

# The COVID-19 Pediatric Riddle



PHOTO ROBYN BECK, AGENCY FRANCE-PRESSE

Infected children may also have undetected neurological symptoms, which may have longer-term consequences, that a specific antibody test may detect.

**COVID-19 does not affect children very much. But it can cause severe pediatric neurological complications. To better understand the phenomenon, pediatric hospitals share their experiences and seek to identify patients at risk.**

Posted on June 14, 2020 at 6:00 a.m.



**MATHIEU PERREAULT**

THE PRESS

"We have developed an antibody test so precise that it detects children who have never tested positive for the virus by swabs," says Adam Cunningham, author of the University of Birmingham in England. of a study on the subject published in early June on the medRxiv pre-publication site. "We detect a much lower level of antibodies than other serological tests."

The hundred or so children studied by Dr. Cunningham presented in April at the Birmingham Pediatric Hospital, which covers a large area of central England, with neurological symptoms. All pediatric patients with similar symptoms in the UK have their records sent to Birmingham for a pooled analysis. The serological (blood) test detecting the presence of antibodies to SARS-CoV-2, the coronavirus responsible for COVID-19, showed that they had been infected several weeks or even months ago.

"It shows there is a delayed reaction," says Dr. Cunningham. Our test eliminates other sources of diagnosis. The British researchers named this neurological problem related to COVID-19, similar to a rare disorder called Kawasaki syndrome, "pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2", or PIMS-TS according to the acronym. The next step is to find antibodies specifically linked to PIMS-TS and see if it is an autoimmune reaction. "Given the time between infection and neurological symptoms, it could be an inflammation of the brain vessels," says Dr. Cunningham.

**Infected children may also have undetected neurological symptoms, which may have longer-term consequences, that a specific antibody test may detect.**

Kawasaki syndrome, which we normally see dozens of cases per year in Quebec, is associated with viral infections. Its symptoms are prolonged fever, rashes, joint pain, and inflammation of the hands and feet. Deaths are very rare. Dr. Cunningham also noted that the PIMS-TS strikes children older than does Kawasaki syndrome, which mainly affects children under 5 years. "We even saw a teenager," says Dr. Cunningham. About ten potential cases of PIMS-TS have been reported in Quebec.

## **Sharing essential knowledge**

The kind of collaboration that led to Dr. Cunningham's test was quickly established between pediatric hospitals for COVID-19. "We immediately added free information sharing on COVID-19 for all pediatric hospitals," said Brian Reisner, Director of Operations for Virtual Pediatric Systems (VPS), a paid information exchange network of 135 pediatric hospitals in Canada and the United States.

**It allowed everyone to quickly know what to do with the rare pediatric patients. We are in the process of setting up an information exchange system for cases of neurological inflammation linked to COVID-19. They are so rare that it is difficult for a pediatric hospital to determine on its own how to react.**

Brian Reisner, Director of Operations, Virtual Pediatric Systems

VPS, which has been in existence for almost 20 years and has published several studies using an extensive database of pediatric intensive care patients, has also tracked the proportion of adult patients with COVID-19 who have been admitted to intensive care units. "In Canada, it was very low, but in the United States, in some hospitals, we have reached 40% of the beds," says Reisner.

## **Improve care**

The two Montreal pediatric hospitals took advantage of this free VPS service, which was founded by Californian intensivists. "It allowed us to see what others were doing, which was precious given that we had so few young patients," explains Patricia Fontela, VPS link manager at the Montreal Children's Hospital. "One way we were able to avoid intubation was because other hospitals reported that a simple oxygen mask worked."

Guillaume Emeriaud, head of the VPS link at CHU Sainte-Justine, confirms that sharing information with the other pediatric hospitals in the VPS network has made it possible to avoid intubations, which are much heavier in terms of staff. "We also had links with European hospitals which helped us a lot," says Dr. Emeriaud.

#####