INFLAMMATORY SYNDROME EXPERIMENTS RELATED WITH COVID-19

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ABSTRACT

According to the first SARS-CoV-2 pandemic reports that signs and symptoms were identified less commonly among pediatric patients than adults. The multisystem inflammatory syndrome in children (MIS-C), which is linked to COVID-19, was first identified in April. Fever, presented in two or more organ systems at the same time, altered inflammatory criteria, and experimental or epidemiological proof of SARS-CoV-2 infection are all symptoms of MIS-C. Kawasaki disorder, toxic shock syndrome, and secondary hemophagocytic lymph histiocytosis syndrome/macrophage activation syndrome all have certain clinical elements in common with MIS-C. The clinical features of seven cases of MIS-C handled in the Republic of Moldova are described in this study.

Keywords: multisystem inflammatory syndrome; children; COVID-19; Kawasaki disease; clinical case

I. INTRODUCTION

Coronavirus2 (SARS-CoV-2) causes moderate respiratory symptoms in infants, although extreme variants have been identified in adults. SARS-CoV-2 /COVID19 has recently been linked to late manifestations of vasculitis, especially in asymptomatic children, which may be due to post-viral immunological reactions. MIS-C is characterized by recurrent fever, markers of inflammation, and indications of single or multi-organ failure, MODS, and may involve features reminiscent of Kawasaki disease, toxic shock or Macrophage activation syndrome, and a sepsis-like disorder, which was recently identified in pediatrics in temporary association with COVID19. The WHO employs the MIS-C system. In Europe, it's known as PMIS-TS (Pediatric MIS temporarily associated with SARS-CoV-2 infection), and in the United Kingdom, it's known as PMIS temporarily associated with COVID19. Serious gastrointestinal complications, cardiac attack, minor respiratory symptoms, and a variable prevalence of rash, conjunctival injection, and oral mucosa involvement have all been recorded in case studies.

II. PURPOSE OF THE STUDY

A systematic presentation of MIS-C syndrome and COVID 19-related Kawasaki disease is presented in this case study.

III. MATERIALS AND METHODS

The study is based on a prospective review of seven clinical cases of MIS-C that were hospitalized between April 22 and September 3, 2020, and was briefly associated with SARS-CoV-2 infection. Anamnestic, epidemiological, and longitudinal data, general clinical manifestations, laboratory findings supporting SARS-CoV-2 infection,
imaging investigations, and the progression of the disease in conjunction with the applied therapeutic decisions were among the variables studied. Patients were included in MIS-C based on requirements that were consistent with the updated WHO definition.

IV. RESULTS

The 7 patients diagnosed with MIS-C had an average age of 6.6 ± 2.1 years, with a range of 8 months to 15 years. The incidence of the condition is 71.42 percent among females, according to the gender distribution of infants (5 girls). Many of the patients in the sample had at least one sign of SARS-CoV-2 infection, with three (42.85%) of them testing positive by RT-PCR in the nasopharyngeal swab, and the remaining four (57.15%) (Cases 1, 2, 3, and 4) having serological proof of Ig G and/or Ig M anti-SARS-CoV-2 in a positive titer). Just one of the seven patients did not have any coexisting diseases. Surgically repaired congenital heart abnormalities and Down syndrome (case 1), beta-thalassemia (patient 7), complicated cirrhosis of the liver with progressive liver disease, portal hypertension, and hypersplenism (patient 6), cytomegalovirus infection (patients 3 and 7), EBV (patients 4 and 7) and parvovirus B19 infection (patients 4 and 7) were among the comorbidities (patient 3). The patient with number five has a diagnosis of laryngotracheitis and repeated severe viral respiratory infections.

Fever and skin rash were the most common symptoms in 100% of patients, followed by stomach discomfort and tachypnea (85.71%), oral mucosal lesions, headache, myalgia, and nausea (71.42%), non-purulent conjunctivitis, non-suppurated lymphadenopathy, and diarrhoea in 57.14 percent of cases. Cough was present in a lower amount of patients (28.57 percent), and nausea/vomiting was present in around 14.28 percent of infants. Three of the seven patients (42.85%) acquired MIS-C, which was identical to Kawasaki disease and met the American Society of Cardiology’s criterion for Kawasaki disease. They had a persistent, drug-resistant fever for more than 5 days, unilateral non-suppurated lymphadenopathy, bilateral non-purulent bulbar conjunctivitis, polymorphic skin rash without blisters or crusts, oral mucosal changes such as red, cracked lips, raspberry tongue with hypertrophied papillae, and diffuse oropharyngeal erythema, as well as skin changes expressed by palmar and plantar erythema at no symptoms of diminished myocardial contractility, pericardial effusion, or aneurysmal dilation of the coronary arteries were seen in any of the 6 patients during echocardiographic tests. Despite the fact that most patients have inadequate respiratory symptoms, chest radiography revealed un- or bilateral pneumonia in 71.42 percent of cases, with pleural effusion in two of them.

Many patients had neutrophilic leukocytosis and lymphopenia in the early phases of the disease, but these symptoms faded as the disease progressed, indicating that the medication was successful. Thus, leukocytosis was found in 4/7 (57.14 percent) of cases, with a median value of 38.2 x10^9 / L, and the ESR was raised to 5/7 (71.42 percent). ) of cases, with a mean value of 30.28 6 mm /h, 57.4 percent had hyperfibrinogenemia, and 28.57 percent (patients 4 and 6) had a change from hyperfibrinogenemia to PCR was improved in both situations, with three (42.85%) of them testing positive by RT-PCR in the nasopharyngeal swab, and the remaining four (57.15%) (Cases 1, 2, 3, and 4) having serological proof of Ig G and/or Ig M anti-SARS-CoV-2 in a positive titer). Just one of the seven patients did not have any coexisting diseases. Surgically repaired congenital heart abnormalities and Down syndrome (case 1), beta-thalassemia (patient 7), complicated cirrhosis of the liver with progressive liver disease, portal hypertension, and hypersplenism (patient 6), cytomegalovirus infection (patients 3 and 7), EBV (patients 4 and 7) and parvovirus B19 infection (patients 4 and 7) were among the comorbidities (patient 3). The patient with number five has a diagnosis of laryngotracheitis and repeated severe viral respiratory infections.

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Any of the seven patients necessitated at least 24 hours in the intensive care unit, with two of them requiring intrusive ventilation (cases 4 and 6). Many of the patients were given individualized corticosteroid and antibiotic treatments. Antiplatelet agents were also provided to cases 1, 2, 5, and 7. Transfusions of freshly frozen plasma, albumin, forced diuresis, and antiedema therapy was needed in cases 4 and 6. Five patients (71.42 percent) had a strong clinical reaction and were released home with instructions to return later to monitor the disease's long-term progression and potential coronavirus complications2. Cases 4 and 6 died as a result of a refractory reaction to the care they were given.

V. DISCUSSIONS

The pathogenic theory that this condition is the product of a post-infectious immune reaction is supported by the transient interaction of MIS-C and the existence of serological proof of SARS-CoV-2 infection in the seven children studied. Children with COVID19 need respiratory ventilator treatment in smaller numbers than adults. According to specialized results, 57.14 percent of the children in the present research required mask oxygen treatment for at least 24 hours, and 28.57 percent needed constant oxygen therapy via the nasal cannula and even

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mechanical ventilation. Patient 4, a three-year-old boy, had an extensive pulmonary injury, as shown by severe bilateral inflammatory infiltration with subtotal pneumatization in S3-S5 on the right and S3, S6, S9 on the left, as well as areas of early destruction. The coronaviruses COVID19, SARS, and MERS, according to several reports, may trigger an overly aggressive and ineffective immune response in the host. Pulmonary damage is even more serious in chronically ill people, and it's linked to a "cytokine storm," which is marked by elevated plasma proinflammatory and anti-inflammatory cytokines.

In seriously ill patients, septic shock and MODS were the most frequent complications. In patients 4 and 6, the multiorgan activity involved dysfunction of the nervous, hematopoietic, and renal systems. Intravenous corticosteroids, antibiotic therapy, and syndrome therapy were provided to each patient individually, depending on their clinical condition. Because of the possibility of cardiac failure and the erratic evolution of MIS-C, the pediatric patients listed in the study would need to be monitored in real-time.

VI. CONCLUSIONS
During the COVID19 pandemic, any infant with a fever for more than three days should be closely watched for the risk of contracting MIS-C and Kawasaki disease.

REFERENCES