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INFLAMMATORY SYNDROMES ASSOCIEATED WITH SARS-COV-2 IN PEDIATRIC PATIENTS: A CASE SERIES

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SARS-COV-2-თან დაკავშირებული ანთებითი სინდრომები ბავშვთა ასაკში: კლინიკური შემთხვევები

თსსუ-ის გ.ჟვანიას სახ. პედიატრიის საუნივერსიტეტო კლინიკა

რეზიუმე

COVID-19-ს პანდემიის დროს და მომდევნო პერიოდში მოიმატა პედიატრიულ პაციენტთა რაოდენობა აუხსნელი ფებრილური სინდრომებით, მულტისისტემური ანთებითი და ჰიპერინფლამატორული მდგომარეობებით. სტატიაში განხიულულია ოთხი კლინიკური შემთხვევა: პერსისტიული ანთებითი მდგომარეობებით, განსხვავებული, პოლიმორფული კლინიკური გამოვლინებებით. აღნიშნული შემთხვევების ანლიზი კიდევ ერთხელ უსვამს ხაზს ჰიპერინფლამატორული მდგომარეობების ადრეული ამოცნობის, მულტიდისციპლინარული მიდგომის და თარგეტული თერაპიის აუცილებლობას.

In the wake of the COVID-19 pandemic, an increasing number of pediatric cases with prolonged febrile syndromes, multi-system involvement, and hyperinflammatory features have emerged. This article presents a series of four pediatric cases with diverse presentations of persistent inflammatory states, exploring their clinical course, diagnostic challenges, and management strategies.

Case 1: Prolonged Febrile Syndrome and Hyperinflammation. Patient Profile: A 12-year-old girl with a 2-month history of recurrent fever, severe back pain, and systemic inflammation.

Clinical Course: The illness began with a fever (38°C) and progressive symptoms, including chest tingling and severe back pain. Despite treatment for a presumed urinary tract infection with p.o Cephalosporin, fever persisted. Positive Epstein-Barr virus (EBV) IgG was identified, and a short course of methyl-prednisolone provided temporary relief. However, symptoms recurred, including severe pharyngitis with aphthous lesions and maculopapular rash. Extensive serological, immunological, and radiological evaluations excluded infectious and oncologic etiologies; positive SARS-CoV-2 IgG (3329AU/ml, N <50 AU/ml)).

Management and Outcome: Hyperferritinemia and persistent inflammation prompted treatment with methylprednisolone (32 mg/day), which normalized inflammatory markers and resolved fever.

Case 2: Multi-System Involvement with Severe Weakness. Patient Profile: A 15-year-old girl presenting with 3 months of generalized weakness, lower limb fatigue, and morning hand stiffness.

Clinical Course: Episodes of presyncope, leukopenia, thrombocytopenia, and abdominal pain were reported. Fever (38.1°C) and fatigue further complicated the picture. Physical examination revealed pale skin, tender abdomen, and hyperemic palatine arches. Workup indicated positive antinuclear antibodies (ANA) (1:160) and elevated anti-MCV levels, positive SARS-CoV-2 IgG (1990AU/ml, N<50 AU/ml).

Management and Outcome: The patient remains under close monitoring with a working diagnosis of early connective tissue disease, pending further rheumatological evaluation.

Case 3: Post-Infectious Hyperinflammatory Syndrome. Patient Profile: A 12-year-old boy with a 10-day history of high-grade fever (40°C), headache, and conjunctivitis.

Clinical Course: Initial treatment with cephalosporins resolved the fever, but the patient developed conjunctivitis, tachycardia, and pericardial effusion and coronary artery dilatation on echocardiography. Laboratory results indicated thrombocytosis, elevated acute-phase reactants, with positive SARS-CoV-2 IgG.

Management and Outcome: The patient was treated with intravenous dexamethasone and oral aspirin, with significant clinical improvement. Kawasaki-like syndrome secondary to post-viral inflammatory response was presumptive diagnosis.

Case 4: Inflammatory Syndrome, abnormal renal function in Adolescence. Patient Profile: A 16-year-old girl with recurrent fever and signs of renal dysfunction.

Clinical Course: Initially managed for an upper respiratory tract infection, the patient developed low-grade fever, general weakness, and decreased urine output. Laboratory findings indicated anemia (Hgb 8.9 g/dL), elevated ESR (92 mm/hr), CRP (52 mg/dL), and creatinine (155.92 μmol/L). Autoimmune studies revealed ANA positivity (1:320), though other antibodies were negative. Echocardiography showed mild pericardial effusion. SARS-CoV-2 IgG positive.

Management and Outcome: The patient's condition improved with supportive care after nephrology consultation. Follow-up revealed normalized creatinine and inflammatory markers. A potential diagnosis of lupus-like glomerulonephritis was considered.

Discussion. This case series highlights the diagnostic complexity of pediatric patients with prolonged febrile syndromes and multi-system inflammation. Post-viral inflammatory syndromes, autoimmune diseases, and occult infections often mimic each other, necessitating comprehensive evaluations and tailored treatment plans. Elevated SARS-CoV-2 IgG in four cases underscores a possible link between COVID-19 and hyperinflammatory responses in children. In these cases:

1. Hyperinflammatory Syndromes Post-COVID-19: Elevated SARS-CoV-2 IgG in these patients supports the hypothesis of post-viral immune dysregulation. MIS-C and other COVID-19-related inflammatory syndromes can mimic autoimmune or infectious processes (Riphagen et al., 2020).
2. Kawasaki Disease-like Phenomena: Case 3 highlights cardiac complications consistent with post-viral inflammatory syndromes resembling Kawasaki Disease, as documented in several post-COVID-19 pediatric studies (Verdoni et al., 2020).
3. Autoimmune Triggers: ANA positivity in Cases 2 and 4 raises the possibility of autoimmune processes triggered by infections, an association commonly seen in systemic lupus erythematosus and juvenile idiopathic arthritis (Seneviratne et al., 2022).
4. Hyperferritinemia and HLH-like States: Hyperferritinemia in Case 1 aligns with macrophage activation syndromes, which can result from viral triggers such as EBV or SARS-CoV-2 (Canna & Behrens, 2012).

Conclusion. A multidisciplinary approach is vital for evaluating pediatric patients with persistent febrile syndromes. Early recognition of hyperinflammatory states and targeted therapy are critical to preventing long-term complications. These cases underscore the evolving spectrum of post-infectious pediatric syndromes in the COVID-19 era.

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SUMMARY

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Keywords: Sars-CoV2, inflammatory syndromes, pediatric patients