# Distinct characteristics of Multisystem Inflammatory Syndrome in Children in Poland

# Supplementary Information

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**Supplemental Table 1. The Inclusion Criteria for MultiOrgan Inflammatory Syndromes COVID-19 Related Study (MOIS-CoR Study)**

**Study inclusion criteria: age, disease severity, timing, diagnosis criterion and exclusion of other causes must be fulfilled.**

Age: 0-18 years

Disease severity: requiring hospitalization

Time frame: since March 4th 2020, ongoing (the paper covers data reported before 20th February 2021)

Diagnosis:
Kawasaki disease (KD) OR incomplete (atypical) Kawasaki disease (aKD)
OR toxic shock syndrome (TSS) OR macrophage activation syndrome[a] (MAS) OR unspecified inflammatory syndrome

**Kawasaki disease (KD) case definition[b]:**
Fever for at least 5 days and 4 from the following symptoms:

a) Erythema and cracking of lips, strawberry tongue, and/or erythema of oral and pharyngeal mucosa
b) Bilateral bulbar conjunctival injection without exudate
c) Rash: maculopapular, diffuse erythroderma, or erythema multiforme-like
d) Erythema and oedema of the hands and feet in acute phase and/or periungual desquamation in subacute phase
e) Cervical lymphadenopathy (≥1.5 cm diameter)

**Incomplete (atypical) Kawasaki disease (aKD) case definition:**
Fever for at least 5 days and 2 or 3 from the above symptoms OR infant with unexplained fever for at least 7 days AND CRP ≥3 mg/dL and/or ESR ≥40 mm/hr AND

1) at least 3 of the following:
   a) Anaemia for age[c]
   b) PLT ≥450 ×10 $^{9}$/L after the 7th day of fever
   c) Albumin ≤3 g/dL
   d) AL ≥40 U/L T
   e) WBC count of ≥15 ×10$^{9}$/L
   f) Urine ≥10 WBC/hpf

OR

2) Changes in echocardiogram suggesting KD

**Toxic shock syndrome (TSS) case definition[d]:**

1) Fever AND
2) Hypotension[e] AND
3) at least two of the following organ systems involvement:
   a) Gastrointestinal (vomiting, diarrhoea, abdominal pain);
   b) Muscular (severe myalgia, elevated creatine phosphokinase level);
   c) Renal (sterile pyuria, elevated creatinine or urea);
   d) Hepatic (elevated liver enzymes and/or bilirubin level);
   e) Hematologic (decrease in PLT <100×10$^{9}$/L);
   f) Disseminated intravascular coagulation;
   g) Acute onset of diffuse pulmonary infiltrates and hypoxemia;
   h) Acute onset of generalized oedema, or pleural or peritoneal effusions with hypoalbuminemia;
   i) Central nervous system (alterations in consciousness in absence of fever and hypotension)

**Macrophage activation syndrome (MAS) case definition[f]:**
Febrile patient with:

1) Ferritin >684 ng/mL AND
2) Any two of the following:
   a) PLT ≤181 ×10$^{9}$/L
   b) AST >48 U/L
   c) Triglycerides >156 mg/dL
   d) Fibrinogen ≤360 mg/dL

**Inflammatory syndrome case definition[g]:**

1) Fever for at least 3 days AND
2) High inflammatory markers (neutrophil count, CRP, ESR, procalcitonin) AND
3) Features of at least one organ dysfunction AND
4) At least two of the following symptoms:
   a) Rash or bilateral non-purulent conjunctivitis or mucocutaneous inflammation signs (oral, hands or feet).
   b) Hypotension or shock.
   c) Features of myocardial dysfunction, pericarditis, valvulitis, or coronary abnormalities (including echocardiogram findings or elevated troponin/BNP/NT-proBNP),
   d) Evidence of coagulopathy (by elevated INR, PTT, D-Dimers).
   e) Acute gastrointestinal problems (diarrhoea, vomiting, or abdominal pain);

Exclusion of other infectious and non-infectious causes that could be responsible for the disease

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

Abbreviations: ALT, alanine transaminase; AST, aspartate aminotransferase; BNP, brain natriuretic peptide; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; hpf, high power field; INR, international normalized ratio, NT-proBNP, N-terminal prohormone of brain natriuretic peptide; PLT, platelet count; PTT, partial thromboplastin time; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; WBC, white blood cells count

[a] DIC diagnosed using modified DIC score[1]

[b] Diagnostic criteria of KD and aKD in its typical and atypical (aKD) form were adapted from American Heart Association guidelines[2]
[c] Haemoglobin norms adapted from Cheng et al.[3]
[d] TSS was defined based on modified criteria by Centers of Disease Control and Prevention[4 5]
[e] Hypotension defined by a minimal systolic blood pressure (sBP) below 70+2×age (in years) mmHg or below 90 mmHg for children over 10 years old[6]
[f] MAS diagnosed using Paediatric Rheumatology International Trials Organization criteria[7]
[g] Adapted from the World Health Organization (WHO) multisystem inflammatory syndrome in children (MIS-C) definition[8]

**Supplemental Table 2. Standardised Study Definitions**

| Feature | Study definition |
|---|---|
| Laboratory abnormalities | |
| Lymphopenia | lymphocytes <1.5 $\times 10^9$/L |
| Anaemia | Hb < age-related norm[a] |
| Thrombocytopenia | PLT <150 $\times 10^9$/L |
| Elevated alanine transaminase | ALT ≥40 U/L |
| Hyponatraemia | Na <135 mmol/L |
| Hypoalbuminaemia | albumin <3.5 g/dL |
| Elevated BNP/NT-proBNP | BNP or NT-proBNP >150 ng/mL |
| Elevated T or I troponin | troponin T or I >50 ng/L |
| Renal dysfunction | eGFR <90 ml/min/1.73 $m^2$ [b] |
| Echocardiographic Abnormalities | |
| Heart dysfunction | EF <55% |
| Severe heart dysfunction | EF <35% |
| Coronary artery dilation | Z-score between 2 to 2.5[c] |
| Coronary artery aneurysm | Z-score ≥2.5[c] |
| Other measurements | |
| Level of consciousness | according to AVPU scale |
| Nutritional status | according to BMI, converted into Z-scores [d] |
| Obesity | BMI≥95 kg/m2 |
| Disseminated intravascular coagulation (DIC) | At least 5 points in scale:<br>1) PLT <50 $\times 10^9$/l=2 pt; 50-100$\times 10^9$/l=1 pt; >100$\times 10^9$/l=0 pt<br>2) D-dimers >2 mg/l=3 pt; 0,5-2 mg/l= 2 pt; <0,5 mg/l= 0 pt<br>3) INR >1.6=2 pt; 1,3-1,6=1 pt; <1,3=0 pt<br>4) fibrinogen min <1 g/l= 1 pt; ≥1 g/l= 0 pt |

Abbreviations: ALT, alanine transaminase; BMI, body-mass index; BNP, brain natriuretic peptide; EF, left ventricle ejection fraction; Hb, haemoglobin; INR, international normalized ratio; Na, sodium; NT-proBNP, N-terminal prohormone of brain natriuretic peptide; PLT, platelet count

[a] Haemoglobin norms adapted from Cheng et al.[3]

[b] Assessed with Schwartz formula[9]

[c] According to the American Heart Association definitions for Kawasaki disease;[2] Z-score was calculated using Dallaire equation[10] or Boston Children's Hospital Z-score calculator,[11] depending on the body surface area. The worst available EF and the largest coronary Z-scores were included. The echography results were assessed by two independent cardiologists.

[d] Assessed using the body-mass index (BMI), converted into Z-scores based on the WHO reference standards for children younger than 5 years[12] and national reference standards for older children[13]

**Supplemental Table 3. SARS-CoV-2 laboratory tests and anamnesis**

| | Cases | Percent of tested | Percent of all |
|---|---|---|---|
| Contact with a confirmed COVID-19 case preceding MIS-C | 120 | 51.9% | 43.8% |
| Confirmed SARS-CoV-2 infection preceding MIS-C | 24 | 9.8% | 8.8% |
| Positive SARS-CoV-2 RT-PCR result at the time of MIS-C | 29 | 12.6% | 10.6% |
| Positive antibodies against SARS-CoV-2 at the time of MIS-C | 241 | 94.5% | 88.0% |

Abbreviations: COVID-19, coronavirus disease 2019; MIS-C, multisystem inflammatory syndrome in children; RT-PCR, real-time transcription polymerase chain reaction; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2

**Supplemental Table 4. Demographic and clinical characteristics, management and outcome of MIS-C cohort**

| | **Overall (N=274)** | **<5 y (N=64)** | **5-12 y (N=140)** | **12-18 y (N=70)** | **p** | **p sex-adjusted** | **PICU patients (N=23)** | **non-PICU patients (N=251)** | **p** | **p age-adjusted** | **p sex-adjusted** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | n or med (% or IQR) | n or med (% or IQR) | n or med (% or IQR) | n or med (% or IQR) | | | n or med (% or IQR) | n or med (% or IQR) | | | |
| Male sex | 172 (63%) | 30 (47%) | 91 (65%) | 51 (73%) | <0.01 | 1 | 17 (74%) | 155 (62%) | 0.2 | 0.5 | 1 |
| Age (years) | 8.8 (5.2-12.1) | 3.2 (2.1-4.3) | 8.7 (6.6-10.5) | 13.6 (12.8-14.8) | <0.01 | <0.01 | 11.2 (10.1-12.6) | 8.4 (5.0-11.9) | <0.01 | 0.03 | <0.01 |
| BMI Z-score | 0.1 (-0.8-0.9) | -0.3 (-0.9-0.7) | 0.1 (-0.8-1.1) | 0.5 (-0.3-0.8) | 0.07 | 0.04 | 0.7 (-0.3-0.9) | 0.0 (-0.8-0.9) | 0.2 | 0.3 | 0.2 |
| **Comorbidities** | 38 (18%) | 7 (14%) | 21 (20%) | 10 (19%) | 0.7 | 0.7 | 4 (21%) | 34 (18%) | 0.7 | 0.8 | 0.7 |
| Obesity | 16 (7%) | 2 (4%) | 11 (9%) | 3 (5%) | 0.3 | 0.3 | 3 (14%) | 13 (6%) | 0.1 | 0.2 | 0.09 |
| Asthma | 11 (4%) | 2 (3%) | 6 (4%) | 3 (4%) | 0.9 | 0.9 | 1 (5%) | 10 (4%) | 0.9 | 1 | 0.9 |
| Chronic neurological issue | 6 (2%) | 2 (3%) | 3 (2%) | 1 (1%) | 0.8 | 0.7 | - | 6 (2%) | 0.5 | 0.5 | 0.4 |
| Other | 9 (4%) | 2 (4%) | 4 (3%) | 3 (6%) | 0.8 | 0.8 | - | 9 (4%) | 0.3 | 0.3 | 0.3 |
| **Symptoms and signs** | | | | | | | | | | | |
| **Fever length (days)** | 7.0 (6.0-9.0) | 7.0 (6.0-8.0) | 7.5 (6.0-9.0) | 7.0 (6.0-9.0) | 0.3 | 0.3 | 8.0 (7.0-10.0) | 7.0 (6.0-9.0) | 0.03 | .06 | 0.04 |
| **Mucocutaneous and lymph nodes** | 262 (97%) | 59 (95%) | 138 (99%) | 65 (94%) | 0.2 | 0.2 | 22 (96%) | 240 (97%) | 0.8 | 0.8 | 0.7 |
| Rash | 218 (83%) | 53 (84%) | 118 (87%) | 47 (71%) | 0.02 | 0.02 | 15 (71%) | 203 (84%) | 0.2 | 0.2 | 0.2 |
| Erythema at BCG site | 1 (0%) | 1 (2%) | - | - | 0.2 | 0.4 | - | 1 (0%) | 0.8 | 0.9 | 0.8 |
| Conjunctivitis | 207 (78%) | 47 (76%) | 109 (81%) | 51 (75%) | 0.6 | 0.6 | 14 (67%) | 193 (79%) | 0.2 | 0.2 | 0.2 |
| Hands/feet swelling or erythema | 142 (55%) | 39 (64%) | 75 (56%) | 28 (45%) | 0.1 | 0.2 | 15 (68%) | 127 (54%) | 0.2 | 0.1 | 0.1 |
| Oral inflammation | 173 (66%) | 43 (68%) | 96 (72%) | 34 (52%) | 0.02 | 0.02 | 14 (67%) | 159 (66%) | 0.9 | 0.8 | 1 |
| Cervical lymphadenopathy | 98 (38%) | 30 (48%) | 46 (36%) | 22 (32%) | 0.1 | 0.07 | 7 (33%) | 91 (38%) | 0.7 | 0.9 | 0.6 |
| **Gastrointestinal** | 250 (93%) | 56 (90%) | 132 (95%) | 62 (90%) | 0.3 | 0.3 | 21 (91%) | 229 (93%) | 0.8 | 0.8 | 0.6 |
| Abdominal pain | 222 (85%) | 42 (76%) | 120 (88%) | 60 (87%) | 0.1 | 0.2 | 21 (91%) | 201 (85%) | 0.4 | 0.5 | 0.5 |
| Nausea | 162 (62%) | 28 (47%) | 100 (75%) | 34 (51%) | <0.01 | <0.01 | 16 (70%) | 146 (61%) | 0.4 | 0.5 | 0.5 |
| Diarrhoea | 164 (62%) | 36 (59%) | 84 (61%) | 44 (65%) | 0.8 | 0.9 | 18 (78%) | 146 (60%) | 0.09 | 0.1 | 0.1 |
| **Upper respiratory** | 98 (38%) | 30 (54%) | 42 (31%) | 26 (39%) | 0.02 | 0.03 | 10 (45%) | 88 (38%) | 0.5 | 0.3 | 0.4 |
| Sore throat | 86 (34%) | 25 (47%) | 38 (28%) | 23 (35%) | 0.05 | 0.05 | 8 (36%) | 78 (34%) | 0.8 | 0.6 | 0.8 |
| Rhinitis | 23 (9%) | 10 (16%) | 7 (5%) | 6 (9%) | 0.05 | 0.09 | 2 (10%) | 21 (9%) | 0.9 | 0.7 | 0.8 |
| **Lower Respiratory** | 128 (50%) | 23 (40%) | 64 (48%) | 41 (63%) | 0.04 | 0.05 | 18 (86%) | 110 (47%) | <0.01 | <0.01 | <0.01 |
| Chest pain | 48 (19%) | 3 (6%) | 19 (14%) | 26 (39%) | <0.01 | <0.01 | 5 (25%) | 43 (18%) | 0.5 | 1 | 0.5 |
| Cough | 74 (28%) | 17 (28%) | 33 (25%) | 24 (35%) | 0.3 | 0.2 | 7 (32%) | 67 (28%) | 0.7 | 0.8 | 0.6 |
| Dyspnoea | 63 (24%) | 8 (13%) | 36 (27%) | 19 (28%) | 0.08 | 0.1 | 14 (67%) | 49 (20%) | <0.01 | <0.01 | <0.01 |
| **Neurological** | 220 (86%) | 54 (86%) | 112 (85%) | 54 (87%) | 0.9 | 0.9 | 20 (100%) | 200 (84%) | 0.06 | 0.06 | 0.05 |
| Lethargy | 151 (59%) | 36 (61%) | 88 (66%) | 27 (44%) | 0.02 | 0.02 | 19 (90%) | 132 (57%) | <0.01 | <0.01 | <0.01 |
| Irritability | 108 (42%) | 40 (65%) | 52 (39%) | 16 (25%) | <0.01 | <0.01 | 6 (27%) | 102 (43%) | 0.2 | 0.4 | 0.2 |
| Headache | 112 (46%) | 16 (32%) | 67 (51%) | 29 (47%) | 0.07 | 0.04 | 8 (38%) | 104 (47%) | 0.4 | 0.3 | 0.5 |

| | Overall (N=274) | <5 y (N=64) | 5-12 y (N=140) | 12-18 y (N=70) | p | p sex-adjusted | PICU patients (N=23) | non-PICU patients (N=251) | p | p age-adjusted | p sex-adjusted |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Meningeal signs | 27 (10%) | 6 (10%) | 15 (11%) | 6 (9%) | 0.9 | 0.9 | 2 (9%) | 25 (11%) | 0.8 | 0.8 | 0.8 |
| Seizures | 3 (1%) | 2 (3%) | 1 (1%) | - | 0.2 | 0.06 | - | 3 (1%) | 0.6 | 0.7 | 0.6 |
| Muscle hypotension | 30 (11%) | 5 (8%) | 16 (12%) | 9 (14%) | 0.6 | 0.7 | 5 (24%) | 25 (10%) | 0.07 | 0.1 | 0.07 |
| Nerve paralysis | 2 (1%) | 1 (2%) | 1 (1%) | - | 0.6 | 0.6 | - | 2 (1%) | 0.7 | 0.7 | 0.7 |
| Nerve paresis | 2 (1%) | - | 2 (1%) | - | 0.4 | 0.4 | - | 2 (1%) | 0.7 | 0.7 | 0.7 |
| Smell loss | 8 (3%) | 1 (2%) | 2 (1%) | 5 (8%) | 0.05 | 0.02 | 1 (5%) | 7 (3%) | 0.7 | 0.9 | 0.6 |
| Taste loss | 7 (3%) | 1 (2%) | 2 (1%) | 4 (6%) | 0.2 | 0.08 | 1 (5%) | 6 (3%) | 0.6 | 0.7 | 0.5 |
| Photophobia | 28 (11%) | 8 (14%) | 16 (12%) | 4 (6%) | 0.4 | 0.4 | - | 28 (12%) | 0.1 | 0.1 | 0.1 |
| Skin hyperesthesia | 87 (34%) | 29 (48%) | 46 (35%) | 12 (19%) | <0.01 | <0.01 | 8 (36%) | 79 (34%) | 0.8 | 0.4 | 0.7 |
| **Cardiovascular** | 139 (58%) | 16 (33%) | 79 (63%) | 44 (69%) | <0.01 | <0.01 | 22 (100%) | 117 (54%) | <0.01 | <0.01 | <0.01 |
| Hypotension[a] | 99 (41%) | 7 (14%) | 57 (46%) | 35 (51%) | <0.01 | <0.01 | 18 (86%) | 81 (36%) | <0.01 | <0.01 | <0.01 |
| Coronary dilation or aneurysm[b] | 21 (8%) | 6 (11%) | 10 (7%) | 5 (8%) | 0.8 | 0.5 | 3 (14%) | 18 (8%) | 0.3 | 0.3 | 0.4 |
| EF<55% | 58 (23%) | 3 (5%) | 31 (23%) | 24 (39%) | <0.01 | <0.01 | 14 (64%) | 44 (19%) | <0.01 | <0.01 | <0.01 |
| Pericardial effusion | 24 (9%) | 5 (9%) | 15 (11%) | 4 (6%) | 0.6 | 0.5 | 3 (14%) | 21 (9%) | 0.5 | 0.5 | 0.6 |
| **Musculo-osteoarticular** | 111 (44%) | 17 (32%) | 58 (44%) | 36 (55%) | 0.04 | 0.03 | 8 (42%) | 103 (44%) | 0.8 | 0.6 | 0.9 |
| Muscle pain | 103 (41%) | 15 (29%) | 53 (40%) | 35 (54%) | 0.02 | 0.01 | 8 (42%) | 95 (41%) | 0.9 | 0.8 | 0.9 |
| Arthralgia | 50 (19%) | 6 (10%) | 29 (21%) | 15 (24%) | 0.1 | 0.08 | 4 (20%) | 46 (19%) | 0.9 | 0.8 | 0.9 |
| Arthritis | 12 (5%) | 1 (2%) | 6 (4%) | 5 (8%) | 0.2 | 0.2 | 1 (5%) | 11 (5%) | 1 | 0.8 | 1 |
| Scrotum/labia swelling | 26 (10%) | 8 (13%) | 12 (9%) | 6 (10%) | 0.6 | 0.2 | 3 (14%) | 23 (10%) | 0.5 | 0.4 | 0.7 |
| **Clinical presentation** | | | | | | | | | | | |
| KD[c] | 170 (67%) | 43 (70%) | 94 (71%) | 33 (54%) | 0.06 | 0.09 | 18 (86%) | 152 (65%) | 0.05 | 0.03 | 0.04 |
| MAS[d] | 59 (22%) | 4 (6%) | 30 (22%) | 25 (36%) | <0.01 | <0.01 | 9 (43%) | 50 (20%) | 0.02 | 0.08 | 0.02 |
| DIC[e] | 42 (17%) | 5 (9%) | 22 (17%) | 15 (22%) | 0.1 | 0.06 | 5 (22%) | 37 (16%) | 0.5 | 0.7 | 0.4 |
| **Therapy and outcome** | | | | | | | | | | | |
| Admission since onset (days) | 5.0 (4.0-6.0) | 5.0 (4.0-5.0) | 5.0 (4.0-6.0) | 5.0 (4.0-6.5) | 0.5 | 0.5 | 6.0 (4.0-7.0) | 5.0 (4.0-6.0) | 0.08 | 0.1 | 0.09 |
| Intensive care | 23 (8%) | 1 (2%) | 13 (9%) | 9 (13%) | 0.05 | 0.08 | 23 (100%) | - | <0.01 | <0.01 | <0.01 |
| Mechanical ventilation | 10 (4%) | - | 7 (5%) | 3 (5%) | 0.2 | 0.2 | 10 (43%) | - | <0.01 | <0.01 | <0.01 |
| Oxygen supplementation | 61 (23%) | 5 (8%) | 41 (31%) | 15 (23%) | <0.01 | <0.01 | 17 (77%) | 44 (18%) | <0.01 | <0.01 | <0.01 |
| No immunomodulatory agent | 8 (3%) | 3 (5%) | 3 (2%) | 2 (3%) | 0.6 | 0.4 | - | 8 (3%) | 0.4 | 0.4 | 0.3 |
| IVIG | 238 (93%) | 55 (90%) | 122 (95%) | 61 (91%) | 0.3 | 0.3 | 20 (100%) | 218 (92%) | 0.2 | 0.2 | 0.2 |
| GCS | 143 (67%) | 27 (56%) | 74 (69%) | 42 (71%) | 0.2 | 0.2 | 17 (89%) | 126 (64%) | 0.03 | 0.04 | 0.03 |
| IVIG and GCS | 133 (62%) | 24 (50%) | 69 (65%) | 40 (67%) | 0.1 | 0.2 | 16 (89%) | 117 (60%) | 0.01 | 0.03 | 0.02 |
| Other immunomodulatory agents | 3 (1%) | 1 (2%) | 2 (2%) | - | 0.6 | 0.7 | - | 3 (2%) | 0.6 | 0.7 | 0.6 |
| ASA | 226 (85%) | 51 (81%) | 119 (88%) | 56 (84%) | 0.4 | 0.4 | 18 (90%) | 208 (85%) | 0.5 | 0.6 | 0.5 |
| Heparin | 91 (38%) | 14 (25%) | 45 (38%) | 32 (49%) | 0.02 | 0.02 | 18 (100%) | 73 (33%) | <0.01 | <0.01 | <0.01 |

| | Overall (N=274) | <5 y (N=64) | 5-12 y (N=140) | 12-18 y (N=70) | p | p sex-adjusted | PICU patients (N=23) | non-PICU patients (N=251) | p | p age-adjusted | p sex-adjusted |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Warfarin | 1 (0%) | 1 (2%) | - | - | 0.2 | 0.1 | - | 1 (1%) | 0.8 | 0.9 | 0.7 |
| Complete recovery at discharge | 218 (93%) | 55 (95%) | 115 (94%) | 48 (87%) | 0.2 | 0.2 | 18 (86%) | 200 (93%) | 0.2 | 0.3 | 0.2 |

Abbreviations: ASA, acetylsalicylic acid; BCG, Bacillus Calmette–Guérin vaccine; BMI, body mass index; DIC, disseminated intravascular coagulation; EF, ejection fraction; GCS, glucocorticoids; IQR, interquartile range; IVIG, intravenous immunoglobulin; KD, Kawasaki disease; MAS, macrophage activation syndrome; med, median; MIS-C, multisystem inflammatory syndrome in children; PICU, paediatric intensive care unit; y, years old

[a] Defined by a minimal systolic blood pressure below 70+2×age (in years) mmHg or below 90 mmHg for children over 10 years old[6]

[b] Dilation was defined as a Z-score between 2 to 2.5, while aneurysm as Z-score ≥2.5[2 10 11]

[c] Diagnostic criteria of KD in its typical and atypical (aKD) form were adapted from American Heart Association guidelines[2]

[d] MAS was diagnosed based on Paediatric Rheumatology International Trials Organization criteria[7]

[e] DIC was diagnosed using modified DIC score[1]

**Supplemental Table 5. Vital signs and laboratory results of MIS-C cohort at admission and at respective peaks.**

| | All (274) | PICU (23) | non-PICU (251) | P | P\|Age | P\|Sex |
|---|---|---|---|---|---|---|
| CRT >2s adm | 30 (13%) | 8 (40%) | 22 (11%) | <0.01 | <0.01 | <0.01 |
| CRT max >2s | 32 (15%) | 10 (56%) | 22 (11%) | <0.01 | <0.01 | <0.01 |
| Saturation adm [%] | 98.0 (96.0-99.0) | 97.0 (95.0-98.0) | 98.0 (96.0-99.0) | 0.09 | 0.08 | 0.09 |
| Saturation min [%] | 96.0 (92.0-98.0) | 92.0 (89.8-97.0) | 96.0 (93.0-98.0) | 0.02 | 0.04 | 0.02 |
| Respiratory rate adm [1/min] | 20.0 (18.0-25.0) | 30.0 (20.0-45.0) | 20.0 (18.0-25.0) | 0.01 | <0.01 | <0.01 |
| Respiratory rate max [1/min] | 25.0 (20.0-30.0) | 40.0 (30.0-49.5) | 24.0 (20.0-30.0) | <0.01 | <0.01 | <0.01 |
| Heartrate adm [1/min] | 120.0 (100.0-133.0) | 127.0 (110.0-140.0) | 120.0 (100.0-133.0) | 0.3 | 0.08 | 0.2 |
| Heartrate max [1/min] | 132.5 (118.0-150.0) | 135.0 (120.0-160.0) | 132.0 (118.0-146.5) | 0.2 | 0.06 | 0.2 |
| SBP adm [mmHg] | 100.0 (90.0-110.0) | 89.0 (78.8-99.5) | 100.0 (91.0-110.0) | <0.01 | <0.01 | <0.01 |
| SBP min [mmHg] | 88.0 (78.0-96.0) | 74.0 (62.5-82.5) | 89.0 (80.0-96.8) | <0.01 | <0.01 | <0.01 |
| Non-alert AVPU adm | 17 (6%) | 5 (22%) | 12 (5%) | <0.01 | <0.01 | <0.01 |
| Non-alert AVPU min | 38 (15%) | 8 (44%) | 30 (13%) | <0.01 | <0.01 | <0.01 |
| WBC adm [$10^9$/l] | 9.6 (6.6-13.3) | 11.6 (7.1-19.1) | 9.6 (6.6-12.8) | 0.1 | 0.1 | 0.1 |
| WBC min [$10^9$/l] | 6.7 (5.0-9.0) | 6.0 (5.3-9.2) | 6.7 (5.0-9.0) | 0.9 | 0.8 | 0.9 |
| WBC max [$10^9$/l] | 14.5 (10.9-19.7) | 19.8 (13.1-28.4) | 14.3 (10.5-19.1) | <0.01 | <0.01 | <0.01 |
| Lymphocytes adm [$10^9$/l] | 1.0 (0.7-1.8) | 0.8 (0.6-1.0) | 1.1 (0.7-1.8) | 0.05 | 0.3 | 0.05 |
| Lymphocytes min [$10^9$/l] | 1.0 (0.6-1.8) | 0.6 (0.5-0.9) | 1.0 (0.6-1.8) | <0.01 | 0.07 | <0.01 |
| Hemoglobin adm [g/dl] | 11.7 (10.7-12.7) | 11.1 (10.3-12.1) | 11.8 (10.7-12.7) | 0.1 | 0.02 | 0.1 |
| Hemoglobin min [g/dl] | 10.3 (9.4-11.2) | 9.7 (8.8-10.7) | 10.3 (9.4-11.2) | 0.06 | <0.01 | 0.05 |
| Platelets adm [$10^9$/l] | 176.0 (127.0-248.0) | 153.0 (121.0-187.5) | 178.0 (128.5-255.8) | 0.08 | 0.1 | 0.07 |
| Platelets min [$10^9$/l] | 160.0 (109.8-230.8) | 135.5 (93.8-182.5) | 163.5 (111.0-243.2) | 0.08 | 0.09 | 0.06 |
| CRP adm [mg/l] | 140.0 (83.7-194.9) | 242.0 (123.3-289.0) | 133.4 (78.8-187.2) | <0.01 | <0.01 | <0.01 |
| CRP max [mg/l] | 166.3 (94.4-242.1) | 264.6 (206.7-309.4) | 161.4 (93.3-226.2) | <0.01 | <0.01 | <0.01 |
| Procalcitonin adm [ng/ml] | 2.5 (1.0-6.9) | 13.2 (2.1-51.2) | 2.3 (0.9-6.2) | <0.01 | <0.01 | <0.01 |
| Procalcitonin max [ng/ml] | 4.3 (1.3-12.9) | 17.0 (10.2-30.7) | 3.5 (1.2-10.0) | <0.01 | <0.01 | <0.01 |
| ESR [mm] adm | 44.0 (31.0-66.0) | 78.5 (73.0-81.2) | 44.0 (30.0-65.0) | 0.03 | 0.02 | 0.02 |
| ESR [mm] max | 57.0 (37.8-80.0) | 77.0 (52.5-82.5) | 55.0 (37.0-78.0) | 0.4 | 0.4 | 0.4 |
| Ferritin adm [ng/ml] | 331.0 (197.9-622.4) | 671.0 (475.9-1052.8) | 317.1 (186.2-533.8) | <0.01 | <0.01 | <0.01 |
| Ferritin max [ng/ml] | 402.2 (217.9-672.2) | 671.0 (559.2-1113.4) | 367.9 (207.3-616.5) | <0.01 | <0.01 | <0.01 |
| Triglycerides adm [mg/dl] | 147.0 (123.0-218.9) | 181.0 (148.5-266.5) | 145.0 (119.0-213.0) | 0.05 | 0.04 | 0.05 |

| | All (274) | PICU (23) | non-PICU (251) | P | P\|Age | P\|Sex |
|---|---|---|---|---|---|---|
| Triglycerides max [mg/dl] | 172.5 (129.0-256.2) | 194.0 (169.0-359.0) | 167.0 (125.0-246.0) | 0.07 | 0.05 | 0.07 |
| D-dimers adm [mg/l] | 2.6 (1.5-4.6) | 3.9 (2.5-5.7) | 2.5 (1.4-4.4) | 0.01 | <0.01 | <0.01 |
| D-dimers max [mg/l] | 3.8 (2.0-6.3) | 5.7 (3.6-8.2) | 3.7 (2.0-6.2) | 0.03 | 0.05 | 0.02 |
| INR adm | 1.2 (1.1-1.4) | 1.3 (1.2-1.4) | 1.2 (1.1-1.3) | 0.3 | 0.5 | 0.2 |
| INR max | 1.2 (1.1-1.4) | 1.3 (1.2-1.4) | 1.2 (1.1-1.4) | 0.1 | 0.2 | 0.1 |
| AlAT adm [U/l] | 24.0 (16.0-40.1) | 35.0 (16.0-92.0) | 23.0 (15.5-40.0) | 0.05 | 0.06 | 0.05 |
| AlAT max [U/l] | 33.3 (21.0-65.8) | 55.0 (32.0-122.0) | 33.0 (20.0-59.2) | <0.01 | 0.03 | <0.01 |
| AST adm [U/l] | 32.1 (25.0-51.5) | 37.0 (25.0-59.0) | 32.0 (24.5-51.0) | 0.3 | 0.3 | 0.3 |
| AST max [U/l] | 43.0 (30.0-65.0) | 57.0 (44.0-108.0) | 42.0 (30.0-63.5) | <0.01 | 0.01 | <0.01 |
| LDH adm [U/l] | 278.0 (228.0-334.1) | 264.5 (238.0-425.5) | 281.0 (224.0-330.0) | 0.7 | 0.6 | 0.6 |
| LDH max [U/l] | 295.0 (239.0-353.0) | 265.0 (246.0-344.0) | 296.0 (239.0-353.0) | 0.9 | 0.9 | 0.9 |
| CK adm [U/l] | 51.0 (37.0-92.0) | 22.4 (13.2-30.9) | 52.0 (38.0-93.0) | 0.01 | <0.01 | 0.02 |
| CK max [U/l] | 51.0 (37.0-85.0) | 27.9 (24.0-38.0) | 56.5 (37.2-92.8) | 0.01 | <0.01 | 0.01 |
| Lactates adm [mmol/l] | 2.0 (1.6-3.0) | 2.1 (1.5-4.2) | 2.0 (1.6-2.9) | 0.4 | 0.4 | 0.4 |
| Lactates max [mmol/l] | 2.5 (1.8-3.5) | 3.5 (2.8-5.0) | 2.5 (1.8-3.4) | 0.01 | 0.02 | 0.01 |
| Sodium adm [mmol/l] | 135.0 (132.0-137.0) | 134.0 (132.0-137.8) | 135.0 (132.0-137.0) | 1 | 0.9 | 0.8 |
| Sodium min [mmol/l] | 133.6 (131.0-135.9) | 133.0 (130.0-135.0) | 133.8 (131.0-135.9) | 0.5 | 0.6 | 0.6 |
| Albumins adm [g/dl] | 3.3 (2.8-3.7) | 2.8 (2.4-3.4) | 3.3 (2.8-3.7) | 0.02 | <0.01 | 0.01 |
| Albumins min [g/dl] | 2.8 (2.5-3.3) | 2.5 (2.3-2.7) | 2.8 (2.5-3.3) | <0.01 | <0.01 | <0.01 |
| Troponin elevated adm | 62 (28%) | 17 (77%) | 45 (22%) | <0.01 | <0.01 | <0.01 |
| Troponin elevated max | 92 (51%) | 18 (86%) | 74 (47%) | <0.01 | <0.01 | <0.01 |
| BNP/NT-proBNP elevated adm | 171 (86%) | 16 (89%) | 155 (85%) | 0.7 | 0.6 | 0.7 |
| BNP/NT-proBNP elevated | 204 (91%) | 20 (100%) | 184 (90%) | 0.1 | 0.2 | 0.1 |
| Creatinine adm [mg/dl] | 0.5 (0.4-0.7) | 0.8 (0.6-1.4) | 0.5 (0.4-0.6) | <0.01 | <0.01 | <0.01 |
| Creatinine max [mg/dl] | 0.5 (0.4-0.7) | 0.8 (0.6-1.4) | 0.5 (0.4-0.7) | <0.01 | <0.01 | <0.01 |
| eGFR adm [ml/min/1.73m$^2$] | 110.1 (86.2-134.3) | 77.1 (50.8-89.5) | 113.1 (90.5-134.8) | <0.01 | <0.01 | <0.01 |
| eGFR min [ml/min/1.73m$^2$] | 104.9 (82.0-126.6) | 73.0 (45.4-88.0) | 107.4 (85.4-128.8) | <0.01 | <0.01 | <0.01 |

Binary data given as count (per-cent), and numerical data as median (interquartile range). Values at admission are marked with adm, lowest obtained with min, while highest with max. Troponin is considered elevated at >50 ng/l, while BNP/NT-proBNP at >150 ng/ml.
Abbreviations: AlAT, alanine transaminase; AST, aspartate aminotransferase; BNP, brain natriuretic peptide; CK, creatine kinase; CRP C-reactive protein; CRT, capillary refill time; eGFR, estimated glomerular filtration rate ; ESR, erythrocyte sedimentation rate; INR, international normalized ratio, LDH, lactate dehydrogenase ; NT-proBNP, N-terminal prohormone of brain natriuretic peptide; SBP, systolic blood pressure ; WBC , white blood cells count

## Increase of the Kawasaki Disease cases in two reporting sites in years 2015-2021

Cases of Kawasaki disease (KD) and atypical KD (aKD) were extracted from historical medical records from the Pediatric Infectious Disease Department, Wrocław, Poland and the Department of Pediatrics with Clinical Assessment Unit, Warsaw, Poland. Fulfillment of KD/aKD criteria according to the American Heart Association[2] was verified independently by KML, MON and ND.

**Supplemental Table 6 Kawasaki Disease (typical and atypical form) hospitalizations per year in 2015-2020/2021 in the Pediatric Infectious Disease Department, Wrocław, Poland and the Department of Pediatrics with Clinical Assessment Unit, Warsaw, Poland.**

| | Pre-pandemic data | | | | | During the pandemic study period |
|---|---|---|---|---|---|---|
| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 04.03.2020-20.02.2021 |
| No of KD/aKD Wroclaw | 9 | 7 | 2 | 13 | 12 | 18 |
| No of KD/aKD Warsaw | 5 | 13 | 15 | 19 | 15 | 52 |
| Summary | 14 | 20 | 17 | 32 | 27 | 70 |
| Median no per year | 18.5 | | | | | |

Abbreviations: KD, Kawasaki Disease; aKD atypical Kawasaki Disease; No, number

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