PIMS-TS or PMISTAC Update 15th May 2020

Paediatric Inflammatory Multi-system Syndrome - Temporally associated with SARS-CoV 2

Paediatric Multisystem Inflammatory Syndrome Temporally Associated with COVID-19

PIMS-TS seems to be taking over as the preferred abbreviation

Links to Full information on RCPCH website

https://www.rcpch.ac.uk/sites/default/files/2020-05/COVID-19-Paediatric-multisystem-%20inflammatory%20syndrome-20200501.pdf

RCPCH Case Definition – see above link

1. A child presenting with persistent fever, inflammation (neutrophilia, elevated CRP and lymphopenia) 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.

Lancet Correspondence 6th May and 13th May New;
https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)31094-1.pdf
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31129-6/fulltext

Paediatric Intensive Care Society Guidance updated 14th March New
PIMS-TS "Paediatric Inflammatory Multi-system Syndrome - temporally associated with SARS-CoV 2"

https://picsociety.uk/wp-content/uploads/2020/05/PIMS-TS-Critical-Care-Clinical-Guidance-v4.pdf

All further information below has been obtained from the Evelina Hospital and South Thames webinar, run on Friday 8th May and the Y&H PCC ODN Teams meeting on 13th May

- Initial "cluster" of 10 cases reported in Woolwich late April/early May
- Now 50 cases in London area, as of mid-May.
  - 3 have needed ECMO.
  - 1 death
- 4 cases in Yorkshire PICUs and children starting to present locally, now 10-15 cases being managed in local DGHs and LGI wards
- Thought to be lag time, of 3-4 weeks, relating to timing of Covid epidemic in each area, so we may start seeing more

This is a post-Covid inflammatory vascular disorder, affecting previously healthy children, and is immune related. "Cytokine storm"

- All children have tested positive for Covid antibodies, have a history of contact, and test negative for antigen

Affects;

- Mostly school age and older, but not exclusively. Possibly also young adults, some cases up to age 21 noticed in USA
- BAME predominantly, mostly Afro-Caribbean and Middle Eastern
- Well-nourished children, BMI >91st centile (this relates to IL-6 and adipose)
- Boys more frequently than girls

History

- High temperature, 38-40°C, unresponsive to antipyretics
- Abdominal pain & diarrhoea very common –there have been some negative laparotomies
- Vomiting
- Rashes
- Conjunctivitis
- Headache
- Myalgia

Presentation

- May present like septic shock, but most are not
- Can be very sick
- Most are very dehydrated
- Low diastolic pressures

Treatment includes;

- Supportive
  - Fluid, but judicious, as patients are extremely fluid sensitive, and frequently have ventricular dysfunction, even 5mg/kg bolus may be enough initially, demonstrated by echo. Palpate liver to assess and titrate fluid.
  - Common advice from PICS to referring hospitals is to begin peripheral inotropes e.g.dopamine and/or adrenaline.
    - Noradrenaline, vasopressin may be needed once central access gained.
    - If evidence of cardiac dysfunction: adrenaline, milrinone,
      - Milrinone can be given peripherally, see Embrace drug chart. Located shelf 8 CRH recovery, HRI being checked.
- Immunomodulation approach variable, discuss with local team
    - may include IVIG, anakinra, tocilizumab
    - steroids, now using lower doses than at outset, methylpred 5-10mg/kg
- Treatment for thrombotic state, varied according to centre
    - LMWH, high dose aspirin. Discuss with local haematology
- Multidisciplinary approach, special MDT formed in Leeds now, including rheumatology, haematology, cardiology, pharmacy, immunology, infectious diseases, PICU etc. Low threshold for referral to Leeds, especially for cardiological involvement.

Points of note for Anaesthetists

- Intubation is not required for respiratory failure, but to facilitate line placement (for vasopressors) in younger children
- Older children are being managed by awake line placement
    - I'm making enquiries about any use of sedation
- Use Ketamine and Rocuronium, as per usual Embrace guideline
- Patients are very sensitive to movement, including lifting for XRs, rolling, transfers and ambulance acceleration and deceleration.
- Cardiac function can change rapidly and cardiomyopathy, ventricular dysfunction and pulmonary oedema can develop
- Embrace will transfer in the usual way

Karen Bartholomew
15th May 2020

<u>Kawasaki Disease</u>
There has been some cross referencing to Kawasaki disease in the publications and the media. It usually affects children < 5yrs old and the features are;
1st phase

- Fever, red "bloodshot" eyes, a pink rash on the back, belly, arms, legs, and genital area; red, dry, cracked lips, a "strawberry" tongue a sore throat, swollen palms of the hands and soles of the feet with a purple-red colour, swollen cervical lymph glands

2nd phase, usually 2 weeks after the fever started.

- joint pain, peeling skin on the hands and feet, diarrhoea, vomiting, abdominal pain