KAWASAKI DISEASE AND CORONAVIRUS

Nearly half a century ago, Dr Kawasaki described the 50 cases of the eponymous disease whose etiology continues to flummox us. It has again reared its head in the alpine city of Bergamo in Lombardy, Italy. Pediatricians in the busy Hospital Papa Giovanni XXIII noticed a 30 times increase in the monthly incidence of Kawasaki disease between February, 2020 and April, 2020 compared to the previous 5 years. They analyzed the clinical data of these children diagnosed during the COVID19 pandemic and compared them to those diagnosed with Kawasaki disease between January, 2015 and February, 2020.

They found that the children with Kawasaki diagnosed during this pandemic had higher incidence of Kawasaki shock syndrome (50%), meningeal signs (40%), macrophage activation syndrome (50%) and abnormal echocardiography (60%). Seventy percent met criteria of an abnormal Kobayashi score, which predicts IVIG resistance, and needed adjunctive therapy with steroids.

Testing for SARS CoV-2 revealed positive IgG antibodies in 80% but a nasopharyngeal PCR for virus was positive in 20% only, suggesting an immune-mediated phenomenon. Coronaviruses have been implicated earlier also as the etiological basis of Kawasaki disease but had not been proven due to low PCR positivity.

The study has put all pediatricians on high alert and may shed light on the obscure origins of Kawasaki disease.
(*Lancet Online May 13 2020*)

A VACCINE AGAINST SARS-COV-2

The COVID-19 pandemic continues its relentless march across the globe. It is clear we are in for the long haul. Consequently the race for the vaccine is heating up. As of 28 April, 2020, there are 90 contenders. At least six have started safety trials in humans.

What is the modus operandi of the various vaccines? The commonest approach is the protein subunit vaccine. There are 28 teams targeting the spike protein or its receptor binding domain. The technique has been evaluated for SARS-CoV-1 in monkeys. The downside of these vaccines is the need for adjuvants and multiple doses. Twenty five groups are working on the viral vector based vaccines. Here, attenuated viruses like measles or adeno are genetically engineered to produce coronaviral proteins. This approach has been successful in the recently approved Ebola vaccine. However, sometimes previous immunity to the viral vector may interfere with a robust immune response.

Johnson and Johnson is experimenting with a killed viral vector vaccine. And Codagenix, New York and Serum Institute, India are working together to develop an attenuated live viral vaccine. Human safety trials have already begun in Beijing using an inactivated whole viral vaccine; some other groups are attempting to make a nucleic acid based vaccine.

Unanswered questions include how rapidly these can be developed, tested and clear safety trials. Who needs it most? What will the costing be? Economics and politics will soon overshadow medicine and ethics.
(*Nature News 28 April 2020*)

WHY IS SARS-COV-2 KINDER TO CHILDREN?

Overall experience shows that children may be less severely affected by SAR-CoV-2. This means understanding the disease in children may be the key to mitigating the disease in adults.

The first hypothesis involves the differential expression of the ACE- 2 receptors in children, through which the virus enters the cell. However, ACE-2 also plays a crucial role in converting angiotensin II to Angiotensin (1-7) and thereby attenuating its damaging effects on the lungs and cardiovascular system. Patients with chronic diseases have been noted to express less ACE-2 receptors. Evaluation of ACE- 2 levels in children may shed further light on the issue. The second possibility is that the innate immune system in children may be more battle ready to handle new organisms. Children have been shown to have natural antibodies of the IgM isotype with a broad reactivity and affinity independent of previous encounter with a particular organism. Recurrent infections that children have and their ongoing regular immunization may induce an enhanced state of activation, which would result in more effective defense against novel pathogens. There are data to show that children who were immunized against measles, and also after influenza vaccinations, had an overall reduction of other infections besides measles or influenza.
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