

Covid-19: Why the Children are Less Affected?

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Coronaviruses are a large and diverse group of viruses, many of which are animal viruses. There are several known coronaviruses that infect humans and often cause mild respiratory diseases, such as the common cold. Before the Covid-19 discovery, six coronaviruses were known to infect humans. Four of them (HKU1, NL63, OC43 and 229E) predominantly cause mild to moderate upper airway disease and are believed to be responsible for 10% to 30% of common colds. Occasionally, they cause viral pneumonia and can be detected by some commercial panels.

However, at least two previously identified coronaviruses have caused severe disease - severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) with high mortality, around 10 and 34% respectively.

The new Coronavirus (Covid-19), was reported to WHO on December 31, 2019, with the identification of several cases of patients with pneumonia of unknown cause, in workers and frequenters of the fish, live seafood and poultry market in the city of Wuhan, Hubei province. The current outbreak is caused by Covid-19, a previously unknown beta coronavirus. The most frequent transmission is from animal to animal. In this case, animal to human transmission is related (~ 96%) to a bat virus and shares about 80% of sequence homology with SARS. The bat, as the initial host, passed on to people through pangolins that were sold at the Wuhan market. Subsequently, there was transmission from man to man, through the first case between members of the same family, who were not in the Wuhan market. An affected person may be symptom free and transmit the disease even during this period. Compared to the SARS virus, contagion is easier, as demonstrated by the number of existing cases. However, mortality is lower: 2 - 3%.

The symptoms are similar to a flu virus infection. The incubation period varies from 2 to 14 days, with the peak between 4 - 7 days. Fever and cough appeared in 80% of cases, diarrhea with 24 hours of evolution in 4% and 98% showed radiological viral pneumonia, but only 25% required intensive care. At this stage, the chance of transmission is greater, but in the incubation period, without any symptoms, the transmission can also happen.

In most cases, male is more affected than female and the average age is > 55 years old. Patients with a weakened immune system either secondary to the disease or because they are undergoing radio/chemotherapy and people with chronic diseases such as diabetes, lung, heart, kidney disease, among others, are more vulnerable.

Why the children are less affected?

In a review of Wuhan cases confirmed, clinically apparent pediatric infection (< 13 years of age), appears rare, but subclinical infection can certainly occur. Vaccines against viruses in the first 2 years of age, can play a defensive role through immune memory. Children, despite being more vulnerable and having less defenses at the onset, often have many viral infections in childhood and consequently the

immune system is much more stimulated and prepared to defend against further new attacks. Some vaccines, like flu can create cross reaction with other virus infections and can help to protect and provoke a better respond from the immune system.

A vaccine against Covid-19 is being tested in several countries, including China, Hong Kong, Australia and the United States. However, they have not yet been used in humans and of course it will take time, to be proven of its effectiveness and safety.

Until then what we can do?

We can use surgical masks, frequent hand washing with soap and water, lasting at least 20 seconds or with alcohol, avoid places with lots of people and closed environments, cover your nose and mouth when sneezing or coughing (with tissue paper or with your arm, never with your hands), throw the tissue in the trash, wash your hands right away and avoid travel to high-risk areas, such as China, namely Wuhan City and Hubei Province.

What to do if I have to travel to risk areas?

Follow the recommendations of the country you visit, follow the recommendations of your own country or city regarding the care to be taken in these places, avoid contact with patients with respiratory problems, wear surgical mask, wash your hands frequently, avoid contact with animals and do not eat raw or undercooked food.

What to do if you have traveled to risk areas?

If you have been in China in the last 14 days and have experienced fever, cough, difficulty breathing or diarrhea for > 24h, you should: seek medical attention immediately, before going to the doctor's office or the emergency room, call ahead and inform them of your recent trip and your symptoms, avoid contact with other people, do not travel while you are ill, wear a surgical mask before going to the doctor or hospital, cover your mouth and nose with a tissue or sleeve (not your hands) when coughing or sneezing, wash your hands frequently with soap and water for at least 20 seconds or use an alcohol-based hand sanitizer if there is no soap and water.

The treatment is directed at the patient's symptoms. Antivirals do not work on coronaviruses although remdesivir is using for test at this moment. Antibiotics are not used as a treatment of first choice. It is important, at this stage, to try to stimulate the immune system: encourage breastfeeding in babies, reduce stress (reduce the level of cortisol, which is aggressive to the immune system), use probiotics such as *Lactobacilli* and *Bifidobacteria* that stimulate the intestinal mucosa, ingesting the vitamin C (stimulates leukocyte activity).

What do we do at the hospital in case of suspicion?

If the patient comes with fever or cough or diarrhea for > 24h or difficulty breathing, plus history of contact with affected patient with Covid-19 or visit or contact with family members in the last 14 days from China, (Wuhan namely), have been in hospitals or clinics in China for the past 14 days, have lived with someone > 13 years old with a fever and cough, have contacted a large number of tourists from China for professional reasons. In all these situations, we send the patients to a "Special ER" zone and test for influenza viruses, others common viruses and Covid-19. If the tests are negative, the Covid-19 survey is repeated 48 hours later. If positive, the patient is sent to the infectious disease ward for treatment (if necessary) and isolation for 14 days. At that stage, will also do the stools screening for coronavirus. Family members or others who have been in contact are also screened.

What measures are supposed to take in each city?

We need to create a Special group to monitor the Wuhan epidemic. This group can give daily information to the general population on the evolution of detected cases, new cases and suspected cases and inform the measures related to prevention, such as the use of masks and hand washing, in addition to avoiding frequent closed spaces and/or with a lot of people. Schools need to be closed for an indefinite period until the disease is under controlled. Closure of other public places to avoid the risk of contagious is also recommended. In hospital,

we can restrict patient visits by family members, only in exceptional cases. Tight control at the various borders. Suspend flights to China, particularly to high-risk areas. Control of tourists or people who were or came from the province of China, particularly Hubei. Apply quarantine in suspected or high-risk patients with medical surveillance. Use surgical masks in public transports.

What is the rest of the world doing?

WHO declared that Covid-19, since 1/30/2020, is an international health emergency. This means greater control of the disease, greater international collaboration, greater epidemiological surveillance, greater support for countries with poor public health network, higher infant mortality, countries with few economic resources and with poor quality sanitary networks. WHO will support the country where it all started, in this case China, particularly the Wuhan city, from a medical and scientific point of view, in search of a vaccine or other type of treatment to reduce the effects caused by the virus, as well as working together to contain this epidemic.

If all the countries involved collaborate to fight the same enemy, in this case Covid-19, everything will be controlled in the short and medium term. The closure of several provinces in China was an unprecedented but courageous measure, thus avoiding a national and world catastrophe. Even so, there are several countries with imported cases.

What about the future?

By controlling through thermal screening, an individual questionnaire about each person with a history of travel to Wuhan or other city of China, the quarantine and the call to stay home during this period, are measures that will have an effect worldwide to stop this epidemic caused by the Covid-19 coronavirus. We hope that the vaccine will create sooner or later a great help to avoid this infection. And the antiviral therapy, will fight the Covid-19 with efficacy [1,2].

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