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# Is the impact of childhood vaccines on coronavirus disease 2019, which is moderate in pediatric patients, possible?

A new-generation coronavirus type causing coronavirus disease 2019 (COVID-19) was detected in the city of China in Wuhan in December 2019. First called 2019 new coronavirus (2019 nCoV) and now referred to as severe acute respiratory distress syndrome coronavirus-2 (SARS-CoV-2), this virus caused the COVID-19 pandemic by spreading out first in China, and then all over the world. Although information about the disease is very new and limited, it is seen that it affects children much less than the elderly population, and the mortality rate among the pediatric cases is low [1]. Moreover, investigating why this age group is less affected is very important for setting new treatment goals for the disease. So, we need to understand why coronavirus is so mild in children.

There were some theories, first one is immune system differences between children and adults, which, according to one belief, the disease is caused by the body's overreaction and cytokine storm, and the thought that a lower degree of responsiveness of children can positively affect the course of the disease; the other is the reduction of the receptor angiotensin converting enzyme-2 (ACE2) receptor, which is necessary for SARS-CoV-2, with its widespread use as a drug for hypertension in adults, this condition is rare in children; another theory is that children have different viruses in their lungs and airways, and these viruses do not allow SARS-CoV-2 with their own internal dynamics [2].

At the current point, we think that childhood live vaccines, especially measles and bacille Calmette-Guérin (BCG) vaccines, can be effective in protecting children from SARS-CoV-2. Prior to the measles vaccine, the most important cause of mortality due to measles, was pneumonia and associated acute respiratory distress syndrome. The fact that childhood deaths decreased more than expected after measles vaccination suggests that the immune response acquired with measles vaccine may reduce other viral infections, especially affecting the respiratory tract [3]. In the study of Escriou et al. [4] at 2014, the recombinant measles vaccine expressing spike glycoprotein in the measles virus sensitive mouse caused a very strong T helper 1 response and could be an important candidate for the SARS-CoV. This supports our hypothesis. Again, it is known that BCG vaccine is more prone to tuberculosis meningitis, miliary tuberculosis, and long-term rather than active tuberculosis. Similarly, BCG is thought to reduce mortality due to reducing other respiratory infections [5].

Childhood vaccines may be effective on ACE receptors in the lung or prevent cytokine storm. However, long-term studies are needed to say these. The proportion of COVID-19 infected pediatric patients in the world is not yet fully known. Due to the increased vaccine hesitation in recent years, it is intriguing whether children infected

with COVID-19 are vaccinated and live in an area with high vaccine hesitation.

Finally, we think that childhood vaccines can be effective in observing COVID-19 infection as a mild disease for pediatric population. However, we need more knowledge about the pandemic considering that pediatric cases may be helpful in shedding light on the treatment of the disease.

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