Rhabdomyolysis, Acute Renal Failure and Hypertension as leading manifestations in a COVID-19 positive Adolescent male

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INTRODUCTION

The current raging coronavirus (COVID-19) pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), continues globally with an increasing number of cases worldwide. The burden of disease is higher in the adult population with a low percentage of children needing hospitalization due to severe illness. Presentation in infected patients can vary from asymptomatic disease to severe acute respiratory disease and extrapulmonary complications with high morbidity and mortality. However, only a handful of cases to date have reported extrarespiratory manifestations of COVID-19 among pediatric patients. In this report, we describe the presentation and management of a pediatric patient with COVID-19 who presented with extrapulmonary complications.

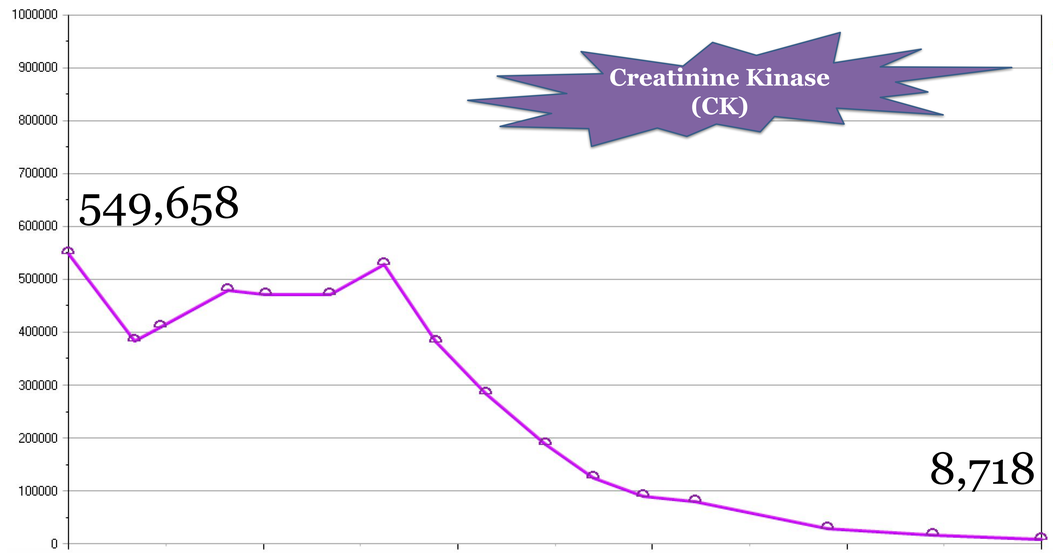
CASE REPORT

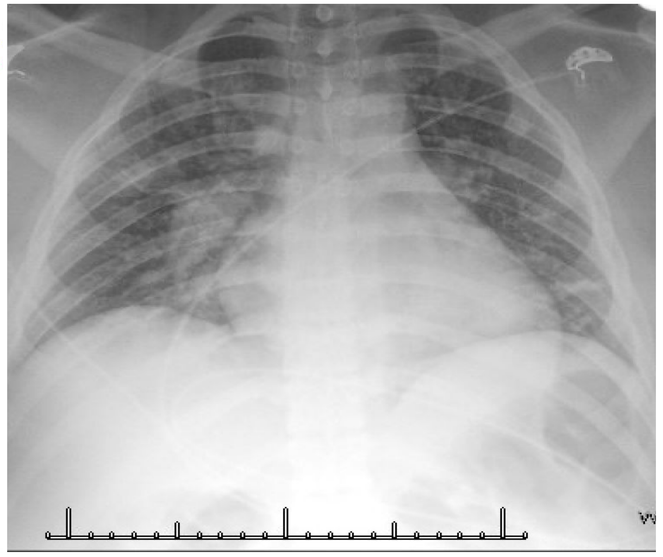
We report the case of a 17-year-old African American male with obesity who presented to the emergency department with complaints of cough, rhinorrhea, generalized myalgia and hematuria. The patient developed cough, URI symptoms and severe body aches a week prior to presentation and subsequently started passing dark colored urine two days prior to presentation. He denied any history of recent illnesses, prolonged exercise, trauma, sick contacts or fever. His presenting vitals were temperature 37.1C, heart rate 124 bpm, respiratory rate 18 bpm and blood pressure of 155/86 mmHg.

A diagnosis of COVID-19 was confirmed by polymerase chain reaction. Other workup showed markedly elevated CK level 549,658, BUN of 22, Creatinine of 1.8, CRP 20.31, Total bilirubin of 1.5, AST of 2,130 and ALT of 435. He was then transferred to the Pediatric Intensive Care Unit for further management. On further questioning, evaluation of his past medical history was significant for rhabdomyolysis following influenza infection 5 years prior with CK 1,051,200; which progressed to renal failure requiring hemodialysis due to BUN of 98 and Creatinine of 6.

On arrival to the PICU, patient was started on aggressive intravenous (IV) hydration, strict input and output monitoring, and cardiopulmonary monitoring with SpO2 goal of >94%. Labs were trended 12 hourly to daily and IV Morphine was started for adequate pain control. Referrals to Nephrology, Pediatric Infectious Disease and Pediatric Hematology Oncology were also placed.

CASE REPORT





Per Nephrology recommendations, maintenance IV fluids were changed from 0.9% normal saline to 0.45% saline with sodium bicarbonate to keep urine pH > 7. Free water ingestion was also encouraged to improve hydration status. Patient was initially stable on room air however desaturated to 71% SpO2 on day 3 of admission and required oxygen supplementation with high flow 40% for 24 hours. Chest Xray done showed abnormal interstitial infiltrates with mild atelectasis and parenchymal infiltrates bilaterally. Patient was subsequently started on IV Dexamethasone daily and completed a 7 day course per Infectious Disease recommendations. Also on day 3 of admission, patient's blood pressure was noted to be persistently elevated, and he was started on daily oral Amlodipine. For deep venous thrombosis prophylaxis, he was placed on daily subcutaneous Enoxaparin, compression stockings and encouraged to ambulate in his room.

Laboratory testing was done every 12 hours to daily to monitor trends of CK, inflammatory markers, alongside liver and renal function tests. Efforts were made to avoid culprit medications such as acetaminophen and nonsteroidal anti inflammatory drugs. Highest recorded BUN was 28 and Cr 1.8 throughout 10-day hospital stay. Patient improved significantly and as at day of discharge, his labs showed CK 8,718, CRP 1.02, Total bilirubin 0.3, AST 175 and ALT 366. Discharge vitals were normal with BP 119/78 mmHg. Patient was instructed to follow up outpatient with Nephrology, Genetics and Infectious Disease due to recurrent rhabdomyolysis and kidney injury following viral infection.

DISCUSSION

The triggers for rhabdomyolysis are extensive, with viruses being the most common cause in pediatric patients. This case contributes to the growing body of literature on rhabdomyolysis following COVID-19 infection in the pediatric population. Guidelines for managing this COVID-19 complication do not currently exist, but this case report provides clinicians with insight on the acute aggressive management and follow-up needed to mitigate severe morbidity and mortality.

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