Revista de Ciencias Médicas de Pinar del Río

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2023; 27(2023): e5767

CASE REPORT

Kawasaki-type inflammatory syndrome related to a SARS-CoV-2 seropositive patient

Síndrome inflamatorio tipo Kawasaki relacionado con paciente seropositivo a SARS-CoV-2

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Received: October 5, 2022
Accepted: January 27, 2023
Published: May 18, 2023

Citar como: Fiallos-Brito EJ, Villacrés-Gavilanes SC. Síndrome inflamatorio tipo Kawasaki relacionado con paciente seropositivo a SARS-CoV-2. Rev Ciencias Médicas [Internet]. Año [citado: fecha de acceso]; 27(2023): e5767. Disponible en: http://revcmpinar.sld.cu/index.php/publicaciones/article/view/5767

ABSTRACT

Introduction: Multisystemic Inflammatory Syndrome has been described to occur in children infected with the SARS-COV-2 virus, coronavirus responsible for COVID-19, who are not necessarily in the acute phase of the disease, but who have a seroconversion of antibodies against it, demonstrate a recent infection or in processes; among its many multiple forms of presentation, a form of the disease similar to Kawasaki syndrome has been described, which responds to conventional treatment for classic disease
Case report: eight-year-old girl who was admitted to the respiratory isolation area, with positive serology for SARS-CoV-2 antibodies, with no history of importance, with diffuse abdominal pain of great intensity, nausea, vomiting, constipation and thermal rise of eight days of evolution, with clinical features of peritonitis, surgical intervention is performed where a small amount of free fluid in the abdominal cavity and congestive cecal appendix is evidenced, a picture not compatible with the intensity of abdominal pain.
Conclusions: Kawasaki type systemic inflammatory syndrome disease secondary to COVID-19, due to the characteristics of the clinical picture, the poor post-surgical evolution, the multisystemic involvement, the radiographic changes and the suspicion of COVID-19, diagnosed serologically through a rapid test.

Keywords: Sars-Cov-2; Covid-19; Mucocutaneous Lymph Node Syndrome.

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RESUMEN

Introducción: El Síndrome Multisistémico Inflamatorio se ha descrito su aparición en niños infectados con el virus SARS-COV-2, coronavirus responsable de la COVID-19, que no necesariamente esté en la fase aguda de la enfermedad, pero que tenga una seroconversión de anticuerpos contra el mismo, demuestran una infección reciente o en procesos; entre sus muchos múltiples formas de presentación, se ha descrito una forma de la enfermedad similar al síndrome de Kawasaki, que responde al tratamiento convencional para la enfermedad clásica
Presentación de caso: se reporta Niña de ocho años de edad que ingresó al área de aislamiento respiratorio, con serología positiva para anticuerpos SARS-CoV-2, sin antecedentes de importancia, con dolor abdominal difuso de gran intensidad, náuseas, vómitos, constipación y alza térmica de cuatro días de evolución, con características clínicas de peritonitis, se realiza intervención quirúrgica donde se evidencia una pequeña cantidad de líquido libre en la cavidad abdominal y el apéndice cecal congestiva, cuadro no compatible con la intensidad del dolor abdominal.
Conclusiones: enfermedad de síndrome inflamatorio sistémico tipo Kawasaki secundario a COVID-19, por las características del cuadro clínico, la mala evolución postquirúrgica, el compromiso multisistémico, los cambios radiográficos y la sospecha de COVID-19, diagnosticado de forma serológica a través de prueba rápida.

Palabras clave: Sars-Cov-2; Covid-19; Síndrome Mucocutáneo Linfonodular.

INTRODUCTION

Systemic inflammatory syndrome (SIDS) has been described to occur in children infected with SARS-COV-2, the coronavirus responsible for COVID-19, who are not necessarily in the acute phase of the disease, but who have seroconversion of antibodies against it, demonstrating recent infection or in process; among its many multiple forms of presentation, a form of the disease similar to Kawasaki syndrome has been described, which responds to conventional treatment for the classic disease.[1]

Kawasaki disease is characterized by acute inflammation of small and medium-sized arteries, most frequently observed in children under five years of age. Since the Japanese pediatrician named Kawasaki reported the first case of the disease, it has been described worldwide for more than 50 years, its etiology is unknown. There have been multiple reports linking the occurrence of Kawasaki disease to viral and bacterial infections, but a strong causal relationship between these infections and the etiology of the disease has not been established. Recently, a genetic predisposition hypothesis has been proposed. So far, since it does not meet all the standard diagnostic criteria, it has been difficult to find a complementary test to confirm its diagnosis.[2]

The suspicion of Kawasaki-type systemic inflammatory syndrome secondary to COVID-19 has been noted both in the acute phase of the disease, or after disappearance of the virus in the blood, but with the persistence of circulating antibodies. Cases reported in Europe and the United States have been clinically characterized by abdominal pain, gastroenteritis, fever, erythroderma, conjunctival injection and mild or no manifestations in the general condition, these expressions have been related to COVID-19, because some of these infants have reported positive PCR for SARS-CoV-2, while others have been PCR negative but with positive serology.[1]

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CASE PRESENTATION

An eight -year-old female patient was brought by her mother to the Hospital de Ambato with a diagnosis of multiorgan failure, with no personal or family history to justify the clinical picture, diagnosed by a positive rapid test for SARS-CoV-2.

Physical Examination

Signs of swelling in the abdominal region, edema in hands and feet, changes in the oral mucosa, strawberry tongue, non-exudative conjunctivitis, skin rash and unilateral lymphadenopathy, gastrointestinal manifestations (vomiting, diarrhea and severe abdominal pain) are observed between one to six weeks. Therapeutic treatment consisted of oxygen supply by nasal cannula to two liters, dry cough, with antibiotic therapy Piperacillin plus Tazobactam, methylprednisolone, furosemide, laboratory examination: platelets 87000. It was decided to admit him to the Intensive Care Unit (ICU).

Management in the Emergency Department

Currently, research with new drugs based on the genome and biophysical understanding of SARS-CoV-2 has been developed, with many drug treatment options, however, the efficacy and safety of these drugs have yet to be confirmed with clinical experiments.[3]

The possibility of infants being exposed to SARS-CoV-2 is high, so it is necessary to indicate a blood count and C-reactive protein (CRP) in case of suspicion of infestation, and if the clinical criteria and history of infection are high, a PCR TR for SARS-CoV-2 should be considered; if negative, serological determination of antibodies should be performed.

In the infant population different symptoms and signs develop in the face of infestation with SAR-COV-2, it has been observed that it has a different clinical presentation and evolution and based on publications, anecdotal data, professional experience, it is recommended the use of antibiotics empirically, initially broad spectrum, since the symptoms overlap with severe bacterial infections.[4]

- Mild SIMS: Ceftriaxone.
- Severe SIMS/shock: Vancomycin, clindamycin and cefepime or vancomycin, meropenem and gentamicin.
- SIMS with gastrointestinal symptoms: Add metronidazole. Regarding the use of antivirals, there are limited clinical trials in relation to Remdesivir, so it is suggested only in those positive for TR-PCR.

The use of complementary therapies, due to the similarity with KD and the inflammatory characteristics, management with intravenous immunoglobulin (IVIG), corticosteroids, aspirin, anakinra and tocilizumab, which have been the most used and reported, are under consideration.

For critically ill children, decisions regarding thrombosis prophylaxis should be guided by hematology.[5]

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Main general observations to have in children when suspecting this syndrome:

- Mucocutaneous: exanthema-like skin rash, which may be accompanied by desquamation, morbilliform reticular rash, purpuric lesions, edema and cracks on the lips, strawberry tongue, conjunctivitis, blistering and desquamative lesions, edema on hands and feet.
- Systemic: Persistent fever > 38.5 °C, myalgias, tachycardia, arterial hypotension, hypo- or hyperperfusion, cervical lymphadenopathy, pharyngeal pain.
- Neurologic: Headache, altered mental status, meningismus, focal deficit, seizures.
- Cardio pulmonary: Respiratory distress with need for supplemental oxygen, chest pain, dry or productive cough.
- Gastrointestinal: Abdominal pain, diarrhea, nausea and vomiting.

Laboratory tests

In case of clinical suspicion and hospital admission, it is recommended to request laboratory studies to assess multisystem involvement:

- Coagulation study.
- PCR TR for SARS-CoV-2
- fibrinogen, D-dimer, ferritin, albumin, blood biometry (anemia-lymphopenia-neutrophilia-thrombocytopenia),
- renal function, liver function, coagulation times (PT-TTP), IL-6 and IL10, elevated CK, LDH, lipids.

Imaging studies

- Cardiac ultrasound and ECG: looking for myocarditis, valvulitis, pericardial effusion, coronary artery aneurysm.
- Chest X-ray: irregular symmetrical infiltrates, pleural effusion.
- Abdominal ultrasound: images suggestive of colitis, ileitis, lymphadenopathy, ascites, hepatosplenomegaly.
- Contrast chest tomography: coronary artery abnormalities.

These studies will be requested according to the protocols and availability of each institution.[4,5,6]

DISCUSSION

In New York City (NY), from April to May 2020, 15 children between two and 15 years of age were hospitalized with symptoms similar to multisystemic inflammatory syndrome (MIDS), probably related to COVID-19, since several of these children were reactive by PCR for this virus or reported positive antibodies in serum, so we began to investigate 85 cases of coronavirus-linked disease in children, It is noteworthy that the symptomatology presented in these children is similar to Kawasaki disease and toxic shock syndrome, similar cases have been reported in Spain and Italy, and in NY the situation was very alarming because in such a short time three young people died due to this circumstance.[7,8,9,10]

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The Spanish Association of Pediatrics (AEP) has warned about new symptoms of COVID-19 in children, characterized by abdominal pain, gastroenteritis (diarrhea and/or vomiting), fever, erythroderma, conjunctival injection and mild or no manifestations in the general condition, These can evolve into a state of toxic shock, characterized by tachycardia and arterial hypotension, and even overlap with Kawasaki disease, since abdominal pain and gastrointestinal manifestations in these children have been associated with myocarditis.(11)

In mid-April 2020, in England, a group of eight children with inflammatory shock was observed, with characteristics similar to atypical Kawasaki disease, of these, four had family exposure to COVID-19 and seven were well above the 75th percentile in weight, had elevated values of C-reactive protein (CRP), procalcitonin, ferritin, triglycerides and D-dimers, parameters present in patients with COVID-19 and in the echocardiogram the common finding was the progression to coronary aneurysm.(12)

Multisystemic Inflammatory Syndrome arises as a manifestation of COVID-19 in the pediatric age, with various phenotypes among which is a Kawasaki-like syndrome, which responds to standard therapy for the classic disease. Case report: We report two cases from the city of Chiclayo, aged seven and nine years, female sex, history of probable and confirmed contacts for COVID-19, and one of the patients with positive IgG serology and tomographic images compatible with COVID-19 in resolution. Both met the criteria for Pediatric Multisystemic Inflammatory Syndrome and classic Kawasaki disease, with favorable response to usual therapy, without complications and in current follow-up.(1)

CONCLUSIONS

It has been speculated that SIMS is related to COVID-19, because most of the children were reactive on PCR for SARS CoV-2 and with the presence of antibodies suggesting that they were exposed to the virus at some point. COVID-19 should not be interpreted as a respiratory condition, it is known to be multiorgan and the respiratory system one of the most affected causing in infants a significant inflammation related to Kawasaki disease (KD), which can lead to toxic shock syndrome and myocarditis with cardiogenic shock. The reported cases respond to conventional therapeutics. SARS-CoV-2 infection, which causes COVID-19 disease, does not manifest itself in children in the same way as in adults, and in the few cases reported in infants these signs and symptoms vary even from one patient to another.

These studies contribute to the documentation of this emerging pathology in the scientific community.

Conflict of Interest
The authors declare no conflicts of interest.

Authors' Contributions
Both authors participated in the conceptualization, formal analysis, project management, writing - original draft, writing - revision, editing and approval of the final manuscript.

Funding
The authors did not receive funding for the development of this research.

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Rev Ciencias Médicas. 2023; 27(2023): e5767

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