old boy was brought with complaints of fever for 2 days, Abdomen pain 2 days, vomiting 1 day and three episodes of loose stools. O/E he was toxic, dull looking and anaemic. Systemic examination showed abdomen guarding and severe pain in epigastrium and around the periumbilical region. Other system examination were found to be normal. Investigation showed TC: 14000, DC 72/28, RFT, LFT normal. ESR 45 and CRP was 67mg/dl. USG abdomen showed ileocolic intussusception. It was successfully reduced by pneumatic reduction in a single attempt by the radiology team under the supervision of the surgical team. As Post procedure he was kept under observation. Despite successful reduction of intussusception, he continued to run high temperature. Work up was done to find out any concomitant infections. Blood cultures and urine cultures were taken to rule out concomitant infections and antibiotics were escalated. On the 4th day of illness, he developed conjunctival redness, maculopapular rash on the trunk and red swollen lips. On the same day, he developed shock. He was then resuscitated with fluids and ionotropes and was shifted to PICU for observation. Blood counts and inflammatory markers were repeated. Due to the covid 19 epidemic, he was suspected to have MISC and work up was done. Covid pcr and IgG covid antibody was also done. CBC showed TC 14000, Dc 41/57/2, Platelet 1.4 lakhs/mm3. LFT: OT/PT 234/289, serum albumin 2.8gm/dl. Crp was 154mg/dl, ESR 112. RFT and electrolytes were normal. S. Ferritin:1112mg/l. D-dimer was less than 0.5. Cultures were negative and Covid pcr was negative. IgG to covid antibody was high Echocardiogram showed Depressed LV function and minimal pericardial effusion with normal coronary arteries.

2.1 Treatment

He was treated following our hospital MIS-C protocol with immune globulin, steroids and aspirin along with Ceftrioxone and vancomycin (Stopped after the negative blood and urine culture reports).

2.2 Course in the hospital

His fever abated after 36hrs and his circulation was restored to normalcy. He improved over the next few days and shifted to ward and was discharged after one week of hospital stay.

2.3 Follow up

On follow up after ten days, repeat Echo was done which was normal. At present the child is doing well and is under regular follow up.

3. DISCUSSION

The evidence regarding Mis-C that is associated with covid 19 is still evolving. It should be considered in any unusual presentation. MIS-C is defined as a state in which there is an exaggerated inflammatory response with fever, gastrointestinal tract (GI) manifestations, symptoms involving the mucocutaneous area, KD-like phenotype and macrophage activation. There are more than 10 cases of intussusception following covid 19 have been reported worldwide[11]. A literature search revealed few prior cases of intussusception occurring in COVID-19-infected children. Tran CD reported a 8 month old infant, who presented with incessant cry and few episodes of loose stools with blood. USG revealed ileocolic intussusception and was found to be coincidently covid 19 positive. Reduced pneumatically and the baby recovered fully[11]. Makrinioti et al., (2020) reported a 10-month old baby who presented with coryza, conjunctivitis, bilious vomiting and red currant jelly stool. RT-PCR was positive for SARS-COV2. USG showed malrotation, septic shock and intussusception. Ileostomy and surgical reduction was done. The baby succumbed to illness due to overwhelming sepsis[12]. Moazzam et al, reported a 4-month old baby who presented with symptoms of URI and incessant cry with red currant stool. USG revealed intussusception. Found to be covid positive. Treated by pneumatic reduction. Child recovered completely[13]. Martínez-Castaño et al[2] reported a 6 month old presented with abdomen pain, incessant cry and red currant jelly stool. USG showed Edematous bowel with telescoping mesenteric fat Ileocecal intussusception. Treated by hydrostatic reduction and the infant completely recovered[14]. Rajalakshmi et al, reported a 8 month old baby who presented with symptoms of covid with abdomen pain and red currant jelly stool. She was found to be covid positive with features of ileocolic intussusception in USG. Treated by pneumatic reduction and the baby recovered[15]. But so far, after thorough literature search, intussusception following MIS-C is not reported. Our index child presented with features of intussusception, who then evolved to a full blown case of MIS-C. This case report showed the rare presentation of MIS-C. In the current scenario, children presenting with symptoms pertaining to GIT should be suspected to have MIS-C, and there is an increase in need to test for causal association. In this index child, intussusception may be a GI manifestation of MIS-C, due mucosal inflammatory changes or may be an unrelated problem. Although the syndrome is just evolving it is prudent, to investigate any child for MIS-C, given an uncommon evolution of abdominal emergency.

4. AUTHORS CONTRIBUTION STATEMENT

Dr.Jayakanthan: Primary surgeon ,conceived and designed the report and critically revised the article and Dr.Krithika A.P.: Primary physician, diagnosed MISC and drafted the paper.

5. CONFLICT OF INTEREST

Conflict of interest declared none.

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