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Case Report

Incomplete Kawasaki Disease Associated with SARS-CoV2 Infection. Report of a Case

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Abstract

Kawasaki disease is an acute multisystemic vasculitis, the etiology of which is unknown and is attributed to genetic predisposition and viral infections. In the literature there are reported cases of the condition and association of SARS-CoV-2, thus the diagnostic suspicion is important in patients with corresponding symptoms and verification of virus infection. We present the case of a pediatric patient who was diagnosed with incomplete Kawasaki disease and SARS-CoV-2. We emphasize early diagnosis since it is vital to avoid major complications and, therefore a fatal outcome.

Keywords: *Kawasaki Disease; Incomplete Kawasaki Disease; Kawasaki Disease Associated with SARS-CoV-2; Multisystemic Inflammatory Syndrome Associated with SARS-CoV-2 Infection*

Abbreviations

Covid-19: Coronavirus Disease 2019; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; RNA: Ribonucleic Acid; ACE2: Angiotensin Converting Enzyme 2; PIMS-TS: Pediatric Inflammatory Multisystem Syndrome: Temporarily Associated with SARS-CoV-2; MIS-C: Multisystem Inflammatory Syndrome in Children; PCR: Polymerase Chain Reaction; ASA: Acetylsalicylic Acid

Introduction

Kawasaki disease, also known as mucocutaneous lymph node syndrome [1], is a pathology that consists of a vasculitis of undetermined origin expressed in a multisystem way and which more severe complications include coronary aneurysm and shock [2,3]. Its diagnosis is mainly clinical in the presence of continuous fever for 5 or more days, 4 out of 5 existing criteria and exclusion of other diseases [1,4]. This disease is described in all pediatric age ranges and ethnic groups. The male gender between 0 - 4 (Japan) and 0 - 5 years (North America) is most affected [2]. Incomplete Kawasaki disease (one of the forms of Kawasaki disease) has the following clinical presentation: continuous fever for 5 or more days and the presence of 2 - 3 criteria or also, pediatric patient with fever longer than 7 days without criteria [6].

On the other hand, SARS-CoV2 is a single-stranded RNA virus belonging to the genus Coronavirus and has both structural and non-structural proteins. Its target receptor is probably ACE2 expressed in the alveolar epithelium and other cells such as those of the heart, kidney, endothelium and intestine [3,6].

On March 11, 2020, the WHO declared SARS-CoV-2 as a pandemic causing COVID-19 and by April, about 1,844,683 cases had been reported in at least 213 countries. Its transmission occurs through close contact with an infected individual, who produces Flügge drops when sneezing or coughing [6].

Currently, faced with the Covid-19 pandemic, there are case reports on patients who present with SARS-CoV-2 infection and express symptoms of Kawasaki disease. Such association is defined as Pediatric Inflammatory Multisystem Syndrome: Temporarily Associated with SARS-CoV-2 (PIMS-TS) in Europe and Multisystem Inflammatory Syndrome in Children (MIS-C) in USA. Therefore, it is important to know and exclude in our country the association of such a condition in pediatric patients, or, timely diagnose and start treatment [4,6].

Clinical Case

A 5-year-old male patient presented a fever of 38°C, odynophagia, and neck pain of 48 hours of evolution. On physical examination, pharyngeal hyperemia was observed with scant posterior secretion of greenish-yellow mucus, neck with limitation of lateral movements, rigidity and antialgic position; Bilateral cervical adenomegaly with no tolerance of touch, the rest of the physical examination and vital signs are without alterations. The initial diagnostic impression is febrile syndrome secondary to bacterial pharyngitis and bilateral cervical lymphadenitis, treatment with amoxicillin and clavulanic acid 50 mg/kg/day every 8h and isolation at home is indicated.

After 24 hours of evolution, there is persistence of neck pain and a physical examination is performed again, presenting sternocleidomastoid contracture, limitation of movement, pain on palpation and a fever of 38°C. Neck ultrasound, blood biometry, procalcitonin and MRI, if necessary, are requested. The radiology report indicates an inflamed cervical lymph node chain without abscess data, and therefore, an MRI is not performed. The mother reports absence of stridor or signs of respiratory distress, indications are given in the event of a complication and cervical lymphadenitis and probably bacterial pharyngitis remain a diagnostic impression, continuing with initial treatment.

On the third day, there is an improvement in the general condition, spaced fever, a decrease in inflammation, an improvement in neck mobility and erythema in which cellulite is suspected, therefore the patient continues treatment and isolation at home. Changes in solid intake and decreased tolerance to the oral route are reported. Laboratories report bandemic leukocytosis, 1 ng/ml procalcitonin, IgG and IgM for Epstein Barr negative.

On the fourth day, he presents a feverish peak (38°C), a decrease in fluid intake and emesis on one occasion for which he was hospitalized, with strict isolation measures on suspicion of COVID 19 and IV treatment is started with clindamycin and ceftriaxone, rehydration and laboratory analysis. The case is presented to the medical director and the chief of intensive care for joint management and evaluation by cardiology and pediatric infectology.

On the sixth day there is persistence of fever, non-suppurative conjunctivitis (Figure 1) and mucositis with lip fissures (Figure 2) are added, for which an incomplete form of Kawasaki disease (Kawasaki like) is suspected as an etiology. The new laboratory report indicates a decrease in leukocytes and bands, procalcitonin in the same previous value, transaminases and high inflammatory parameters, results that increase the diagnostic possibility of Kawasaki. In turn, due to the study protocol in this regard and the current pandemic PCR study is requested to rule out SARS-CoV-2 infection as an etiology. The hospital board requests his transfer to a COVID hospital so he is transferred to the Country 2000 hospital to carry out tomographic studies and continue management and assessment with protocols as a COVID patient.

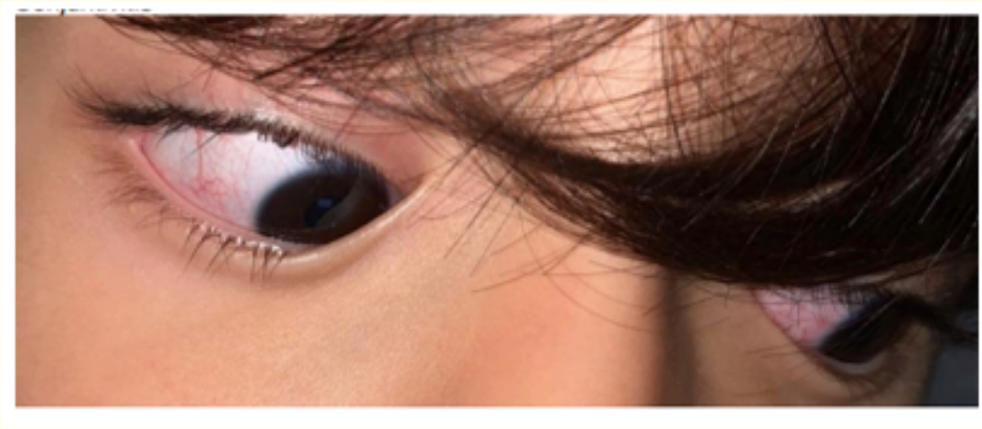

Figure 1: *Nonsuppurative conjunctivitis.*

Figure 2: *Mucositis and lip fissures.*

Cardiology reports absence of coronary artery injury, pericardial effusion, or myocardial injury, which is why it is determined as incomplete Kawasaki disease and treatment with ASA 80 mg/kg/day and IVIG 2 gr/kg is started and antibiotic treatment is continued due to elevated antistreptolysin. Tomography is performed where neck (Figure 3 and 4) and thorax are observed, and the presence of bilateral basal lamellar atelectasis is reported (Figure 5).

Figure 3: *A retropharyngeal ganglion with a hypodense center is observed, corresponding to lymphangitis previously observed on ultrasound (yellow circle).*

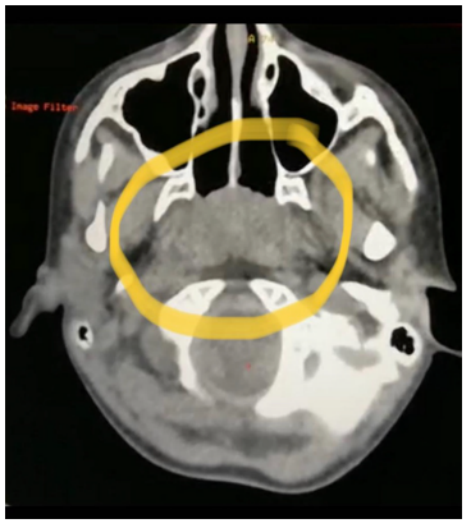

Figure 4: *Prominent adenoids (yellow circle).*

Figure 5: *Chest tomography in axial section.*

On the seventh day of the disease the patient is stable, only a feverish peak and 1800 D-dimer are reported, therefore the same dose of ASA is maintained with close monitoring. The PCR test is reported as positive and Kawasaki disease is confirmed by SARS-CoV-2. Prophylaxis with low molecular weight heparin and hydroxychloroquine is added, ceftriaxone is discontinued, and clindamycin is continued due to association with *Streptococcus*.

On the eighth day of the disease there is improvement in general conditions, he coughed only twice, afebrile and the laboratories report an increase in D-dimer and fibrinogen, for which hematology consultation is requested.

On the ninth day, he is afebrile and without respiratory, gastrointestinal, or circulatory symptoms. Mother PCR for COVID 19 is reported negative. Control of normal corrected QT cardiac ultrasound, without relevant findings. After 72 hours afebrile, the ASA dose is reduced to 4 mg/kg/day to complete 6 weeks of treatment.

The patient is discharged due to clinical improvement and control laboratory studies are carried out one month after the onset of the disease, where the following is observed: negative anti-dengue antibodies and dengue NSI antigen, normal procalcitonin, anti-SARS-CoV-2 antibodies negatives and C-reactive protein elevated above reference values.

Results and Discussion

The younger are the children the more prone to hygiene dependent on others are and, the little understanding of it, makes them a vulnerable group to acquire infections, adding nutritional status and even behaviors such as talking loudly or shouting [5].

Kawasaki disease has been described in literature since 1871 but due to its rarity it is considered a diagnosis by exclusion and despite not having pathognomonic signs, some bibliographies mention fever, strawberry tongue and conjunctivitis as the three most prevalent clinical signs [3,7]. In the case presented, an uncertain onset is shown, which requires close monitoring of its evolution. Since palpation of lymph nodes can be considered within normality or as indicative of serious disease and in the case of Kawasaki, it is one of the less common main clinical characteristics, thus, its finding requires an adequate evaluation and complemented with laboratory and cabinet studies [5,8].

Current reports of Kawasaki disease and SARS-CoV-2 in several countries have opened a new line of clinical, epidemiological and treatment research, in which doctors describe and treat the disease, sharing the findings and comparisons with the previous literature [2,4]. Considering this, the associated disease can be shown as classic Kawasaki, Kawasaki with complications, or incomplete Kawasaki (as presented in this article), demonstrating the importance of ruling out other etiologies of the observed clinic, laboratories that demonstrate an inflammatory process, an adequate anamnesis regarding the risk of exposure to contagion and carrying out the PCR test for COVID [2,4,5].

The treatment for the association of the virus and the disease does not currently have an official guideline, and despite this, it has been observed that multidisciplinary follow-up in the areas of pediatric infectology, intensive care and cardiology are a cornerstone. At this time of the pandemic there are no reports of cases resistant to treatment (refractory) and most of the patients progress adequately until resolution of the pathology following the guidelines of the AHA, that is, the use of intravenous immunoglobulin (IVIG at 2 g/kg in a single infusion for 10 to 12 hours) and ASA (dose every 6 hours of 80 - 100 mg/kg/day), adding the use of hydroxychloroquine and low molecular weight heparin [2,4,5]. Finally, the clinical resolution of Kawasaki disease and the result of negative PCR after Kawasaki does not mean that the patient ceases to be of interest to his study as it may lead to other questions.

Conclusion

Kawasaki syndrome associated with SARS-CoV-2 infection is an entity of which suspicion begins to take on greater relevance in the current pandemic, this is why an early diagnosis is vital to avoid major complications.

In the context of prevention, the increase in such disease expresses the importance of primary caregivers in the health of the infant.

Finally, due to the severity that Kawasaki associated with SARS-CoV-2 infection can trigger, we consider that no resources of any kind should be spared, this implies not limiting the tests for COVID 19 only for patients with respiratory symptoms.

Conflict of Interest

The authors declare that they have no conflicts of interest in relation to this article.

Bibliography

1. Guía de Práctica Clínica Diagnóstico y Tratamiento de la Enfermedad de Kawasaki. (Síndrome Mucocutáneo Linfonodular) México: Secretaría de Salud (2015).

2. Toubiana J., *et al.* "Kawasaki-like multisystem inflammatory syndrome in children during the covid-19 pandemic in Paris, France: prospective observational study". *The BMJ* (2020): 1-7.

3. Treviño G and Hernández V. "Síndrome de Kawasaki". *Alergia, Asma e Inmunología Pediátricas* 15.3 (2006): 97-103.

4. Jones V Mills M., *et al.* "COVID-19 and Kawasaki Disease: Novel Virus and Novel Case". *Hospital Pediatrics* 10.6 (2020): 537-540.

5. MacCrindle B., *et al.* "Diagnosis, Treatment, and Long-Term Management of Kawasaki Disease A Scientific Statement for Health Professionals From the American Heart Association". *Circulation* 135.17 (2017): e927-e999.

6. Shailendra K. "Coronavirus Disease 2019 (COVID-19) Epidemiology, Pathogenesis, Diagnosis, and Therapeutics, Lucknow, India, Springer (2020).

7. Santafé G., *et al.* "Enfermedad de Kawasaki: caso clínico". *Revista Médica-Científica Cambios Hcam* 17.1 (2019): 57-60.

8. Friedman A. "Evaluation and Management of Lymphadenopathy in Children". *Pediatrics in Review* 29.2 (2008): 53-60.

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