Case Report

COVID-19 associated Kawasaki-like multisystem inflammatory disease in an adult

Sabrina Sokolovsky, DO⁎, Parita Soni, MD, Taryn Hoffman, MD, Philip Kahn, MD, Joshua Scheers-Masters, MD

⁎ Department of Emergency Medicine, Maimonides Medical Center, Brooklyn, NY, United States of America

Abstract

Recent reports have described a secondary Multisystem Inflammatory Syndrome in Children (MIS-C) after a prior COVID-19 infection that often has features of Kawasaki disease (KD). Here, we report the case of a 36-year-old woman who presented to the emergency department hypotensive and tachycardic after 1 week of fevers, abdominal pain, vomiting and diarrhea, and was found to have the classic phenotype of complete Kawasaki’s Disease including nonexudative conjunctivitis, cracked lips, edema of the hands and feet, palmar erythema, a diffuse maculopapular rash, and cervical lymphadenopathy. Initial laboratory studies were significant for hyponatremia, elevated liver function tests including direct hyperbilirubinemia, and leukocytosis with neutrophilia. Imaging revealed mild gallbladder wall edema, a small area of colitis, and small pleural effusion. She was treated for Kawasaki Disease Shock Syndrome (KDSS) with pulse dose solumedrol, IVIG, and aspirin with near resolution of symptoms and normalization of vital signs within 1 day and subsequent improvement in her laboratory abnormalities. She was later found to be COVID-19 IgG positive, suggesting past exposure. This case represents an early report of a KD-like illness in an adult with serologic evidence of a previous COVID-19 infection, similar to MIS-C. It suggests that the virulent strain of SARS-CoV-2 appears to cause a post-infectious inflammatory syndrome similar to KD in adults, as well as children. Our understanding of the myriad of COVID-19 symptoms and sequelae is rapidly evolving. We recommend physicians remain vigilant for inflammatory syndromes that mimic KD/KDSS which may warrant prompt treatment with IVIG and steroids.

1. Introduction

Recent reports have described a secondary Multisystem Inflammatory Syndrome in Children (MIS-C) after a prior COVID-19 infection, who have presented with features of Kawasaki disease (KD) [1,2]. Recently, there are media reports of young adults in their late teens and early twenties with the same syndrome [3]. The following case describes the clinical features, treatment, and response of an adult who presented with a KD-like inflammatory disorder, similar to past reports of MIS-C, with evidence of a prior COVID-19 infection.

Abbreviations: MIS-C, Multisystem Inflammatory Syndrome in Children; KD, Kawasaki Disease; KDSS, Kawasaki Disease Shock Syndrome.

2. Case description

A 36-year-old previously healthy Hispanic female presented to the hospital with 1 week of subjective fevers, abdominal pain, vomiting, and diarrhea with 2 days of a diffuse rash and arthralgias. The patient presented to the Emergency Department febrile, tachycardic, tachypneic, hypotensive and with the classic phenotype of complete Kawasaki’s Disease [4]: Bilateral nonexudative conjunctivitis (Fig. 1A); mucositis with cracked lips (Fig. 1B); edema of the bilateral hands and feet (Fig. 1C, 1D); palmar erythema (Fig. 1D); a diffuse maculopapular rash (Fig. 1E); and cervical lymphadenopathy. The constellation of findings was suspicious for Kawasaki Disease Shock Syndrome (KDSS) [5].

Laboratory results included leukocytosis with WBC of 25.3 K/UL (4.9–10.8), absolute neutrophilia of 19.5 K/UL (1.4–7.5), mild normocytic anemia (Hgb 10.8 g/dL [12–16]), and normal platelets. The patient had hyponatremia of 115 mmol/L (133–146), and abnormal LFTs with AST 116 IU/L (10–33), ALT 116 IU/L (6–47), ALP 311 IU/L (36–112), direct hyperbilirubinemia (total bilirubin 3.9 mg/dL [0.2–1.4], direct bilirubin 3.3 mg/dL [0.2–0.3], indirect bilirubin 0.6 mg/dL [0.0–0.4], GGT 116 IU/L [5–40], and alkaline phosphatase 311 IU/L (36–112).
direct bilirubin 2.4 mg/dL (0.0–0.2). Serum albumin was decreased at 2.5 g/dL (3.5–5.2) and INR increased to 2. ESR was 30 mm/h (0–20), CRP: 30 mg/dL (0.0–0.9), and d-dimer: 652 ng/mL (<318). ANA was 1:160 (<1:80), SSA was 2.8 (<0.9), with C3 of 59 mg/dL (81–157) and C4 of 12 mg/dL (13–39); however anti-dsDNA, anti-smith, anti-RNP, SSB, RF, CCP, ANCA, ASO, and anti-Jo-1 antibodies were negative. HIV and hepatitis panels were negative. A bedside right upper quadrant ultrasound revealed mild gallbladder wall edema. CT angiogram of the chest revealed normal lung parenchyma and a trace right pleural effusion. CT abdomen/pelvis illustrated mild circumferential gallbladder wall thickening and a small area of colitis; all of which have been seen in KD and previously reported in MIS-C [1]. Echocardiogram after treatment with IVIG revealed an EF of 65% with moderate tricuspid valve regurgitation. Subsequent CTA coronaries was normal except for a trace pericardial effusion. COVID-19 testing revealed positive PCR, as well as a positive IgG with negative IgM antibodies.

Treatment was initiated with fluid resuscitation for shock, a single dose of aspirin 650 mg, IVIG 2 g/kg, and methylprednisolone 2 mg/kg for 5 days followed by a prednisone taper. The patient experienced a near resolution of symptoms and normalization of vital signs within 5 days. Inflammatory markers and hyperbilirubinemia improved rapidly over 6 days. AST, ALT, and ALP initially rose but trended down during this time. The patient was discharged home on prednisone.

3. Discussion

This case represents an early report of a KD-like illness in an adult with serologic evidence of a previous COVID-19 infection, similar to MIS-C. KD is a rare illness in pediatrics and even more rare in adults. However, the virulent strain of SARS-CoV-2 appears to cause a post-infectious inflammatory syndrome similar to KD in both the pediatric and adult populations. While our patient met criteria for KD, there are inconsistent features such as a heliotrope rash with prominent plate-like scaling (Fig. 1A) and hypocomplementemia. Repeat ANA and SSA antibodies will be needed to determine persistence. These low titers do not appear consistent with her presentation and may be clinically insignificant.

4. Conclusion

Our understanding of the myriad of COVID-19 symptoms and sequelae is rapidly evolving. We recommend physicians remain vigilant for secondary inflammatory syndromes that mimic KD/KDSS which may warrant prompt treatment with IVIG and steroids.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

[1] Riphagen S, Gomez X, Gonzalez-Martinez C, Wilkinson N, Theocharis P. Hyperinflammatory shock in children during COVID-19 pandemic. Lancet. 2020. [https://doi.org/10.1016/S0140-6736(20)31094-1 (published online May 7)].
[2] NYC Health. Health Alert #13: Pediatric multi-system inflammatory syndrome potentially associated with COVID-19. Available from: https://www1.nyc.gov/site/doh/providers/resources/health-alert-network.page; 2020. (Accessed on May 16, 2020).
[3] Cha AE, Janes C. Young adults are also affected by Kawasaki-like disease linked to coronavirus, doctors say. Washington Post. Accessed May 21, 2020. [https://www.washingtonpost.com/]
[4] McCrindle BW, Rowley AH, Newburger JW, et al. Diagnosis, treatment, and long-term management of Kawasaki disease: a scientific statement for health professionals from the American Heart Association. Circulation. 2017;135(17):e927–99. [https://doi.org/10.1161/CIR.0000000000000484].
[5] Kanegaye JT, Wilder MS, Molkara D, et al. Recognition of a Kawasaki disease shock syndrome. Pediatrics. 2009;123(5):e783–9. [https://doi.org/10.1542/peds.2008-1871].