The Gastrointestinal presentation of PIMS-TS/ MIS-C in a cohort at a Tertiary Centre Paediatric Centre

Kurteva E*[1], Ahmad T*1, Grant K[2], Penner J[2], Kiparissi F[1], Gaynor EPT[1]
[1.] Department of Paediatric Gastroenterology; [2] Department of Paediatric Infection Diseases , Great Ormond Street Hospital

Introduction

Paediatric inflammatory multisystem syndrome temporally associated with COVID-19 (PIMS-TS) is a novel condition with poorly understood pathophysiological presentation.

Aim of Study

This authors report on the presence of gastrointestinal (GI) symptoms and subsequent investigations in children with PIMS-TS, also known as Multisystem inflammatory syndrome in children (MIS-C), at presentation and follow-up from a tertiary/quaternary Paediatric centre.

Methodology

All children under 18 years of age, with a new diagnosis of PIMS-TS between March and May 2020 were identified – representing the first distinct cohort of children presenting with this condition at our centre.

A diagnosis of PIMS-TS was confirmed using the RCPCH (UK) consensus guidance, and children with alternative diagnoses were excluded.

GI symptoms and manifestations of PIMS-TS were collected prospectively at presentation and follow-up until December 2020.

Investigations including biochemical and inflammatory profiles, stool calprotectin and abdominal imaging (US-Small bowel and CT- Abdomen) were documented and monitored on subsequent assessments using a standardized template.

RCPCH Case Definition for PIMS-TS

1. A child presenting with persistent fever, inflammation (neutrophilia, elevated CRP and lymphopaenia) and evidence of single or multi-organ dysfunction (shock, cardiac, respiratory, renal, gastrointestinal or neurological disorder) with additional features. This may include children fulfilling full or partial criteria for Kawasaki disease.

2. Exclusion of any other microbial cause, including bacterial sepsis, staphylococcal or streptococcal shock syndromes, infections associated with myocarditis such as enterovirus (waiting for results of these investigations should not delay seeking expert advice).

3. SARS-CoV-2 PCR testing may be positive or negative

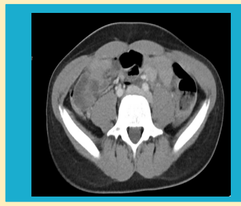

Fig 2: *Terminal ileum is markedly thickened, and there is significant fat stranding around it*

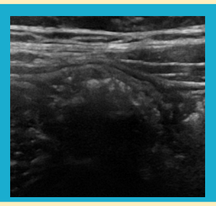

Fig 3: *Terminal ileum with sub mucosal thickening and wall oedema in PIMS-TS*

Results

Between March and May 2020, 54 children were identified (35 male), with a median age of 10.3 years ($\bar{x}$ = 10.0, range 0.75–17.2y).

INTIAL PRESENTATION

48/54 (94%) of children had GI symptoms on presentation to admitting hospital (abdominal pain 76%, vomiting 59%, diarrhoea 57%, nausea 35% and ascites 22%). (Figure 1)

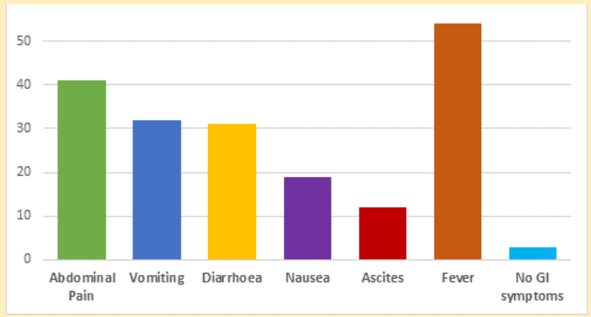

Fig 1: PIMS-TS Symptoms at presentation

Faecal calprotectin was not a recommended investigation in the UK National PIMS-TS consensus (Delphi process), was only performed on 3/54 children at presentation. All of which were within normal range. Elevated ALT, AST and/or GGT were seen in 63% of children.

Abdominal imaging was performed in 36/54 (67%) of total cohort – Table 1.

Ultrasound Abdomen (n, %)	N=32
Normal	10 (31%)
Hepatobiliary Abnormalities	10 (31%)
Ascites	13 (40%)
Ileocolitis	10 (31%)
Appendicitis	2 (6%)
Mesenteric adenitis	4 (13%)

Computed tomography Abdomen (n, %)	N=8
Normal	1 (13%)
Hepatobiliary Abnormalities	2 (26%)
Ileocolitis	5 (63%)

Table 1: GI-Imaging in our cohort

FOLLOW-UP

On first review of all patients following discharge (mean: 54 days from discharge), it was noted that there was esolution of GI symptoms in 96% of the total cohort. 19% continued to have abnormal abdominal imaging (predominately hepatobiliary abnormalities). 5% had persistently raised transaminases. 43% children had a faecal calprotectin analyzed during the follow-up period, with 48% (11/23) had an elevated calprotectin >50µg/g (range 55-399).

Conclusions

PIMS-TS has predominately been characterized as a rare condition that effects the cardiovascular system and/or is signified by symptoms of fever and circulatory shock. **This study demonstrates the high incidence of GI symptoms at presentation**. Abnormalities in transaminases and abdominal imaging are seen in significant numbers, notably inflammation in the distal ileum and proximal colon and hepatobiliary abnormalities which persist in 19% at their first review. Increased faecal calprotectin levels seen at follow-up, suggest utility at testing at admission.