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A CASE REPORT OF MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN

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INTRODUCTION

Last 2019, a novel coronavirus, SARS-CoV-2 emerged in Wuhan, China and struck the world. Since then, it has reached into pandemic proportions. The World Health Organization has designated the disease COVID-19. Among the pediatric population, it has been observed to be usually mild, however, it can sometimes present with severe manifestations that can somehow differ in presentation. Some were observed to be similar to Kawasaki Disease or Toxic Shock Syndrome. The condition has been termed Multisystem Inflammatory Syndrome in Children (MIS-C)

OBJECTIVES

1. To present a case of a multisystem inflammatory syndrome in children

2. To discuss briefly the different clinical presentations of multisystem inflammatory syndrome in children

3. To discuss the different diagnostic and imaging modalities that may help in the diagnosis and management of multisystem inflammatory syndrome in children.

4. To briefly discuss the current recommended management for MIS-C.

CASE SUMMARY

A 13-year-old female from Quezon City was noted to have fever with headache and abdominal pain. Erythematous rashes on the palms of the hands were noted with productive cough. Patient was seen at ER and at that time was assessed with Dengue Severe. Patient was then admitted at PICU-COVID ward. On the 4th day, patient was identified as a confirmed COVID-19 case with elevated inflammatory markers (CRP, ESR, Procalcitonin and Serum ferritin) with neutropenia, lymphocytopenia, history of shock and erythematous rashes on the both hands. Patient was then assessed as a case of multisystem inflammatory syndrome in children based from the clinical presentation and inflammatory markers. Patient was referred back to Infectious Disease Specialist who agreed with the working impression and agreed to start the patient on IVIG treatment.

Table 1: Hematologic and Clinical Chemistry

CBC	05/19 (2am)	05/19 (1pm)	05/20		05/19	05/20		05/19
Hgb	136	133	116	Na	131.1	137	PT	13.9 (11.21)
Hct	39	36	34	K	2.94	3.2	INR	1.05
WBC	15.0	10.4	11.9	Cl	87.4	101	%Act	93%
RBC	4.6	4.2	3.9	BUN		2.7	PTT	36.7 (32.3)
Segmenters	75	86	88	Creatinine		67		
Lymphocytes	19	7	6	ALT		58.2		
Eosinophils	1	5	2	AST		62.6		
Monocytes	5	2	4	Uric Acid				
Basophils	0	0	0	LDH				
Platelet count	180	205	233	Total Calcium		2.08		
				Albumin		37.2		

Table 2: Other Diagnostic and Ancillary Procedures

Chest Xray 05/19	Probable Left retrocardiac pneumonia
Dengue IgG and IgM 05/18	IgG Positive, IgG Negative
COVID RT-PCR 05/19/2021	Positive
Blood Typing 05/19	"O" Positive
ABG 05/19	pH 7.539 pCO2 27.5 HCO3 22.9 PaO2 96 BeB 0.3 SaO2 98
Blood CS 05/20	No growth after 24h,3d,5d & 7days of incubation.
CRP 05/20	48
ESR 05/20/21	60
Procalcitonin 05/21	1.98 (High)
Urinalysis 05/23	Yellow/clear/6.5/1.015/Protein Negative/Sugar Negative/RBC 0-1/ Pus 0-2/SEQ Occ/Bacteria Occ
Urine GS 05/23	No microorganism seen.
Urine CS 05/23	No growth after 48h of incubation.
Serum Ferritin 05/24	707.75 (high RR: 4.63-204)

DISCUSSION

Patients with MIS-C may show similar symptoms to Kawasaki Disease and should receive standard therapies, including IVIG, aspirin, and glucocorticoids. It will be increasingly difficult to distinguish patients with incident KD who have seroconverted from prior SARS Co-V2 infections from patients with MIS-C who meet KD criteria. Thus, it is important to intensify treatment if KD high-risk criteria are present. MIS-C can also present similar signs to toxic shock syndrome. Thus, patients should receive prompt antibiotic therapy pending culture results (e.g. ceftriaxone plus vancomycin).

The role of COVID-19 antiviral therapies in the management of MIS-C is uncertain. It is generally limited to children with severe MIS-C Immune-modifying therapies using IVIG is suggested for all patients with MIS-C. The dosing for IVIG in this setting is 2 g/kg administered in a single infusion over 8 to 12 hours.

The patient was given antibiotic therapy in the form of Azithromycin, with adjuncts such as Zinc sulfate and Vitamin D3. Ongoing clinical trials will further define its role in the management of this disease. Additionally, Vitamin D supplementation may be used as an adjunct to antibiotics for the treatment of acute childhood pneumonia. This patient was finally given a 2 day course of IVIG and was noted to have improved. Patient was discharged and upon follow up, no complications were noted and was assessed as a well adolescent.

CONCLUSION

MIS-C should always be a entertained among patients presenting with fever, shock and multi-organ involvement. A detailed history and physical examination is crucial and must be on high alert for any complication that may arise. Since no standardized treatment and management for MIS-C is observed worldwide, management should be focused and be tailored for each individual patient.

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