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CASE REPORTS

UNUSUAL CUTANEOUS AND NEUROLOGICAL COMPLICATIONS IN A CHILD WITH MULTISYSTEM INFLAMMATORY SYNDROME

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ABSTRACT
4 years female child was admitted with fever and loose stools for 1 day. She was resuscitated with fluids and inotropes for hypotensive shock. Child developed cutaneous discolouration over dorsal aspect of left hand that progressed to gangrene. IgG covid antibody was positive. She was diagnosed as MIS-C and treated with immunoglobulin, methylprednisolone, aspirin, anticoagulants and antibiotics. Later, she developed cerebellar features. Neuroimaging revealed bilateral cerebellitis. She improved over the next one week and was discharged on oral drugs. Cutaneous manifestation with such severe intensity and cerebellitis as a neurological complication in MIS-C is very unusual.

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KEYWORDS
MIS-C, Cerebellitis, Cutaneous gangrene.

Introduction

Multisystem inflammatory syndrome in children associated with covid 19 (MIS-C) is not uncommon these days. The common cutaneous manifestations seen in MIS-C are maculopapular rashes, erythema, edema, and urticaria.[1] Cutaneous involvement in the form of gangrene has been reported in adults. Though not fully understood, hypercoagulable state may be a reason for such manifestation.[2] Early identification of MIS-C and prompt management with anticoagulants, steroids, and IVIG results in good outcome.[3]

Case Report

A 4 years female child presented in the emergency department with history of fever since one day, loose stools, pain in abdomen, vomiting, and lethargy. On clinical examination her GCS was 12/15, temperature of 100.7 F. She had tachycardia and tachypnea with feeble pulses. She was hypotensive with systolic blood pressure of 60 mm Hg. She was immediately resuscitated with adequate fluid therapy, inotropic support, and oxygen support. Initial diagnosis of septic shock was kept and stress dose of hydrocortisone was given. In PICU, she had one episode of posturing at 12 hours of admission and she continued to be in an altered state. At 14 hours of admission, she developed blister with discolouration on the dorsum of left hand which progressed to involve the index, middle, and ring fingers [Figure 1]. Doppler study revealed normal flow. She continued to be febrile and required inotropic support. Her laboratory parameters are summarised in table 1. Fever work up including typhoid, leptospirosis, scrub typhus, and dengue were negative. Blood and urine cultures were negative. CSF examination was normal CSF viral markers [HSV and JE enterovirus] were negative.

Her D-dimers were elevated [2.16 mcg/ml], troponinT was normal [0.82 ng/L], procalcitonin [72 ng/dl] and Interleukin 6 [22.25 pg/ml] were elevated. Echocardiogram revealed ejection fraction of 72% and fractional shortening was 41%. Coronaries were normal. IgG Covid antibody was positive [69.98 AU/ml]. Covid RT PCR was negative. She was diagnosed and was being treated as **MIS-C**.

Figure 1. Discolouration of the hand

Management and outcome:
She received Intravenous immunoglobulin [IVIG 2 gm/

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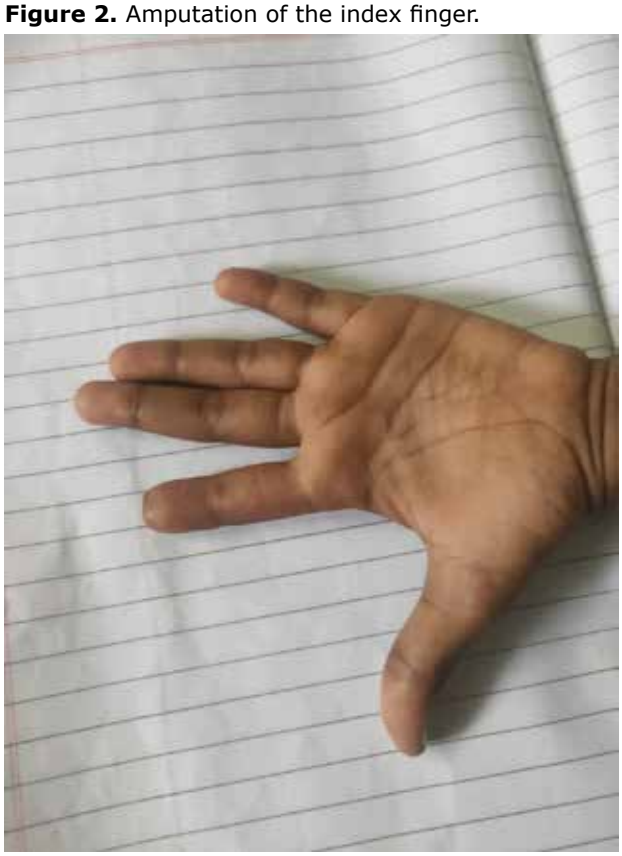
Table 1. Summary of the laboratory parameters

Day of stay	1	3	7	10	12	18
Total count cells/cumm	8800	14700	13800	10500	29000	21600
Polymorphs%	64	81	81	74	63	73
>Hb g%	12	11.5	10.3	9.4	9	11
>Platelet in lakhs/cumm	3.9	2.9	2.22	2.3	7.1	6.28
>ESR mm/hr			42	60	72	17
>Ferritin mg/dl			260	450		
>CRP mg/L	48		49		neg	
>Serum sodium mEq/L	127	134	135	139	131	137
>Prothrombin time sec	32		20.1		24.1	11.7
>ApTT sec	60		40		49.4	26.4
>INR	2.2		1.44		1.68	0.88
>Urea mg/dl	45	19	27	18	27	18
>Creatinine mg/dl	1.2	0.4	0.3	0.4	0.3	0.3
>SGOT IU/L	45	195	87		37	
>SGPT IU/L	14	109	89		50	
>CPK		848		505		130

kg], intravenous methylprednisolone [MPS 30 mg/kg/day] for 3 days with injectable heparin. Inotropes were weaned off by day 3. On day 3, she developed bilateral ptosis, nystagmus, inability to sit, and clumpsiness of hands. MRI brain showed features of cerebellitis. The acetylcholine receptor antibody level was done as a part of myasthenia workup which was normal [<0.11 nmol/l]. The cerebellar features decreased by day 6 of hospital stay and she started walking with minimal support. The intensity of discolouration of the hands reduced over the next 4 days in PICU and she had developed gangrene of the distal half of left index finger. Protein C and S levels were normal. Intravenous MPS was gradually tapered and shifted to oral steroids. She stayed in PICU for 21 days. On follow up she had normal echo, no cerebellar features, distal phalanx of index finger got autoamputated [Figure 2]. Her repeat MRI, MRA, MRV were normal. Nerve conduction velocity was normal. Oral steroids and aspirin were discontinued at 6 weeks of treatment.

Figure 2. Amputation of the index finger.



Discussion

Cutaneous manifestations of MIS-C are known, but there are not many reports available in paediatric population. Presentation like chlilblains has been predominantly reported in Covid infection[1] Covid lesions presenting as acroischemia, cyanosis, bullae, and gangrene has been described in literature.[2] The transient cutaneous involvement leading to gangrene and autoamputation in covid is uncommon. Children presenting with skin lesions have been found to have very low positivity rate in nasopharyngeal swabs for covid RT-PCR.[2] Whether these manifestations are due to coagulopathy or hypersensitive reactions need to be studied. Given the coagulopathic nature of covid-19, consideration of thrombolytics is a must in critically ill children with involvement of vascular surgeons.[4] Encephalopathy, seizures, focal brain lesions including thalamic lesions, ADEM features, thrombotic manifestations, posterior reversible encephalopathy syndrome, cerebellitis and myelitis have been reported as neurological features in

children with Covid 19.[5,6] Though rare this is one such child with transient cerebellar features both clinically and radiologically with complete recovery. Immune-mediated parainfectious features have been described involving the brain, spine, cranial nerves, and nerve roots.[5] However ptosis as a manifestation in MIS-C has not been reported so far in literature. Ptosis as a presentation in MIS-C is a new finding which needs further research.

Lessons learnt:

Early recognition and management of MIS-C is lifesaving.

Abnormal cutaneous gangrene along with elevated D-dimers need early initiation of anticoagulants.

Careful systemic examination on daily basis helps in diagnosing uncommon manifestations like cerebellitis in MIS-C.

Compliance with Ethical Standards

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Conflict of Interest: None

References:

1. Michael Gottlieb, Brit Long, et al. Dermatologic manifestations and complications of COVID-19. The American Journal of Emergency Medicine. 2020;38(9):1715-1721.
2. Zhang Y, Cao W, Xiao M, et al. Clinical and coagulation characteristics in 7 patients with critical COVID-2019 pneumonia and acro- ischemia. cma.j.issn. 2020;41(4):302-307.
3. Ouldali N, Toubiana J, Antona D, et al. Association of Intravenous Immunoglobulins Plus Methylprednisolone vs Immunoglobulins Alone With Course of Fever in Multisystem Inflammatory Syndrome in Children. JAMA.2021;325(9):855-864. doi:10.1001/jama.2021.0694
4. Patelis N, Bisdas T, Tsiachris D, et al. The role of vascular surgeons in the treatment of covid-19 associated pulmonary embolism. Journal of Vascular Surgery. 2020 Sep 1;72(3):1148.
5. Lindan CE, Mankad K, Ram D, et al. Neuroimaging manifestations in children with SARS-CoV-2 infection: a multinational, multicentre collaborative study. The Lancet Child & Adolescent Health. 2020;5(3): 167-177.
6. Abel D, Shen MY, Abid Z, et al. Encephalopathy and bilateral thalamic lesions in a child with MIS-C associated with COVID-19. Neurology. 2020;95(16):745-748.