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Review

SARS-CoV-2 in pediatrics. History of a pandemic from China to Colombia

SARS-CoV-2 en pediatría. Historia de una pandemia desde China hasta Colombia

Julieth Fernanda Urbano Arcos[1], Isabel Ruiz Ponce de Leon[1], Oskar Andrey Oliveros[2], Luis Fernando Mejia Rivera [1,2], Juan Pablo Rojas Hernandez[1,2,3]

1 Universidad Libre, Facultad Ciencias de la Salud, Especialización en Pediastria, Cali, Colombia.
2. Fundación Clinica Infantil Club Noel, Cali, Colombia
3. Universidad del Valle, Facultad de Salud, Doctorado en Salud. Cali, Colombia

Correspondence to: Isabel Ruiz Ponce de Leon. e-mail: isaruizp201192@gmail.com

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Abstract

Introduction: Coronavirus until 1930 were part of the viruses that only disturbed the animal niche. Severe acute respiratory syndrome due to coronavirus 2 (SARS-CoV-2) a type of coronavirus that causes coronavirus disease (COVID-19); In the last year it has become a concern for international public health due to the triggered pandemic, due to its high transmissibility and high mortality that it has caused.

Objective: describe SARS-COV-2 infection in pediatrics with special emphasis on virological, epidemiological aspects, transmission mechanism, clinical manifestations, and expectations of treatment in pediatric age.

Methods: A review of articles in Spanish and English was made, using valid terms, on the PubMed, ScienceDirect and Medline databases related to the disease. Articles with a publication period of no more than 5 years were considered.

Results: The epidemiology, pathophysiology, clinical manifestations, complications, isolation and possibilities of treatment of SARS-CoV-2 in pediatric age are described.

Conclusions: SARS-CoV-2 is highly contagious, the pediatric population has mostly mild clinical manifestations. The importance of an appropriate approach in this population is to avoid spreading to other ages of greater morbidity and mortality and possible associated complications.

Resumen

Introducción: Hasta 1930 los coronavirus eran parte de los virus que solo afectaban animales. El síndrome respiratorio agudo severo por Coronavirus 2 (SARS-CoV-2), es un tipo de coronavirus causante de la enfermedad por coronavirus (COVID-19), el cual se ha convertido en un importante problema para la salud pública mundial por la pandemia desencadenada y su alta transmisibilidad y mortalidad.

Objetivo: Describir la infección por SARS-CoV-2 en pediatría realizando especial énfasis en aspecto virológicos, epidemiológicos, mecanismo de transmisión, manifestaciones clínicas y expectativas de tratamiento en la edad pediatría.

Métodos: Se hizo una revisión de artículos en español e inglés, usando términos estandarizados, sobre las bases de datos PubMed, ScienceDirect y Medline relacionados con la enfermedad. Se tuvieron en cuenta artículos con periodo de publicación no mayor a 5 años.

Resultados: Se describe la epidemiologia, fisiopatología, manifestaciones clínicas, complicaciones, aislamiento y posibilidades de tratamiento de SARS-CoV-2 en edad pediátrica

Conclusiones: SARS-CoV-2 es altamente contagioso, la población pediátrica tiene en su mayoría manifestaciones clínicas moderadas y leves. La importancia del abordaje adecuado en esta población es evitar la propagación a personas con edades de mayor morbimortalidad y posibles complicaciones asociadas.

Key study facts

Objective	To describe SARS-CoV-2 infection in pediatrics
Study design	review
Source of information	Articles in English and Spanish using standardized terms in databases such as Pubmed, ScienceDirect and Medline
Population/sample	A descriptive analysis was performed using a frequency table and measures of central tendency and dispersion (mean ± standard deviation) for qualitative and quantitative variables, respectively
Main findings	SARS-CoV-2 is highly contagious but the pediatric population mostly has moderate and mild clinical manifestations, so an appropriate approach to the disease must be achieved .

Introduction

Until the 1930s, coronaviruses were thought to affect only animals. In animals, coronaviruses trigger respiratory, gastrointestinal, hepatic, and neurological symptoms. Over time, environmental modifications and genetic mutation allowed coronaviruses to cross the biological barrier and they were able to infect and spread among humans, causing diseases that are difficult to control and deadly (1).

Seven species of coronavirus are known in humans that can generate symptoms and disease in humans. All seven have a wide range of signs and symptoms. Three of these species have received increased attention and are termed as causing serious disease. These have been capable of triggering epidemics, causing severe and fatal infections among the population. The first two that were declared were SARS coronavirus 1 (SARS-CoV1 for its acronym for severe acute respiratory syndrome coronavirus 1) and MERS coronavirus (MERS-CoV for its acronym Middle East respiratory syndrome), which caused epidemics in 2002 and 2012, respectively. These two species caused high mortality (1).

SARS-CoV-2 ranks third, in terms of severity, within the entire family of coronaviruses. SARS-CoV-2 causes the coronavirus disease called COVID-19. On March 11, 2020, it became a pandemic. It was discovered and isolated for the first time in Wuhan (China) at the end of 2019. The hypothesis is that SARS-CoV-2 had a complex zoonotic origin: it went from an animal host (bat and pangolin) to a human (2).

The appearance and rapid spread of SARS-CoV-2 is a concern for international public health due to the high level of contagiousness and mortality it has caused (2). Starting in February of 2020, special care began to be taken regarding the course of this disease in children. During this time, the first series of pediatric cases in China was described. The average age presented was 7 years with more than 90% of the cases being diagnosed as asymptomatic or mild. They are highly contagious, playing an important role in the spread of the virus among the population, mainly at high-risk ages.

This article aims to present a review of SARS-CoV-2 infection in pediatrics, with special emphasis on its virological and epidemiological aspects, transmission mechanism, clinical manifestations and treatment expectations in pediatric age that allow control of the spread of the virus.

Methods

To ensure quality in the content of this review, inclusion criteria were proposed. A selection of Spanish and English articles was made, using terms such as: COVID-19, SARS-CoV-2, pediatrics, immunology, pediatrics, immunology. Search engines including PubMed, Medline and ScienceDirect were used. Research product articles, review articles and electronic books were selected. Most articles with a publication period of no older than 5 years were included and ideally literature from 2019 and 2020 was chosen.

Epidemiology

The vast majority of coronaviruses manage to circulate in humans, triggering only mild respiratory manifestations. At the end of 2019 in Wuhan, the capital of Hubei in China, however, there was an unusual increase in cases of pneumonia of unknown origin which was highly aggressive with levels of severity being determined according to age groups. The only important epidemiological link in common with all cases that was reported was the exposure of the patients to a seafood market where live animals were also sold. When carrying out tests, at the end of December 2019, a new coronavirus (SARS-CoV-2) was found from bats whose intermediate animal could have been either pangolins or snakes. These animals are consumed in said market. Given the persistence of the disease and its rapid spread, it was determined that the most likely contagion was from person to person and that the course of the disease could be asymptomatic (3).

Up until January 31, 2020, 11,374 cases were registered, of which 11,221 were from China. Cases were also reported in countries such as South Korea, Germany and Italy, thanks to the continuous migration of patients and their high level of contagiousness (4). In little less than a month, it became a disease that affected all continents. On February 25, 2020, the first case presented in the American continent in Brazil and on March 6, the first case presented in Colombia in an adult who had travelled from Italy. On March 11, the World Health Organization (WHO) declared the disease a pandemic, with more than 118,000 cases and 4,291 deaths, mostly older than 50 years, distributed across 114 countries (5).

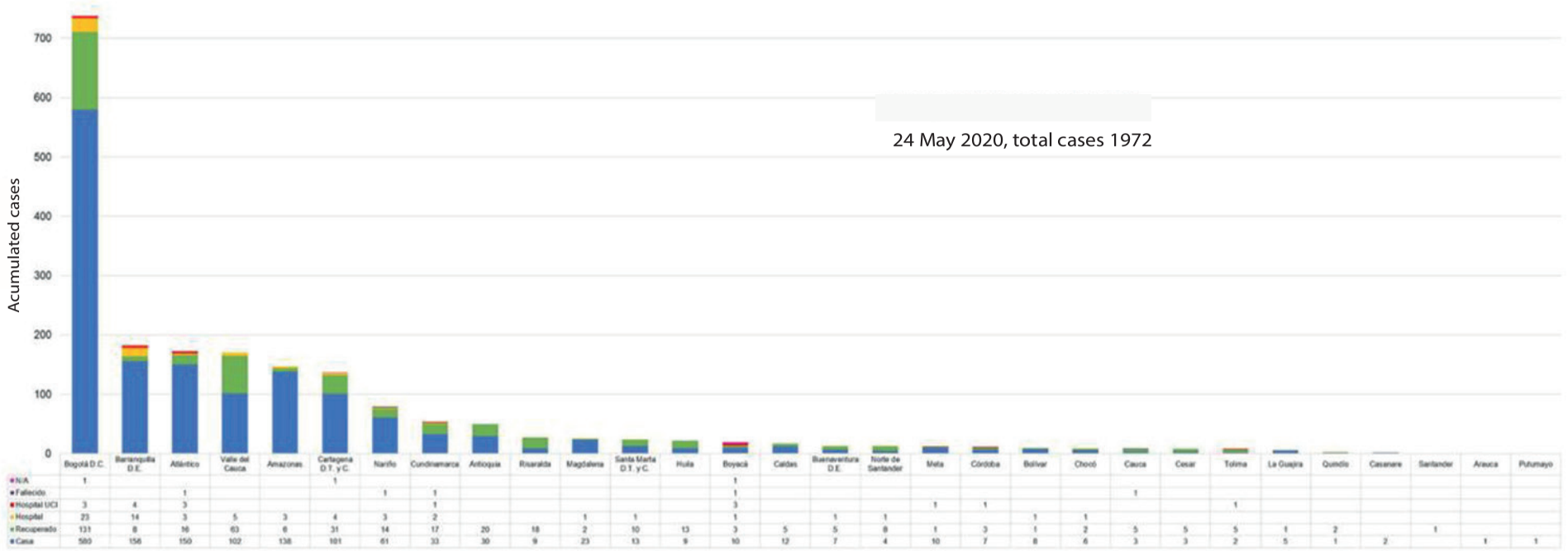
The case fatality rate is uncertain but it is estimated to range from 0.9%-3%. It is comparatively lower than for SARS-CoV and MERS-CoV (6% -17% and 20% -40%), respectively (6,7).

Regarding the pediatric population, in February 2020, a characterization of 2,143 pediatric patients in China was carried out, 731 cases were confirmed by laboratory testing, with a mean age of 7 years and 94.1% were diagnosed as asymptomatic or mild cases. Severe or critical cases were the minority of the series, with an age of less than one year and only one case of mortality associated with comorbidities (8,9,10). In the United States, up until April 202, there were 149,760 laboratory-confirmed cases and 5,443 deaths. Of all the cases, 2,572 equivalent to 1.7% were cases in children under 18 years of age and a total of 3 cases of death were reported in patients associated with other comorbidities in patients of pediatric age (11).

By May 24 in Colombia, 2,504 cases had been reported in children under 18 years of age affected by this virus. The distribution was homogeneous and they are geographically located mostly in the Colombian southwest. The first death was recorded in a three-year-old patient from the department of Cauca with multiple comorbidities including Alagille syndrome with congenital heart disease and biliary tract atresia. They died on March 25, 2020, positive for SARS-CoV- 2 (12).

Bogotá, Valle del Cauca, Barranquilla, Atlántico and Amazonas are the departments that presented the most cases of SARS-COV-2 in the pediatric population, so far only seventeen patients have

Figure 1. COVID-19: Colombia, pediatrics <18 years, information by department, data extracted from the National Institute of Health of Colombia (12).



required hospitalization in an intensive care unit and sixty-five patients in hospitalization wards (12) (Figure 1). The age in which more cases have occurred and that have required hospitalization in an intensive care unit are those under one year of age and adolescents over 12 years of age; five deaths have occurred at ages 1 and 3 (12) (Figure 2).

Regarding the epidemiological link, we can observe that related cases are more common in the pediatric population. A large number of the cases are still under study pending their possible origin (12) (Figure 3).

Virology and pathophysiology

Coronaviruses belong to the Coronaviridae family, Orthocoronavirinae subfamily and the genera (according to their genetic structure) Alphacoronavirus, Betacoronavirus, Gammacoronavirus and Deltacoronavirus. The virus belongs to the genus Betacoronavius and is made up of single-stranded RNA wrapped in a surface with spike-like projections (hence its name). In humans, it can cause respiratory and gastrointestinal symptoms that can range from a common cold to acute respiratory distress syndrome, multiple organ failure and even death (13).

The disease has three phases: in the first phase (called incubation), the virus enters the respiratory tree and begins rapid replication. This phase can last from 10 to 15 days and is generally a phase with no or few symptoms with a low contagion capacity. In the second phase (or pulmonary phase), the enormous immune network located in the respiratory system is activated, thus an adaptive response to the virus is assembled, which in the majority of those affected is a mild response that is self-limited and control of the virus is achieved mediated by the release of interferons from the immune system. This is a phase characterized by high contagiousness and different symptoms depending on the host. In less than 15% of those affected, in the second phase, an immune response is produced without self-control, interferon is not released in the ideal proportion, leading to a disproportionate release of pro-inflammatory cytokines such as IL-1,6, TNF-alpha, released by macrophages and granulocytes that perpetuate an inflammatory state both at the pulmonary level with a complicated respiratory distress syndrome (ARDS), as well as systemically, in other vital organs such as the kidney, heart and intestine. After this state, the resolution phase is passed more or less after four weeks from the inoculation of the virus, where recovery from the damages produced is achieved (14).

The innate immune response depends on the type I interferon (type I IFN) response that controls virus replication and induces an effective adaptive immune response. In SARS-COV and MERS-COV infection in a certain population, especially older adults, the type I IFN response is suppressed in response to viral infection, so pro-inflammatory cytokines are released by neutrophils and macrophages, generating a serious infection. The same mechanism has not been confirmed with SARS-COV2 and it is believed that there is a delayed induction of type I IFN with loss of viral control in the early phase of infection. Regarding adaptive immunity, a TH1 response is mainly given, although a TH2 response with release of IL-4.5-10 has been observed in the most severe cases (15).

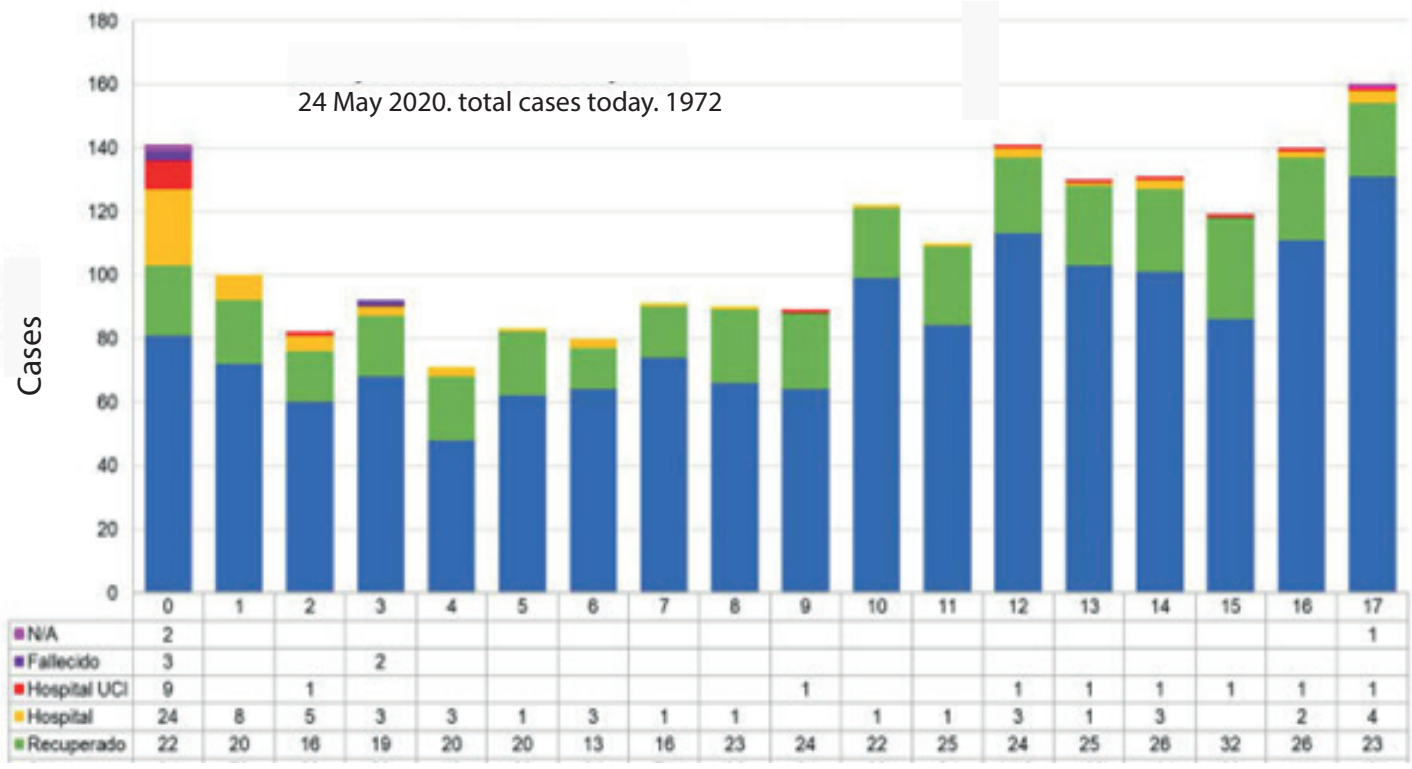


Figure 2. COVID-19: Colombia, pediatrics <18 years, information by age, data extracted from the National Institute of Health of Colombia (12).

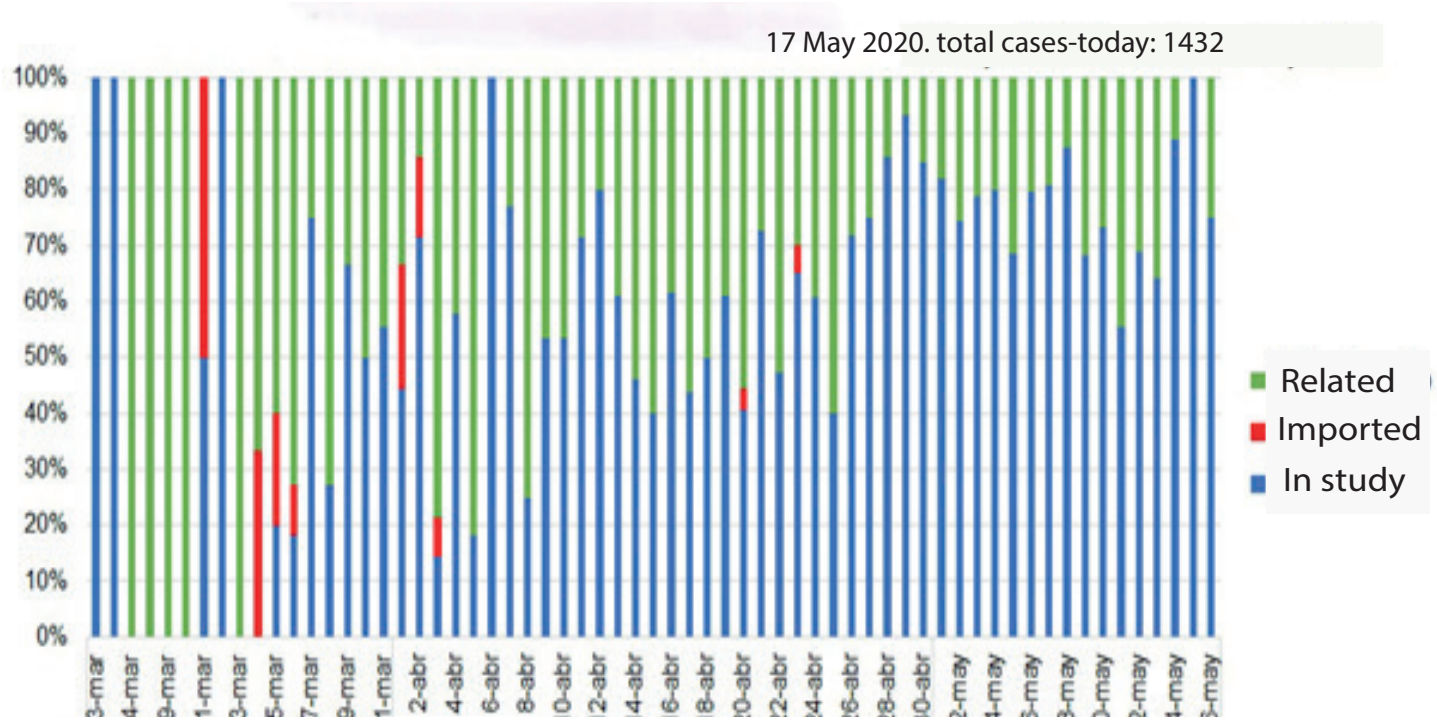


Figure 3. COVID-19: Colombia, pediatrics <18 years, distribution% by nexus and date, data extracted from the National Institute of Health of Colombia (12).

It is presumed that angiotensin-converting enzyme 2 could be the host receptor for SARS-CoV-2. It predominates on the surface of type II pneumocytes, intestine, heart, kidneys, testes and placenta; the virus binds through the S2 subunit of the transmembrane protease serine 2 to the receptor, facilitating the entry of the virus into the cell and allowing viral replication. This fusion generates pulmonary edema, vasoconstriction and a proinflammatory state that can worsen inflammation at the pulmonary level (16). One of the theories put forward is that in the pediatric population, since they present fewer receptors for angiotensin-converting enzyme 2, they would have fewer places for the virus to bind, so the infection would not be as severe (17).

In China, a study was carried out with 173 patients confirmed with SARS-CoV-2 through the use of real-time Polymerase chain reaction (RT-PCR) in respiratory tract samples, who were sampled for total antibodies, IgM and IgG for SARS-CoV-2, which had an average seroconversion of 11, 12, and 14 days, respectively (17).

Transmission

Infection in humans occurs by inhalation. The main sources of infection are patients in the incubation period and in the period of active immune response. The virus spreads through aerosols released by breathing, when patients speak, sneeze or cough, at distances of less than one meter. The highly stable virus manages to survive on different surfaces for several hours and days. Contact with the infected surface and subsequent contact of the contaminated body part with the nose, mouth or conjunctiva therefore achieves virus inoculation (11,18).

Until now, feto-placental vertical transmission has not been reported, but infection has been observed from sick mothers to neonates (19). In Wuhan, a case was reported of a newborn who presented elevated IgG and IgM for SARS-COV-2 two hours after birth, although RT-PCR in a nasopharyngeal sample was negative. High immunoglobulin levels are considered as an intrauterine infection with possible vertical transmission, but more studies are required to verify this possibility since it is the only case reported with these characteristics (20).

As they are barely symptomatic, with symptoms manifested as mild and bizarre, children are very important sources of contagion and spread of the disease, especially in their daily activities, where populations at higher risk are involved (10).

Clinical manifestations

According to the literature, the disease in children can be asymptomatic or present mild symptoms in up to 90% of cases. In a study conducted in China, 2,143 cases were reviewed in children, of which 4.4% were asymptomatic, 50.9% had mild symptoms, and 38.8% had moderate symptoms. In Wuhan, a study was conducted with 27 patients where 15.8% were asymptomatic and 19% had upper respiratory tract involvement. The most common symptoms were fever and cough; admission to the intensive care unit was limited to between 3-6 patients who suffered from other comorbidities (11).

The most frequent symptoms found in all the reported series are fever, cough, nasal congestion and odynophagia, fatigue, diarrhea, and headache are mentioned to a lesser extent (21,22).

The neurological manifestations reported in children are anosmia, ageusia, acute post-infectious myelitis, acute ventilatory failure of central origin, cerebral edema, meningoencephalitis, cerebrovascular accidents, intracranial hypertension, myopathy, altered state of consciousness and Guillain Barré syndrome (23).

Cutaneous manifestations can be diverse. In Italy, a case was reported of a 13-year-old patient who presented round erythematous-purple lesions 5-15 mm in diameter on the plantar surface of the right first toe and on the dorsal surface of the right and left second toes. Blisters and blackish crusts later appeared, and it was diagnosed as acro-ischemia (24,25).

In addition, an unusual increase in cases of multisystem inflammatory syndrome associated with COVID-19 like Kawasaki disease has been reported, for which the WHO has issued an alert and considerations regarding the diagnosis of this disease (26).

As of April 20, 2020, in Italy, 10 children were diagnosed with Kawasaki disease-like inflammation syndrome, five of the children presented with fever, conjunctivitis, latero-cervical lymphadenopathy, and polymorphous exanthema. The other five patients presented with conjunctivitis, polymorphic exanthema, and erythema of the oral mucosa and two of them presented dilatation of the left coronary artery, reduction of the ejection fraction and mitral regurgitation. Their laboratory tests showed elevated ferritin, leukopenia with lymphopenia, thrombocytopenia, which differs from the normal findings in Kawasaki disease which is characterized by thrombocytosis. Additionally, some patients had resistance to immunoglobulin and required the use of steroids as adjuvants (27).

Reported cases in the neonatal stage are rare. In China, a case report was published of a newborn son of a mother with positive COVID-19, who was positive for coronavirus confirmed by RT-PCR for SARS-CoV-2 in pharyngeal swab samples 36 hours after birth. Among the manifestations mentioned, lymphopenia and increased liver enzymes were notable and after support management for 17 days after birth, the patient was discharged (19).

The most frequent symptoms presented by newborns with SARS-CoV-2 infection were fever, cough and emesis, the least frequent presented were tachypnea, tachycardia, nasal flaring, apnea, lethargy and abdominal distension (16,18).

In a series of cases carried out in China, in which 10 neonates were included, 6 were premature and presented symptoms of respiratory distress, fever, increased heart rate and emesis; 4 of the neonates presented feeding intolerance and gastric bleeding (18).

Diagnosis

The definitive diagnosis for clinical purposes is made by real-time detection with Polymerase Chain Reaction for SARS-CoV-2 (RT-PCR SARS-CoV-2) in samples of tracheal aspirate and nasopharyngeal or oropharyngeal swab. It is not recommended for this to be performed on sputum due to the risk of aerosol production. If the test is negative and there is high suspicion of infection, the test should ideally be repeated in 48 hours. Invasive tests such as bronchial lavage should be performed only when the results are inconclusive or an alternative diagnosis is suspected. They should never be routinely requested, due to the high risk of contagion that they entail (28).

The most widely used complementary paraclinical tests when the patient requires a hospital setting do not vary between the adult and pediatric population: those formulated are blood counts where the most striking finding is lymphopenia, neutrophilia and thrombocytopenia, CRP (C-reactive protein), LDH (lactate dehydrogenase) and CPK (creatinine phosphokinase) are increased, liver enzymes, bilirubin, renal function, troponins, EKG (electrocardiogram), arterial gases are reserved for patients who are in severe disease progression. D-dimer has been designated as a marker of disease severity and is ideal for follow-up (28). The role of procalcitonin is still not clear and more studies are required to define its usefulness: it has been found that there can be normal or high values in severe cases, especially those associated with bacterial superinfection (29).

Imaging aids are useful to show pulmonary compromise and chest X-rays show findings compatible with pneumonic processes such as unilateral or bilateral consolidations, parenchymal opacities in ground glass or thickening of the bronchial wall, adenopathies or effusion (30,31). Chest computed tomography (CAT) is performed when the patient has severe disease progression, when SARS-CoV-2 pneumonia is highly suspected, but the chest radiograph is normal or nonspecific (32).

Some studies talk about the usefulness of using chest CT at the time of diagnosis because laboratory tests require processing time, but more studies are required to verify the validity of this recommendation since they are images that are not available in all hospitals (32,33).

Complications

The complications that can occur in patients with SARS-CoV-2 infection include: the first and most feared which is ARDS, secondary to the inflammatory process in the lungs, there is a compromise of the oxygenation barrier which, together with the severe inflammatory process, are responsible for promoting the rest of the complications, including septic shock, disseminated intravascular coagulation, heart failure, myocarditis, elevated liver enzymes, impaired renal function. The pediatric population at greatest risk for this complication are those under 1 year of age (34).

Treatment

Several clinical trials are underway to evaluate different agents and therapies around the world. Unfortunately, very few of these studies involve the pediatric population. Data will therefore have to be extrapolated from adult studies to children.

Next, we present proposed therapies for the pediatric population, and we also mention procedures performed in adults with certain levels of evidence that at some point could be useful in pediatrics.

Treatment in pediatric population

Fortunately, pediatric patients have mild symptoms and low mortality. Ideally, they should be managed on an outpatient basis with strict isolation and should avoid contact with populations at risk. Recommendations include constant hand hygiene, symptomatic support with antipyretics such as acetaminophen every six hours and adequate telephone clinical surveillance with alarm signs to consult the emergency room (35).

If the patient requires hospitalization, strict isolation must be guaranteed, along with biosafety measures for the health personnel involved in their care, such as cubicles ideally equipped with negative pressure. In addition, for patient support, adequate hydration is recommended, a caloric intake appropriate for age that allows a fluid and electrolyte balance, oxygen if necessary, to maintain an oxygen saturation (SATO2) greater than 92%, with a delivery system that does not disseminate aerosols to avoid contagion. Paraclinical tests should be taken as necessary as explained above (35).

The use of antibiotics is only recommended in patients with suspected bacterial co-infection or in patients with septic shock. The use of antivirals is not recommended since they have not been shown to have no action on the virus. Oseltamivir is only used if there is coinfection with influenza A (28,30).

In Colombia, on May 24, 2020, in a statement from the Colombian Association of Infectious Diseases (ACIN) through its official website, they make recommendations based on expert consensus and informed by the evidence for the management of SARS-CoV-2/COVID-19 (36) (Table 1).

In patients with ARDS, septic shock, encephalitis, hemophagocytic syndrome, severe bronchospasm, glucocorticoids can be used for 3-5 days; In severe cases, intravenous immunoglobulin G has been used, but more studies are needed to confirm its efficacy (37).

Patients with ARDS are managed according to the 2015 PALICC guidelines, which give us the following recommendations (38)

- Early start of enteral feeding in the first 48 hours
- Maintain a hemoglobin greater than 7 gr/dL.
- Start of mechanical ventilation with the following parameters: tidal volume of 5-8 mL/kg in patients with adequate compliance and 3-6 mL/kg when there is inadequate compliance, plateau pressure less than 28 cm H2O, inspiratory pressure (PIP) between 30-35 cm H2O, pressure at the end of expiration (PEEP) between 10-15 cm H2O to avoid alveolar collapse, high respiratory rate for easier removal of CO2, SATO2 between 88-92% if it is severe and between 92-97% if it is mild
- A permissive hypercapnia PCO2 70 and a PH of 7.15-7.3 are accepted.
- Recruitment maneuvers improve oxygenation and lung compliance
- The prone position increases functional residual capacity and allows redistribution of pulmonary perfusion, with improvement in the ventilation/perfusion ratio, which is why it is recommended to perform it early.
- There is no evidence on the use of glucocorticoids, surfactant or nitric oxide, the latter unless it is accompanied by right ventricular dysfunction and pulmonary hypertension or in very severe cases of ARDS.
- High-frequency ventilation is considered in patients with severe hypoxemia, difficult-to-manage hypercapnia, and a peak pressure of 30 with high ventilatory parameters and a severe oxygenation disorder.

In case of septic shock, fluid resuscitation should be started,

Table 1. Recommendations based on expert consensus and informed by the evidence for the management of SARS-CoV-2/COVID-19.

It is suggested NOT to use Hydroxychloroquine or Chloroquine in clinical practice in the management of patients with SARS-CoV-2/COVID-19 infection. Weak against. Good practice point. The use of Hydroxychloroquine or Chloroquine will only be considered in the setting of an approved clinical trial
No recommendation is issued for or against the use of Lopinavir/Ritonavir in patients with SARS-CoV-2/COVID-19 infection. Good practice point. The use of Lopinavir/Ritonavir will only be considered in the setting of an approved clinical trial.
There is no consensus to issue a recommendation for or against the use of Tocilizumab in patients with SARS-CoV-2/COVID-19 infection
EIt is recommended NOT to use Azithromycin as an antiviral alone or in combination in patients with SARS-CoV-2/COVID-19 infection. Strong against.
It is suggested that interferon B therapy as an antiviral in SARS-CoV-2/COVID-19 infection be considered only in approved clinical trial settings. Weak in favour.
It is suggested that the use of Remdesivir as an antiviral in SARS-CoV-2/COVID-19 infection be considered only in approved clinical trials. Weak in favour.
It is suggested that the use of Ivermectin as an antiviral in SARS-CoV-2/COVID-19 infection be considered only in approved clinical trial scenarios. Weak in favour

Adapted and modified from: http://acin.org/images/guias/coronavirus/Comunicado_10.pdf

repeating if necessary and evaluating signs of fluid overload, taking blood cultures, starting antibiotics within the first hour and monitoring diuresis, capillary refill, peripheral perfusion, venous oxygen saturation, heart rate and blood pressure, and start of epinephrine and norepinephrine support if necessary, according to the indications of the 2020 sepsis survivor monitored in intensive care units (28,39).

The patient can be discharged when there is no fever for more than 48 hours, improvement of respiratory symptoms, hypoxemia and good tolerance to oral administration (30).

Treatment in neonatal population

Neonates should be in an isolated cubicle and the management of patients with acute respiratory distress syndrome common to their conventional management should be carried out with measures such as surfactant, oxygen with invasive, non-invasive or high-frequency mechanical ventilation (40).

Protection measures based on promotion and prevention

Studies have been carried out that have shown that the best way to control viral transmission is social isolation, that is, not less than two meters away from another person, not having meetings of more than 10 people; hand washing with soap and water for 30 seconds, several times a day or use of glycerinated alcohol allows the elimination of the virus, use of a surgical mask. Another measure that has shown efficacy is not touching the face at any time to avoid transmission of the virus after touching an object contaminated by it, and disinfection of surfaces with disinfectants or alcohol with a concentration greater than 70% are measures that ensure the elimination of the virus (12,31,41).

Regarding the measures within the outpatient area, two meters must be maintained between patients, there should be no toys and books that children could share and those over one year old must wear a surgical mask. Those children under one year of age must remain in their car (42).

Conclusion

SARS-CoV-2 is a highly contagious infection that to date has had mostly severe manifestations in the adult population with a history of comorbidities, while in the pediatric population it mostly presents moderate and mild clinical manifestations; mortality cases reported in children are those with comorbidities. The specific treatment for adults and children is still under study and there is no specific antiviral management at the date of this publication. For the time being, supportive measures should be continued with specific symptomatic management for each of the complications that could occur. The main strategy is therefore prevention through hand washing, use of masks according to indications, and social isolation in order to prevent spread to other age groups with higher morbidity and mortality and possible associated complications.

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