COVID-19 Complications: A Presentation of Multisystem Inflammatory Syndrome in Children (MIS-C)

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PATIENT PRESENTATION

- 5-year-old female with no significant past medical history
- Presented to the ED with a week-long history of fevers and shortness of breath
- Subsequently developed hypotension and acute respiratory failure

WORKUP

- PCR testing was positive for COVID-19
- Laboratory workup revealed an acute kidney injury
- Echocardiogram showed myocarditis as well as acute heart failure with reduced left ventricular ejection fraction of 40%

MANAGEMENT AND OUTCOMES

- Patient was treated by a multi-disciplinary team due to the multiple organ systems impacted
- Patient was treated with a variety of medications for the multi-organ system involvement, including milrinone, intravenous immunoglobulin, aspirin, anticoagulation and steroids
- Patient subsequently had normalization of her heart function and ejection fraction
- Weakness persisted throughout her extremities, requiring contact guard to minimal assistance with transfers and ambulation
- Additionally, had decreases in both activity tolerance and balance from her prior baseline and required frequent cueing for improvement
- Following a course of acute inpatient rehabilitation, patient was able to ambulate >300 feet and require only supervision assistance with mobility

FIGURES

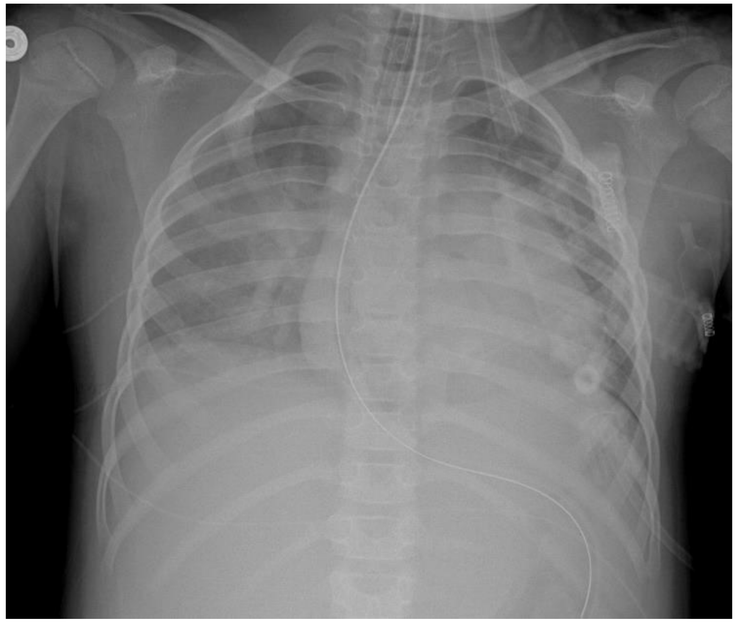

Figure 1: Chest x-ray, AP view demonstrating an enlarged cardiac silhouette with bilateral hazy perihilar opacities, conistent with cardiomegaly and pulmonary infection. Enteric tube located in stomach

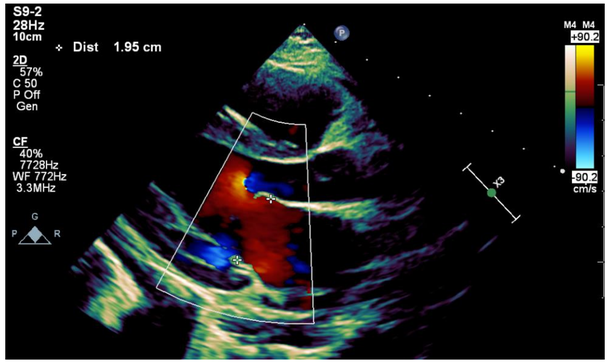

Figure 2: Still image from echocardiogram findings demonstrating myocarditis with significantly depressed left ventricular ejection performance

DISCUSSION

- MIS-C is an acute, rare complication of COVID-19 that develops in children[1]
- CDC definition of this rapidly evolving syndrome involves a patient under the age of 21-years-old presenting with fever, elevated inflammatory markers, and multisystem organ involvement with COVID-19 infection within the prior 4 weeks
- Described as a “Kawasaki-like” illness[1]
- Patients can present with severe neurologic, pulmonary, and cardiac manifestations, including encephalopathy, muscle weakness, brainstem and/or cerebellar signs, arrhythmias, myocardial dysfunction, and respiratory failure resulting in prolonged hospitalizations[1,2]
- This multisystem disease requires a multidisciplinary approach, including cardiopulmonary and/or neurological rehabilitation in order to make functional progress towards a hopeful return to prior level of function

CONCLUSIONS/TAKE HOME POINTS

- MIS-C is a rare complication of COVID-19 which can cause serious debilitation in severe cases with multisystem involvement[1]
- The criteria, incidence, and treatment of this disease are quickly evolving
- As the pandemic progresses there will likely be an increasing number of MIS-C cases that require rehabilitation and multidisciplinary, multispecialty care.

REFERENCES

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