A MYSTERY REVEALED IN HISTORY

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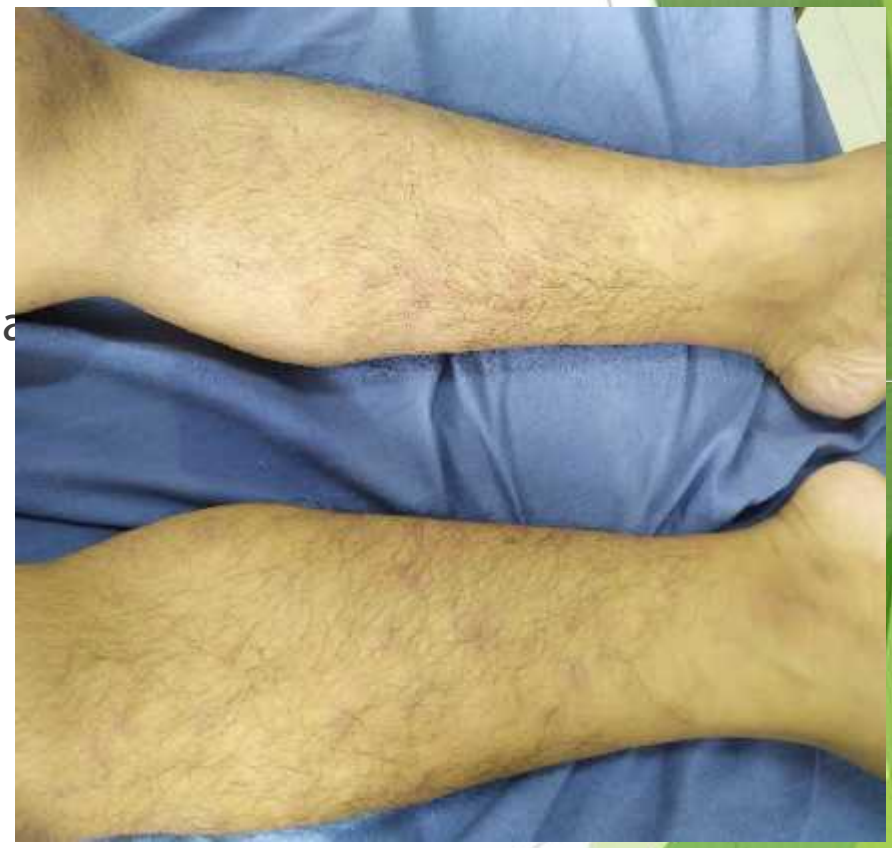
PATIENT PARTICULARS

- A 24 year male.
- Living in Raipur, Uttar Dinajpur ,West Bengal.
- Student,unmarried.
- Normotensive , non diabetic , euthyroid.
- Non alcoholic, non smoker.

CHIEF COMPLAINTS

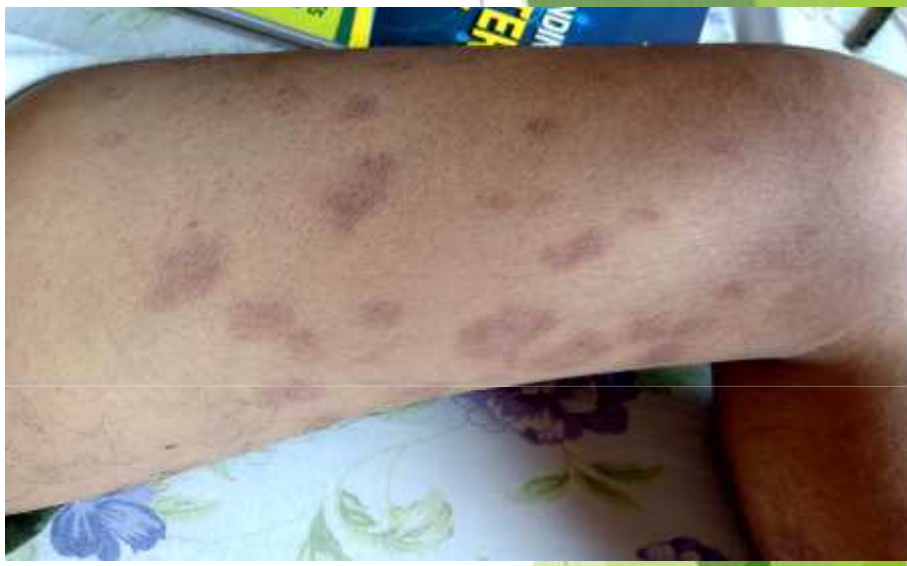
1. **Fever** and **headache** for 9days.
2. **Rash** from day 5 of illness.
3. **Vomiting** and **redness of right eye** for 5da



HISTORY OF PRESENT ILLNESS

- **FEVER**:

1. Moderate to High grade, intermittent in nature.
2. Not associated with sweating or chills and rigor.



- **RASH**:

1. Initially papular in nature.
2. Then became macular erythematous patches.
3. Blanching.
4. Non pruritic, non tender.
5. Generalized all over the body including both upper & lower limbs.
6. Oral mucosa and genitalia not involved.

HISTORY OF PRESENT ILLNESS

- **HEADACHE**:

1. Severe frontal headache.
2. Non pulsatile.
3. Not associated with photophobia.

- **VOMITING**:

1. Recurrent non projectile non billious vomiting.
2. Associated with abdominal pain.
3. Not associated with blood .

- **VISUAL SYMPTOMS**:

1. Redness of right eye.
2. Associated with itching and blurring of vision

NEGATIVE HISTORY

- Cough / Sore throat/ Shortness of breadth
- Drug intake
- Epistaxis
- Bleeding manifestation
- Joint pain
- Hematuria/ Dysuria
- Increased frequency of urine
- Diarrhoea
- Urticaria , Asthma

PAST HISTORY

- No history of similar symptoms in past.
- No contact history of pulmonary tuberculosis.
- No history of recent travel

PAST TREATMENT HISTORY

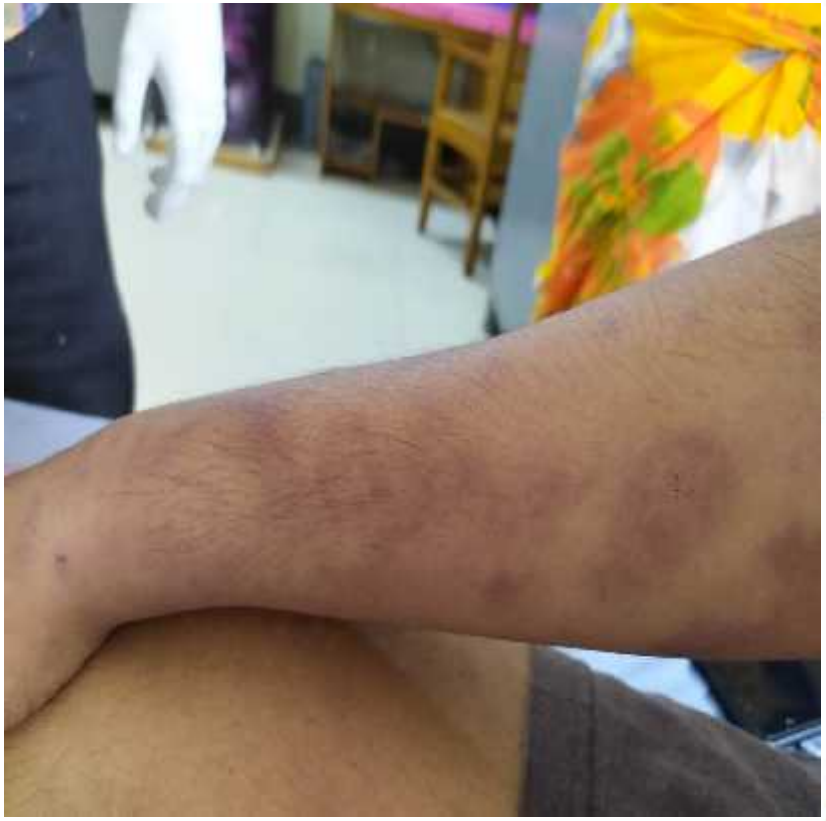
- After consulting a doctor he received Inj Ceftriaxone 1gm × iv twice daily from day 4 to day 6 of fever at his home.
- On day 5 he developed generalized maculopapular rash starting from lower limbs followed by upper limbs and rest of the body
- On day 6 he was admitted in a hospital.
- Proteus Ag OX K turned out to be reactive
- Received tab doxycycline 100mg twice daily and inj meropenem 1gm iv twice daily for 3days.
- Fever, headache and rash still persisted along with vomiting.
- Referred to our hospital on day 9 of illness.

CLINICAL EXAMINATION

- Patient was alert conscious co operative, oriented to time, place, person
- GCS 15/15
- Built- Average, Weight – 62kg,. Height- 168cm
- Facies – Normal
- Decubitus of choice
- No pallor, cyanosis ,jaundice, clubbing, edema
- No distended neck veins or lymphadenopathy
- Pulse – 96/min , regular rhythm with no special characters
- BP- 126/80 mmHg , no postural drop

CLINICAL EXAMINATION

- Temperature - 101.7°F
- Spo2 – 98% in room air
- CBG – 110mg%
- Respiratory rate : 18/min
- **Rash** :



1. Erythematous macular
2. Non tender
3. Non palpable
4. Non pruritic
5. Blanching
6. Upper and lower limbs , front and back of chest and abdomen

CLINICAL EXAMINATION SYSTEMIC

- **Lymphoreticular System :**

1. Skin – erythematous rashes
2. Oral cavity- No involvement
3. Lymph nodes – Not enlarged
4. Liver and spleen – Not palpable
5. No sternal tenderness

- **Respiratory System :**

1. Bilateral vesicular breath sound
2. No crepitation or wheeze present

CLINICAL EXAMINATION SYSTEMIC

- **CARDIOVASCULAR SYSTEM**

1. S1 and S2 audible
2. No other sound

- **Musculoskeletal System:** normal
- **Genitalia** – No abnormality detected

CLINICAL EXAMINATION

- **Ophthalomological**:

1. Right eye - non purulent conjunctivitis
2. Left eye – clear
3. Bilateral papilledema present with raised intra ocular pressure
4. Visual acuity – 6/6 both eye, normal colour vision in both eyes . No RAPD present.

- **Neurological examination:**

Higher function normal , memory and speech normal , no neck rigidity

Kernig sign – negative. Brudzinski sign – negative

Upper and lower limbs – Tone – Normal , power – 5/5, reflex – within normal limit

Plantar – bilaterally flexor .

Sensory examination- Touch, pain ,temperature ,vibration, joint sense and proprioception preserved

Autonomic – Bladder and bowel not involved

Cranial nerve involvement absent

POSSIBILITIES....

- **Differential diagnosis:**
- Scrub typhus
- Dengue
- Typhoid
- Chikungunya
- Malaria
- Leptospirosis
- Japanese encephalitis
- Herpes Simplex
- Epstein Barr- Infectious mononucleosis
- Bacterial / Tubercular / Viral meningitis
- Hemophagocytic lymphohistiocytosis

POSSIBILITIES

- **Differential diagnosis:**
- Meningoenchephalitis
- Cryptococcal meningitis
- Syphilis
- COVID associated rash
- Lupus (SLE)
- Drug induced

EVALUATION
BLOOD REPORTS

- WBC- 6400/cmm (N70 L28)
- RBC- 3.20×10^6 /cmm
- PLATELET- **130× 10^3/cmm**
- HB% - **9.4gm**%
- MCV – 89.7
- MCH – 29.4
- MCHC – 32.8
- FBS – 89mg/dl PPBS – 110mg/dl
- Urea – 29mg/dl , Creatinine – 1.2 mg/dl

EVALUATION
BLOOD REPORTS

- TSB – 1.6 mg/dl, Conjugated- 0.5mg/dl
- ALBUMIN/ GLOBULIN – 3.0/3.6gm/dl
- SGOT – 43 IU/L
- SGPT – 41 IU/L
- ALP- 46 IU/L
- Na- 128.9 meq/l k+4.47mEq/l
- Triglyceride- 110mg/dl
- Total cholesterol- 122 mg/dl
- HDL- 33 mg/dl
- LDL – 86 mg/dl

Inflammatory Markers:

1. ESR – **125mm/1hr (**<20 mm/hr)
2. CRP – **336 mg/L (**<6mg/L)
3. FERRITIN – **2250** ng/ml (20-250 ng/ml)
4. PROCALCITONIN- **0.78** ng/ml (<0.05 ng/ml)
5. LDH – **758** u/l (105- 333 u/l)

- **Coagulation profile :**

1. BT – 3mins (2-7mins)
2. CT – 9mins (8-15mins)
3. PT – 15. INR – 1.2 control – 13secs
4. aPTT – 32seconds (30-40secs)
5. D-dimer – **6.0 microgram/ml** (< 0.5 microgram/ml)
6. Fibrinogen- 380 mg/dl (200-400 mg/dl)

- **Blood culture -** Coagulase negative Staphylococci (CONS)
- **Urine pus cell** - 2-3/hpf , Urine culture – No growth
- **Stool** - OBT & OPC negative

Specific Investigations To Rule Out Infective causes

1. MP / MPDA – NR
2. DENGUE IgM – NR
3. LEPTOSPIRA IGM- NR
4. CHIKUNGUNYA IGM – NR
5. JAPANESE ENCEPHALITIS IgM – NR
6. TYPHIDOT IGM- NR
7. Brucella IgM – NR
8. Anti HSV IgM – NR
9. EBV – VCA IGM – NR
10. Cryptococcal Ag- NR
11. VDRL- NR
12. Scrub typhus IgM – NR
13. COVID 19 RTPCR - NR

- **Serology:**

1. HbsAg – NR
2. AntiHCV – NR
3. ICTC – NR

- **Sputum** :
- Gram stain and culture and fungal stain culture – No growth
- AFB – Not found , CBNAAT - Negative

RADIOLOGICAL EVALUATION

- **USG Whole Abdomen**- No abnormality detected
- **Chest X-ray** – no abnormality
- **CECT Thorax**- No abnormality detected
- **CECT Whole Abdomen** –Mild hepatomegaly ,otherwise no abnormality detected
- **CECT Brain-** No abnormality detected
- **MRI Brain with contrast -** Mild linear enhancement in right periventricular region ,Rest of brain parenchyma is normal.

CARDIOVASCULAR EVALUATION

- **ECG** – Normal sinus rhythm. No abnormality detected.
- **ECHO** – LVEF – 60% ,Good systolic and diastolic function
- **Trop T** – Negative
- **NT – PRO BNP –** 79.85 pg/ml (<125 pg/ml)

CSF Study :

1. **Appearence -** Crystal clear
2. **Pressure- Very raised**
3. **Cell type and count** – **25cell** /cmm , All are lymphocytes
4. Protein- **55.6** mg/dl
5. Sugar – **74mg**/L
6. LDH – **68u**/l
7. Gram stain with AFB and Fungal stain and culture – No growth
8. CBNAAT- negative
9. JE PCR – Undetected
10. HSV 1 & 2 PCR – Undetected
11. CrAg – NR
12. VDRL- - NR

Rhematological Profile:

1. ANA (HEP 2 with cell line titre) – Negative
2. ANA Profile- negative
3. Rheumatoid Factor- 5iu/ml (<10iu/ml)
4. Anti CCP – 2ru/ml (<5ru/ml)
5. P – ANCA and C-ANCA – Negative
6. C3 – 174mg/dl (90-180 mg/dl)
7. C4 – 30.4 mg/dl (10-40mg/dl)

- **Skin Biopsy:**
- **Histopathological examination** show Hyperkeratosis with a focus of parakeratosis and increased pigmentation of basal keratocyte. The dermal vessels show intimal proliferation and endothelial cells prominance suggesting a **VASCULOPATHIC LESION.**
- **Immunofluorescence Assay:**
- IGG,IGM ,IGA, C3 – Negative **(Doesn't show any fluorescence**)

- After admission at our hospital,

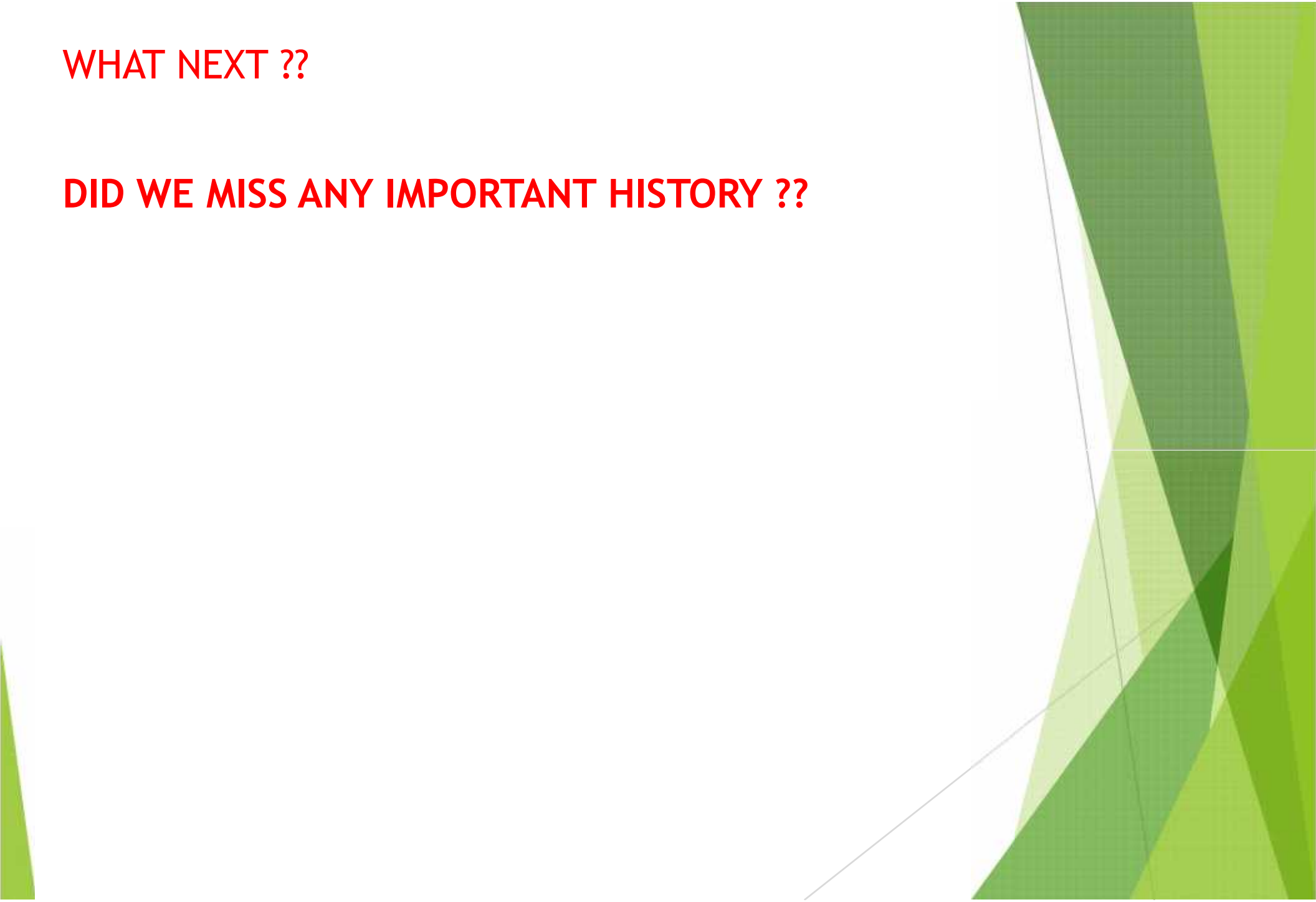
Patient received to continue tab doxycycline and injection meropenem.

But His fever headache and rashes didn’t subside.

Daily rise in temperature with persistent headache

WHAT NEXT ??

DID WE MISS ANY IMPORTANT HISTORY ??



- After further enquiry it was found that the patient had **history of close contact with a family member suffering from COVID 1 month back.**
- During that time he got tested and his COVID 19 RTPCR report was **negative.**
- After gathering this information we decided to perform a COVID Antibody test
- **COVID ANTIBODY (IgG and total) was positive in high titre.**
- Patient **did not receive any COVID vaccine.**

- **So Our Provisional Diagnosis is –**

Multisystem Inflammatory Syndrome – Adult

(MIS –A)

MIS A CRITERIA – CDC

- A patient aged ≥21years hospitalized for ≥24hours , or with an illness resulting in death,who meets the following clinical and laboratory criteria.
- The patient should not have a more likely alternative diagnosis for the illness (eg. Bacterial sepsis, exacerbation of a chronic medical condition)
- **CLINICAL CRITERIA-**

Subjective fever or documented fever (≥**38.0 C)** for ≥24hours prior to hospitalization or **within the first THREE days of hospitalization** and at **least THREE of the following clinical criteria occurring prior to hospitalization or** within the first THREE days of hospitalization. **At least ONE must be a primary clinical criterion.**

PRIMARY CLINICAL CRITERIA

1. Severe cardiac illness includes myocarditis, pericarditis, coronary artery dilatation/aneurysm, or new onset right or left ventricular dysfunction (LVEF<50%),2nd/3rd degree A-V block , or ventricular tachycardia.
2. **Rash and non purulent conjunctivitis**

SECONDARY CLINICAL CRITERIA

1. New –onset neurologic signs and symptoms includes encephalopathy in a patient without prior cognitive impairment, seizures,meningeal signs,or peripheral neuropathy (including GB syndrome)
2. Shock or hypotension not attributable to medical therapy (eg.sedation,renal replacement therapy)
3. **Abdominal pain, vomiting, or diarrhoea**
4. **Thrombocytopenia** (Platelet count <150,000/microliter)

Laboratory Evidence

The presence of laboratory evidence of inflammation

AND SARS -COV-2 infection.

A. Elevated levels of at least TWO of the following:

1. C- Reactive Protein (CRP)
2. Ferritin
3. IL-6
4. Erythrocyte sedimentation rate (ESR)
5. Procalcitonin

B. A positive SARS – COV-2 test during the current illness by RT PCR, antibody or antigen detection.

Points in favour of MIS- A :

1. Our patient is **≥21years**, hospitalized for **≥ 24hrs** with **documented fever (≥38.0 C) for ≥ 24hrs** prior to hospitalization and **after 3days of hospitalization**
2. **Rash and non purulent conjunctivitis of right eye**
3. **Newer onset severe headache with bilateral papilledema.**
4. Gastrointestinal problem –**Recurrent vomiting and occasional abdominal pain**
5. Thrombocytopenia (**Platelet count- 130× 10^3/cmm**)
6. Elevated markers of inflammation – **ESR , CRP , procalcitonin**
7. Evidence of Coagulopathy – **Elevated D – Dimer**
8. **No** other obvious microbial cause of inflammation, including bacterial sepsis.
9. Evidence of **contact** with **COVID 19 RTPCR positive** patient **within 4weeks.**

TREATMENT

- Patient received

1. Inj Methylprednisolone (2mg/kg/day) 125mg iv OD (Once daily) for 3days
2. Followed by Methylprednisolone in tapering doses for another 3weeks.

- **After getting Methylprednisolone, his fever , headache and rash subsided gradually and discharged in afebrile condition.**

Papilledema subsided and conjunctivitis resolved

*Reference-

mis c CDC 24hr emergency operation center

American college of Rheumatology Guideline

Case Series of Multisystem Inflammatory Syndrome in Adults Associated with SARS-CoV-2 Infection — United Kingdom and United States, March–August 2020

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On October 2, 2020, this report was posted as an MMWR Early Release on the MMWR website (https://www.cdc.gov/mmwr).

During the coronavirus disease 2019 (COVID-19) pandemic, reports of a new multisystem inflammatory syndrome in children (MIS-C) have been increasing in Europe and the United States (1–3). Clinical features in children have varied but predominantly include shock, cardiac dysfunction, abdominal pain, and elevated inflammatory markers, including C-reactive protein (CRP), ferritin, D-dimer, and interleukin-6 (1). Since June 2020, several case reports have described a similar syndrome in adults; this review describes in detail nine patients reported to CDC, seven from published case reports, and summarizes the findings in 11 patients described in three case series in peer-reviewed journals (4–6). These 27 patients had cardiovascular, gastrointestinal, dermatologic, and neurologic symptoms without severe respiratory illness and concurrently received positive test results for SARS-CoV-2, the virus that causes COVID-19, by polymerase chain reaction (PCR) or antibody assays indicating recent infection. Reports of these patients highlight the recognition that illness referred to here as multisystem inflammatory syndrome in adults (MIS-A), the heterogeneity of clinical signs and symptoms, and the role for antibody testing in identifying similar cases among adults. Clinicians and health departments should consider MIS-A in adults with compatible signs and symptoms. These patients might not have positive SARS-CoV-2 PCR or antigen test results, and antibody testing might be needed to confirm previous SARS-CoV-2 infection. Because of the temporal association between MIS-A and SARS-CoV-2 infections, interventions that prevent COVID-19 might prevent MIS-A. Further research is needed to understand the pathogenesis and long-term effects of this newly described condition.

Potential MIS-A patients were identified from several sources: reports from clinicians and health departments, published case reports, and published case series. Clinicians and health departments in the United States voluntarily reported adult patients with suspected MIS-A to CDC using the case report form* developed for MIS-C after a Health Advisory was published on May 14, 2020, calling for reporting of MIS-C cases. The case report form included information on patient demographics, underlying medical conditions, clinical findings, complications, laboratory test results including those from SARS-CoV-2 testing, imaging findings, treatments, and outcomes. Two clinician reviewers selected patients who fulfilled the working MIS-A case definition used in this report, which included the following five criteria: 1) a severe illness requiring hospitalization in a person aged ≥21 years; 2) a positive test result for current or previous SARS-CoV-2 infection (nucleic acid, antigen, or antibody) during admission or in the previous 12 weeks; 3) severe dysfunction of one or more extrapulmonary organ systems (e.g., hypotension or shock, cardiac dysfunction, arterial or venous thrombosis or thromboembolism, or acute liver injury); 4) laboratory evidence of severe inflammation (e.g., elevated CRP, ferritin, D-dimer, or interleukin-6); and 5) absence of severe respiratory illness (to exclude patients in which inflammation and organ dysfunction might be attributable simply to tissue hypoxia). Patients with mild respiratory symptoms who met these criteria were included. Patients were excluded if alternative diagnoses such as bacterial sepsis were identified.

To identify potential published cases, a literature search was performed on August 20, 2020, and 355 publications were identified.† Abstracts were screened by one reviewer to determine whether cases met the working MIS-A case definition; when no abstract was available, the full paper was examined. The references were reviewed to identify additional relevant studies. Data were obtained from published reports; authors were contacted to confirm published cases and, when necessary, to provide data not included in the original articles.

* [illegible]
† [illegible]

TABLE 1. Demographics, clinical features, treatments, and outcomes of nine adults reported to CDC with multisystem inflammatory syndrome (MIS) associated with SARS-CoV-2 infection — United States, March–August 2020

Age (yrs), sex, race/ethnicity, location	Underlying medical conditions	Clinical signs and symptoms	Previous respiratory illness/ SARS-CoV-2 testing	SARS-CoV-2 testing at time of MIS Admission	Laboratory studies (peak)*	Imaging/Other diagnostic studies	Treatments	Outcome and length of stay
Patient 1, [illegible], female, African American, [illegible]	None	[illegible]	No/Testing unknown	PCR (-)/Ab (+)	CRP [illegible]; D-dimer [illegible]; ferritin [illegible]; troponin [illegible]; ALT [illegible]; ALC nadir [illegible]	TTE: [illegible] pericardial effusion. CT chest: [illegible] pleural effusion. CT abdomen/pelvis: [illegible] free fluid	[illegible] steroids, [illegible], heparin, corticosteroids	Discharged after [illegible] days
Patient 2, [illegible], male, African American, [illegible]	None	[illegible]	No/Testing unknown	PCR [illegible]	CRP [illegible]; D-dimer [illegible]; ferritin [illegible]; troponin [illegible]; ALT [illegible]; ALC nadir [illegible]	[illegible] ST segment changes. TTE: ejection fraction [illegible]; [illegible] pleural effusion	[illegible] corticosteroids	Discharged after [illegible] days
Patient 3, [illegible], male, African American, Florida	Obesity, [illegible]	[illegible]	Yes/Testing unknown	PCR (-)/Ab (+)	CRP [illegible]; D-dimer [illegible]; ferritin [illegible]; troponin [illegible]; IL-6 [illegible]; ALT [illegible]; ALC nadir [illegible]	EKG: ST segment changes. CT chest: [illegible]. CT abdomen: hepatic steatosis	[illegible], heparin	Deceased
Patient 4, [illegible], male, Hispanic, [illegible]	Obesity	[illegible]	No/Testing unknown	PCR (-)/Ab (+)	CRP [illegible]; D-dimer [illegible]; ferritin [illegible]; troponin [illegible]; IL-6 [illegible]; ALT [illegible]; ALC nadir [illegible]	TTE: [illegible] ejection fraction [illegible]. CT chest: [illegible]	IVIG, corticosteroids, [illegible]	Discharged after [illegible] days
Patient 5, [illegible], male, African American, Georgia	Obesity, HTN, [illegible]	[illegible]	Yes/PCR (+) [illegible]	PCR (-)/Ab (+)	CRP [illegible]; D-dimer [illegible]; ferritin [illegible]; troponin [illegible]; IL-6 [illegible]; ALT [illegible]; ALC nadir [illegible]	[illegible]. CT abdomen/pelvis: normal. TTE: [illegible]	Anticoagulation	Discharged after [illegible] days
Patient 6, [illegible], female, Hispanic, [illegible]	None	[illegible]	No/Testing unknown	PCR (-)/Ab (+)	CRP [illegible]; D-dimer [illegible]; ferritin [illegible]; troponin [illegible]; IL-6 [illegible]; ALT [illegible]; ALC nadir [illegible]	CT [illegible]. TTE: ejection fraction [illegible]. [illegible]	[illegible], corticosteroids	Discharged after [illegible] days

See table footnotes on the next page.

Discussion

Findings indicate that adult patients of all ages with current or previous SARS-CoV-2 infection can develop a hyperinflammatory syndrome resembling MIS-C. Although hyperinflammation and extrapulmonary organ dysfunction have been described in hospitalized adults with severe COVID-19, these conditions are generally accompanied by respiratory failure (7). In contrast, the patients described here had minimal respiratory symptoms, hypoxemia, or radiographic abnormalities in accordance with the working case definition, which was meant to distinguish MIS-A from severe COVID-19; only eight of 16 patients had any documented respiratory symptoms before onset of MIS-A.

The pathophysiology of MIS in both children and adults is currently unknown. Eight of 27 (30%) adults described in this report and 45% of 440 children with MIS-C reported to CDC through July 29, 2020, (1) had negative PCR and positive SARS-CoV-2 antibody test results, suggesting MIS-A and MIS-C might represent postinfectious processes. However, in some patients, persistent infection outside the upper respiratory tract is possible; SARS-CoV-2 has been identified in

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BMC Infectious Diseases

CASE REPORT Open Access

A young adult with COVID-19 and multisystem inflammatory syndrome in children (MIS-C)-like illness: a case report

Aaron D. Kofman*, Emma K. Sizemore, Joshua F. Botelho, Benjamin Albrecht and Anne L. Pantales

Abstract

Background: A healthy 25-year-old woman developed COVID-19 disease with clinical characteristics resembling Multisystem Inflammatory Syndrome in Children (MIS-C), a rare form of COVID-19 described primarily in children under 21 years of age.

Case presentation: The patient presented with 1 week of weakness, dyspnea, and low-grade fevers, followed by mild cough, sore throat, vomiting, diarrhea, and lymph node swelling. She was otherwise healthy, with no prior medical history. Her hospital course was notable for profound acute kidney injury, eosinophilia, hypotension, and cardiac dysfunction requiring ICU admission and vasopressor support. MIS-C-like illness secondary to COVID-19 was suspected due to physical exam findings of conjunctivitis, mucositis, and shock. She improved following IVIG, aspirin, and supportive care and was discharged on hospital day 5.

Conclusions: MIS-C-like illness should be considered in adults presenting with dyspnea, clinical findings and concern for COVID-19. Further research is needed to support the role of IVIG and aspirin in this patient population.

Background

COVID-19 is increasingly recognized to have a protean range of clinical manifestations in adults, from respiratory illness to hyper-inflammatory and coagulopathic complications, as well as a broad spectrum of disease severity. When the epidemic began in China in late December 2019, case reports of pediatric illness were relatively rare, and almost all children had mild clinical courses. However, a growing number of reports from the United Kingdom, Italy, the United States, and elsewhere has now described a severe inflammatory syndrome in children similar to Kawasaki's disease, a vasculitic illness of unclear etiology originally described in Japan in 1967 [1–3]. This syndrome has been named Multisystem Inflammatory Syndrome in Children (MIS-C). To date, case series of MIS-C have described multisystemic organ involvement including the mucocutaneous, cardiac, gastrointestinal, and respiratory systems [4]. The mortality rate of MIS-C appears to be low, though severe illness is common, and a number of fatalities in children have been reported. Anecdotal reports of MIS-C-like illness have been reported in young adults in their early twenties, raising concern that this rare presentation of COVID-19 may also have some penetrance into younger adult age groups [5]. Herein we describe a unique case report of MIS-C-like illness in a young adult with COVID-19.

Case presentation

A 25-year-old previously healthy woman presented to an emergency department (ED) in Atlanta, Georgia in June 2020 with a chief complaint of fatigue. She reported 1 week of weakness, dyspnea, and low-grade fevers, followed by mild cough, sore throat, vomiting, diarrhea, and lymph node swelling. She lived at home with family and had no recent travel or known sick contacts. She was a nonsmoker, drank alcohol socially, and did not use recreational drugs. She was not on any chronic medications and had no known allergies. She endorsed taking ibuprofen and acetaminophen over the prior week for symptomatic relief.

On presentation, she was afebrile, with mild hypotension (blood pressure 98/56 mmHg) and normal oxygen saturation on room air. She appeared ill with tender cervical lymphadenopathy, significant conjunctival injection without peribulbar sparing, injected erythematous, and cracked lips, and tenderness to palpation in the left lower abdominal quadrant. She had no rash, splenomegaly, or swelling of the extremities.

Laboratory work-up was notable for profound acute kidney injury and leukocytosis (Table 1). SARS-CoV-2 PCR from nasopharyngeal swab and SARS-CoV-2 IgG from serum were both positive. Blood cultures and Legionella urine antigen were negative. The patient's urine culture grew *Escherichia coli*, which was treated with ceftriaxone switched to piperacillin-tazobactam due to AmpC-type resistance of the isolate. Chest X-ray and CT without contrast were unremarkable. Point of care echocardiogram revealed a dilated inferior vena cava. CT abdomen/pelvis demonstrated mild peripancreatic fat stranding, felt to possibly represent acute uncomplicated pancreatitis, as well as nonspecific bilateral perinephric fat stranding. The patient was admitted to the intensive care unit (ICU) for hypotension, with diagnosis of COVID-19 and concern for possible MIS-C due to mucocutaneous, renal, GI and cardiac system involvement.

The patient's blood pressure initially normalized and her creatinine improved to 2.5 mg/dL with aggressive fluid resuscitation. She was transferred to the floor on hospital day 2, however, within 7 h she experienced recurrent hypotension requiring transfer to the ICU for the initiation of vasopressors. Workup for the new shock revealed evidence of worsening cardiac dysfunction. An electrocardiogram demonstrated right axis deviation. Troponin-I was newly detectable at 0.06 ng/mL and N-natriuretic peptide (BNP) increased to 161.7 pg/mL. She

Table 1 Laboratory Data

	On Admission	On Discharge	Reference Range
White blood cells (10^3/mcL)	17.1	23.8	4–10
Differential count (%)			
Neutrophils	83	88	34–71
Lymphocytes	9	5	19–45
Monocytes	7	6	3–13
Eosinophils	0	1	1–7
Hemoglobin (g/dL)	11.8	8.6	12.5–17.5
Platelets (K/uL)	368	571	150–400
Sodium (mmol/L)	125	138	136–145
Potassium (mmol/L)	3.3	4.2	3.4–5.4
Chloride (mmol/L)	82	98	98–108
Carbon dioxide (mmol/L)	34	24	20–32
Blood urea nitrogen (mg/dL)	53	7	6–20
Creatinine (mg/dL)	2.46	0.53	0.5–1.2
Alanine aminotransferase (U/L)	35	22	5–40
Aspartate aminotransferase (U/L)	28	33	5–40
Lipase (U/L)	327	N/A	11–82
Troponin-I (ng/mL)	0.06	< 0.006	0–0.04
N-terminal pro-B-type natriuretic peptide (pg/mL)	161.7	34.5	0–99
Urinalysis	27 WBC/hpf, 6 squamous epithelial cells/hpf, large leukocyte esterase, negative nitrites	N/A	0–5 WBC/hpf, negative leukocyte esterase, negative nitrites
C-reactive protein (mg/L)	30	15	0–10
Erythrocyte sedimentation rate (mm/hr)	32	N/A	0–20
Ferritin (ng/mL)	993	1210	15–150
Ferritin (ng/mL)	788	N/A	11–307

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The Multisystem Inflammatory Syndrome in Adults With SARS-CoV-2 Infection—Another Piece of an Expanding Puzzle

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COVID-19 Resource Center

The COVID-19 pandemic has upended our societal status quo. SARS-CoV-2, the virus responsible for COVID-19, has led to a myriad of clinical presentations, many of which were different from the diseases caused by other respiratory viral infections. Among the manifestations were olfactory dysfunction and so-called COVID toes, leading to a constant change of what we understood as the spectrum of illness caused by SARS-CoV-2. To help understand this complex clinical picture, a framework for the spectrum of SARS-CoV-2 infection has been proposed.[1] Now, more than a year after the initial discovery of COVID-19, that complete clinical picture continues to be evasive as new features of SARS-CoV-2 are described.

In April 2020, European colleagues were the first to report pediatric cases of a hyperinflammatory syndrome[2] that shared clinical features of Kawasaki disease and toxic shock syndrome.[3] Pediatricians who frequently encounter cases of these conditions identified children who presented to the hospital with fevers, rashes, gastrointestinal symptoms, and severely elevated inflammatory markers. Many patients arrived in shock, with diagnoses of myocarditis. Clinicians and public health officials recognized the temporal association of this syndrome with the initial European wave of the pandemic, with these pediatric cases occurring approximately 2 to 4 weeks after initial SARS-CoV-2 infection; many of these patients had developed positive SARS-CoV-2 serology. As a result, this novel syndrome was initially called pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS). Soon thereafter, US cases were reported in the state of New York, offering an opportunity to contribute to the growing science of this novel syndrome. State partners and a field team from the US Centers for Disease Control and Prevention summarized the data from these cases in New York State,[4] which helped to establish an initial epidemiologic case definition[5] as well as a new name: the multisystem inflammatory syndrome in children (MIS-C). In choosing this name, we wanted to be inclusive of adult patients, as we suspected that multisystem inflammatory syndrome in adults (MIS-A) existed but had not yet been described.

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CASE REPORTS

Multisystem Inflammatory Syndrome in an Adult With COVID-19

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Abstract

Multisystem inflammatory syndrome (MIS) in children is a severe illness characterized by fever, laboratory evidence of inflammation, and multisystem organ dysfunction resulting from severe acute respiratory syndrome coronavirus 2 infection in a patient younger than 21 years. We present the case of a 39-year-old man with evidence of prior COVID-19 who seemed to meet all non–age-related criteria for MIS in children as well as criteria for the working definition of MIS in adults, and who improved after treatment with aspirin, corticosteroids, and intravenous immunoglobulin. Clinicians should be aware of this new inflammatory illness, not only in children but potentially also in adults with antecedent or concurrent COVID-19.

TAKE HOME MESSAGE

- MIS A is rare but serious and severe complication of SARS COV2 infection.
- It is much less common than MIS-C (Multisystem inflammatory Syndrome- Child) but never miss a case of MIS A in an adult patient presenting with fever ,headache and rash in this COVID era.
- Steroid (Methylprednisolone) to be given after rulling out all possible infective causes
- Proper implementation of steroid in a case of MIS A in a proper time saves lives .

Thank you