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Congenital Microgastria in a Premature Infant as an Isolated Anomaly: A Case Report

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Abstract

Thousands of cases of multisystem inflammatory syndrome in children (MIS-C) have already been reported in children; however, it's rarely reported in new-borns. MIS-C is a post-infectious immune-mediated condition that typically occurs 3–5 weeks after COVID-19 infection. It usually presents with fever and multi-organ involvement, and blood investigations often show increased inflammatory markers weeks several weeks after exposure to SARS-CoV-2. A 25-day-old male neonate was admitted to the neonatal intensive care unit with symptoms of multi-organ dysfunction affecting the cardiovascular, respiratory, and haematological systems. The patient exhibited positive inflammatory markers, high levels of ferritin and D-dimer, and elevated cardiac enzymes. Blood cultures were negative for any infection. PCR of nasopharyngeal swab material was positive for respiratory pathogens. Serological tests conducted on both the mother and the patient showed negative results for anti-spike SARS-CoV-2 IgM and anti-nucleocapsid SARS-CoV-2 IgG. The patient was diagnosed with neonatal multisystem inflammatory syndrome (MIS-N) and successfully treated with two doses of intravenous immunoglobulin (1 g/kg/dose) and methylprednisolone (2 mg/kg/day for 5 days). MIS-N related to SARS-CoV-2 can present with cardiorespiratory compromise and carry a higher risk of adverse outcomes in neonates.

Keywords: Neonatal multisystem inflammatory syndrome; SARS-CoV-2; Intravenous immunoglobulin

Introduction

COVID-19, caused by SARS-CoV-2 has imposed a significant burden on the public health system [1]. Initial studies indicated that children were spared of severe COVID-19. However, recent case reports have described children experiencing a potentially life-threatening paediatric inflammatory multisystem syndrome (PIMS), also known as multisystem inflammatory syndrome in children (MIS-C) [2]. MIS-C occurs due to immune dysregulation following exposure to SARS CoV-2 [3]. It typically presents with fever and multi-organ involvement, accompanied by elevated inflammatory markers weeks after exposure to the virus [4]. More than 80% of children with MIS-C have specific IgM and IgG antibodies against SARS-CoV-2, but only around 33% test positive for SARS-CoV-2 by RTPCR [5]. We present a male neonate from Morocco who developed respiratory distress at 28 days of life, diagnosed with neonatal multisystem inflammatory syndrome (MIS-N). We present a case report of MIS-N in Morocco, in a male neonate who developed respiratory distress at 28 days of life.

Case Presentation

A 25-day-old male neonate was admitted to the neonate intensive care unit with features of respiratory distress. He was born at term with a birth weight of 3 kg and had a normal antenatal and perinatal history. The mother had history of fever, cough for 5 days. The baby was evaluated in the post-natal ward by a paediatric doctor. He presented to emergency room in view of respiratory distress (respiratory rate: 65/min, intercostal retraction), along with multiple episodes of loose stool.

On examination, the baby was afebrile, lethargic, reduced tone, absent suck, no bulging of the anterior fontanelle. The baby was admitted with suspected late-onset sepsis, and continuous positive airway pressure (CPAP) support was initiated for respiratory distress. Empirical antibiotics were also started.

Laboratory tests revealed haemoglobin 15.9 g/dL, leukocytes 12700 cells/L, neutrophils 4600 cells/L, albumin 3.0 g/dL, platelet count 246×109/L, AST 96 IU/L, ALT 85 IU/L, normal CRP (0.4 mg/L), elevated D-dimer (2150 ng/mL), elevated CK MB (283 U/L), Pro-BNP > 25,000 pg/ml and elevated ferritin (1650 mg/dL). Nasopharyngeal swab, for SARS-CoV-2 RT-PCR was positive. Transthoracic echocardiogram showed normal biventricular systolic function with ejection fraction 82%. Also, cerebrospinal fluid (CSF) analysis and urine analysis were normal. In the chest computed tomography (CT) scan bilateral, peripheral ground glass infiltration and opacity were observed.

The clinical presentation, which included multi-organ dysfunction, positive inflammatory markers, high ferritin and D-dimer levels, along with negative serological results in both the mother and infant, but a positive nasopharyngeal swab for SARS-CoV-2 PCR in the infant, suggested a hyper-inflammatory process consistent with neonatal multisystem inflammatory syndrome (MIS-N). The patient was treated with intravenous immunoglobulin (IVIg) (2 g/kg) and intravenous methylprednisolone (2 mg/kg/dose).

Discussion

The evidence suggests that the majority of infants were either not infected with COVID-19 or had very mild symptoms [6]. However, some neonates have a severe MIS-C which can involve several vital organs. It is worth mentioning that MIS-N, a newly recognized syndrome, primarily occurs in neonates. The incidence of MIS is higher in children and infants compared to new-borns [7].

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Neonates affected by MIS-N would present with varying degrees of multi-organ system involvement such as gastrointestinal, cardiac, respiratory, haematological, hepatic, and dermatological, leading to significant morbidity. Children with MIS-C may have a fever and a range of manifestations like abdominal pain, vomiting, diarrhoea, neck pain, rash, bloodshot eyes, or feeling extra tired. Laboratory evidence of inflammation includes 1 or more of the following: an elevated C-reactive protein (CRP), erythrocyte sedimentation rate, fibrinogen, procalcitonin, D-dimer, ferritin, lactate dehydrogenase, or interleukin-6; elevated neutrophils or reduced lymphocytes and low albumin [8]. However, there has been no international consensus criterion for the diagnosis of MIS-N. Pawar suggested that MIS-N is a unique phenomenon induced by passive transfer of maternal antibodies in the setting of COVID-19 in pregnancy, leading to multisystem inflammation.

The diagnostic criteria used for MIS-C in children cannot be directly applied to neonates, as fever is less common in this age group, and neonates typically exhibit milder symptoms. Therefore, in neonates, exposure to COVID-19 and the presence of systemic symptoms along with increased inflammatory laboratory markers are considered sufficient for diagnosis.

This new syndrome can be related to COVID-19 [9,10]. MIS-C is rare, but this disease may have been observed during the COVID-19 pandemic in some studies [11].

Several institutions, including the Royal College of Paediatrics and Child Health, Centres for Disease Control and Prevention (CDC), and the World Health Organization (WHO), have provided diagnostic criteria for MIS-C [12,13].

The management of patients with MIS-N involves several key components including controlling shock, immune-modulatory therapy, and the usage of thrombi-prophylaxis agents [14]. Immune-modulatory therapy particularly intravenous immunoglobulin, corticosteroids, and interleukin-1-receptor antagonist (anakinra) have been successfully used for treatment [15]. Immune-modulatory therapy particularly intravenous immunoglobulin, corticosteroids, and interleukin-1-receptor antagonist (anakinra) have shown successful outcomes in the treatment of MIS-N. Molecular mechanisms underlying MIS-C are not fully understood. A study conducted by Consiglio and colleagues demonstrated that the pathophysiology of MIS-C is distinct from the cytokine storm of severe acute COVID-19 and the inflammatory response seen in Kawasaki disease, in addition to finding evidence of autoantibody-mediated pathology [16].

Conclusion

Neonatal multisystem inflammatory syndrome is a newly recognized disease that is associated with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV2). Neonatal multisystem inflammatory syndrome (MIS-N) is a multisystem inflammatory syndrome that affects various systems in the body and is confirmed with a positive history of polymerase chain reaction (PCR) test in the mother and/or a history of contact with those who are a vector for COVID-19 infection and a positive serologic test in the neonate. Having no fever throughout the course of illness, in some neonates, suggests that neonate's respond differently compared with children.

Consent

Written informed consent was obtained from the patient for publication of this case report.

Disclosure

This clinical case was written based on clinical observation without any funding.

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None

Conflict of Interest

There are no conflicts of interest between the authors and between the authors and the patient.

References

1. https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---17-august-2022
2. Hoste L, Van Paemel R, Haerynck F (2021) Multi-system inflammatory syndrome in children related to COVID-19: A Systematic Review. Eur J Pediatr EU 180: 2019-34
3. Davies P, Evans C, Kanthimathinathan H K, Lillie J, Brierley J (2020) Intensive care admissions of children with paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS) in the UK: A multicentre observational study. Lancet Child Adolesc. Health EU 4:669-77.
4. Shaiba LA, Hadid A, Altirkawi KA, Bakheet HM, Alherz AM (2021) Case Report: Neonatal Multi-System Inflammatory Syndrome Associated With SARS-CoV-2 Exposure in Two Cases from Saudi Arabia. Front Pediatr EU 9:1-6
5. Pawar R, Gavade V, Patil N, Mali V, Girwalkar A, (2021) Neonatal Multisystem Inflammatory Syndrome (MIS-N) Associated with Prenatal Maternal SARS-CoV-2: A Case Series. Children EU 8:1-15.
6. Eghbalian F, Esfahani AM, Jenabi E (2020) COVID-19 virus in a 6-day-old girl neonate: a case report. Clin Pediatr EU 59:1288-9
7. Tolunay O, Celik U, Arslan I, Orgun A, Demir H (2021) Multisystem Inflammatory Syndrome in Children (MIS-C) Associated with COVID-19: A Case Series Experience in a Tertiary Care Hospital of Southern Turkey. J Trop Pediatr EU 67:1-27.
8. Bhat CS, Gupta L, Balasubramanian S, Singh S, Ramanan AV (2020) Hyperinflammatory syndrome in children associated with COVID-19: need for awareness. Indian Pediatr IND 57:929-35
9. De Rose DU, Piersigilli F, Ronchetti MP, Santisi A, Bersani I, (2020) Novel Coronavirus disease (COVID-19) in newborns and infants: what we know so far. Ital J Pediatr UK 46:1-8.
10. Dong Y, Mo X, Hu Y, Qi X, Jiang F (2020) Epidemiology of COVID-19 Among Children in China. Pediatrics USA 145:1-10.
11. Coronado M A, Nawaratne U, McMann D, Ellsworth M, Meliones J (2020) Late-onset neonatal sepsis in a patient with Covid-19. N Engl J Med US 382:1-3
12. Henderson L A, Canna S W, Friedman K G, Gorelik M, Lapidus S K (2022) American College of Rheumatology Clinical Guidance for Multisystem Inflammatory Syndrome in Children Associated With SARS-CoV-2 and Hyperinflammation in Pediatric COVID-19: Version 3. Arthritis Rheumatol NY 74:1-20
13. https://emergency.cdc.gov/han/20 20/han00432.asp
14. Divekar AA, Patamasucon P, Benjamin JS (2021) Presumptive Neonatal Multisystem Inflammatory Syndrome in Children Associated with Coronavirus Disease 2019. Am J Perinatol UK 38:632-6
15. Magboul S, Khalil A, Al Shami A (2020) Refractory MultiInflammatory Syndrome in a two weeks old neonate with COVID-19 Treated Successfully with Intravenous Immunoglobulin, Steroids and Anakinra, 24 August 2020. Research Square US 5:1-7
16. Consiglio CR, Cotugno N, Sardh F, et al. The immunology of multisystem inflammatory syndrome in children with COVID-19. Cell US 183: 968-981