

Where are we in the Covid-19 Pandemic, on Fifth Month (Expert Opinion)

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Many countries around the world have passed the peak of their epidemics, few have contained the virus. But already an obvious drastic consequences on economy and many aspect of human life globally are alarming, while we are still learning about the novo virus and the disease, revising and updating our knowledge in treatment, in answering questions to understand how to live with it until effective vaccine is available, or effective treatment or global herd immunity is achieved in the end.

Many virologist and epidemiologist all over the world including Prof. Dr Lothar Wieler, President, Robert Koch Institute, Berlin, Germany [1] said the epidemic will last 2 years, by the end “60 - 70%” of population globally would have been infected and developed the so called herd immunity unless effective vaccine developed and distributed, this raise question about the increased possibility of mutation of covid-19 virus being RNA virus, many even wonder would vaccine when become available even works, but what is relatively assuring that the virus until now undergoing very small genetic changes to evade immune system, and the sequences of original virus isolated in China are very close to one in united state [1], this fact also acts in support of excluding re-infection in recovered individuals from COVID-19 who is testing positive in many countries, the given possible explanation, is not due to infection with new mutation or same virus but rather PCR testing doesn't differentiate between live virus and dead one within the garbage of dead infected cells [2] and only culturing the virus will clarify the live virus from dead one.

It's important to know as well that covid-19 the deadly disease for many is not causing chronic disease like DNA virus in “HIV” which can stay dormant in the cell nucleus for years as latent infection, while in covid-19 the RNA virus enter cell cytoplasm and after replication it spread either to adjacent cell or by budding free viruses. Studies found that covid-19 virus persist for 30 days in respiratory tissue in severe infection [2,3] compared with 21 days in mild disease and found that in mild disease viral load peaks in second week after disease onset whereas viral load continued to be high during the third week in those with severe disease therefore the risk of viral spread and infectivity accordingly. Recent study found the virus in stool of infected patients and it persist in stool longer than in respiratory tissue pointing that transmission through it perhaps should not be ignored [4].

Our understanding of the disease is progressing, the answer of why is it severe in some people and not in others? Studies found the cause lies in individual genetic variation in HLA class1 [5] which we know from basic immunity to viral infections that viral antigen “epitope” must combine to self HLA class1 in the infected cell to get identified by T-cells on cell surface and the more the binding is perfect the strongest the immune response, the study [5] showed people who has special allele HLA-B*46:01 had the fewest predicted binding peptides for COVID-19 suggesting individuals with this allele may be particularly vulnerable to COVID-19 and as HLA typing not expensive the study suggest pairing HLA typing with COVID-19 testing where possible and thus identifying people at risk and in future following the development of vaccine those vulnerable individuals could be prioritized for vaccination.

Another study [6] revealed that the secret why children have mild disease and rarely respiratory distress syndrome and ICU admission is due to their activated state of innate immunity by repeated exposure to viral infections in childhood and immunization “trained immunity” which represent an innate immune memory cells especially natural killer (NK) cells but not in neonate and infants below 12 month

and comparing to adult children have much higher number of lymphocyte B,T and especially NK and high ACE2 receptors concentration. But Children are a possible source of transmission of the infection, furthermore where obesity is high in children it could shift severe disease to this younger age group, as it is currently seen in USA obese children increasingly admitted to ICU [7].

BCG vaccine has drawn the attention largely, a trial in process “giving BCG vaccine to boost non specific immune response and antiviral response” [8].

Important questions are not answered yet particularly do we confer immunity after covid-19 infection and for how long? COVID-19 is a human race disease in our highly connected world but in the current wave every country fighting its own battle with difficulties even for richest countries, some going national and some suffering hunger and poverty specially in vulnerable economy and after lock down measures, covid-19 reminding us that our health is connected, everybody has right to treatment, to strong public health, to food, to homes. Top scientists warn to avoid worse pandemic in future by commitment to our duty to preserve environment, stop exploiting wildlife. Finally it's so obvious only with international collaboration we can win, we have sufficient guidance by ongoing scientific works and CDC and WHO sustained efforts to survive the coming two years whatever the scenario is going to be, is it ups and downs of outbreaks according to loosening the restrictive measures, or only as slowly as detecting new cases and contacts and perhaps the less likely scenario is the second dangerous wave in autumn as usually strongest response happens at the beginning of epidemic.

Hopefully we succeed with effective vaccine.

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