COVID, CONSPIRACY & CAUSATION

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Implications of Covid-19 for India's geo-biostrategic game plan and new biosecurity doctrine

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"There is poison in the fang of the serpent, in the mouth of the fly and in the sting of a scorpion; but the wicked man is saturated with it." - **Kautilya, Arthashastra.**

Many new questions have been raised by the present Covid19 pandemic. **First**, it has added a nano-level dimension as what we are dealing with are infectious nanoparticles. Ultra-submicroscopic Viral Ribonucleoproteins. **Second** India has absolutely nothing to match Chinese capacity in Virological, nanobiotechnological and Synthetic biology research. China may be using artificial intelligence and robotics in such research. **Third**, Covid-19 may not be the last infectious virus to emerge from China. **Fourth**, there is more focus on the product that is the Covid19 genome than the process of its genesis and

the focus is drifting away from secret Chinese research on designer coronaviruses and maybe other lethal viruses. **Fifth**, there needs to be a total overhaul of the U.N. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BWC) in the light of present pandemic and India needs to play a decisive role in permanent elimination of the bioweapons from the planet. In this regard the report of the deliberations by leading experts from government, academia, and business conducted on August 27, 2019, by Sandia National Laboratories (SNL) and the Council on Strategic Risks (CSR), USA to discuss the vision of making bioweapons obsolete becomes useful. Sixth, India needs a knowledge-based brand new geo-biostrategic game plan in 21st century and a new national biosecurity doctrine.

First, we need to investigate whether China has the capacity to engineer a lethal infectious Coronavirus like Covid-19. Scientists have been producing designer viruses. In 2011 Wimmer E and Paul AV both from Department of Molecular Genetics and Microbiology, Stony Brook University, USA published a remarkable review ‘ Synthetic poliovirus and other designer viruses: what have we learned from them?”. In the Annual Review of Microbiology (65:583-609). Before we address the issue of the novel Coronavirus as a possible bioweapon, we need to see what they mentioned about the technical capacity that was available to design custom made viruses outside the host cells a decade ago. I would quote only

the relevant part about designer coronavirus.

How Scientists designed synthetic SARS- CoV?

In 2002 a coronavirus (CoV) causing a severe acute respiratory syndrome (SARS) emerged from China and the epidemic ended on July 5, 2003, after more than 2300 cases. Coronaviruses having some of the largest positive-strand RNA genomes in nature are divided into three groups (I, II, III). The infectious SARS CoV was characterized as an early split-off from group II. The scientists sequenced bat genome from faecal samples. Wimmer and Paul reported (2011) the work done by MM Becker and his team in 2008. Their publication in US national Academy proceedings bears an interesting title- “Synthetic recombinant bat SARS-like coronavirus is infectious in cultured cells and in mice”. Wimmer and Paul have summarized their research- “To identify the steps involved in the adaptation of SARS CoV from bats to humans, Beckeret al. have chemically synthesized a consensus bat SARS-like coronavirus (Bat SCoV) genome, considered the most likely progenitor of the SARS epidemic in humans. After replacing the receptor-binding domain (RBD) of bat SARS CoV with the RBD domain of human SARS CoV, they successfully produced an infectious clone. MacRoy and Barin had shown in 2008 that “the RBD domain was previously shown to be a region associated with CoV host range expansion”.

Now we come to the most important comment by these review authors- “The chemical synthesis of the infectious

SARS CoV chimaera demonstrates the usefulness of genetics and whole-genome synthesis in the investigation of the “trans-species movement of zoonoses”. It would be naive to believe that state-funded virological laboratories in China were not engaged in such investigations on designer coronaviruses.

Bat Coronavirus research in China

In the guise of Chinese Academy of Sciences, the real masters and controllers of all virological research in china are from Peoples’ Liberation Army (PLA) which takes orders from Central Military Commission (CMC). Therefore, behind its global intellectual façade, the world would never know what is going on inside CAS Key Laboratory of Special Pathogens and Biosafety, at Wuhan Institute of Virology. In March 2019 virologist Yi Fan from this institute with three others published a paper – “Bat Coronaviruses in China”. This is an eye-opener paper a few months before the Wuhan new coronavirus outbreak. Because there was some serious work going on at that time on different strains of the coronaviruses closely related to Covid-19. The summary of the paper informs us- “During the past two decades, three zoonotic coronaviruses -Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), and Swine Acute Diarrhoea Syndrome (SADS) were identified. SARS and MERS emerged in 2003 and 2012, respectively, and caused a worldwide pandemic that claimed thousands of human lives, while SADS struck the swine industry in 2017. They have common characteristics,

such as they are all highly pathogenic to humans or livestock, their agents originated from bats, and two of them originated in China." These authors then predict – "it is highly likely that future SARS- or MERS-like coronavirus outbreaks will originate from bats, and there is an increased probability that this will occur in China. "This is an important and interesting prediction just a few months before the outbreak in Wuhan. It is too much of a coincidence.

This team then gives some idea of what they were working on – "therefore, the investigation of bat coronaviruses becomes an urgent issue for the detection of early warning signs, which in turn minimizes the impact of such future outbreaks in China. The purpose of the review is to summarize the current knowledge on viral diversity, reservoir hosts, and the geographical distributions of bat coronaviruses in China, and eventually, we aim to predict virus hotspots and their cross-species transmission potential." So by March 2019, at least the Chinese virologists were playing in their laboratories with diverse strains of wild bat coronaviruses. They surely knew that there were high chances of "outbreak" and "increased probability" that China would be host to the new lethal strain. This part could be for general consumption of the rest of the world but we cannot doubt the capacity of the Chinese laboratories to produce designer Coronaviruses just as what they did in the USA for "investigation of the "trans-species movement of zoonoses". Was this done in the lab at Wuhan? Now it is just a matter of nomenclature how we define a viral bioweapon.

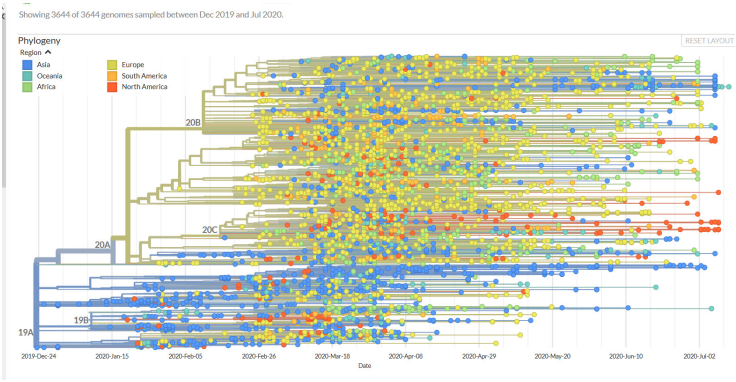
Nothing is known about delivery systems of such bioweapons and the acceptable risks which state actors like China are ready to take. The world scientific community has only looked at the sequences of the Covid19 and did not subject the entire Chinese Coronavirus research programme under critical and deep scrutiny from biosafety angle.

COVID-19 as a prototype bioweapon

It is possible to design custom made viruses outside the cells. There are still many unanswered questions on Covid19 as a bioweapon- and whether it originated in the USA or China or somewhere else. If past eight months of global research is still unable to explain its precision killing capacity with most of the attention focused on bats in China as original hosts then there is something fundamentally wrong in our understanding of the record and rapid evolution of the new coronavirus as a viral killing machine unprecedented in the history of the human civilization. The host country -Peoples Republic of China (PCR) has been selling its narrative to the global scientific community and UN Member states to defend itself and perhaps divert global attention to its secretive bioweapons development programme. For such a vast and resourceful country with decades of experience of detecting zoonotic disease outbreaks and conducting research in animal-borne RNA viruses why the new Coronavirus proved a challenge? If the Chinese virologists had the advanced knowledge of the S protein which locks to human ACE receptors then they must have also known its

infectious properties much in advance before the first human infection was detected. The world knows nothing about the viral strains which Chinese labs are maintaining. We are still in dark about any programme funded by the Chinese state to produce chimeric viruses by using secret unpublished recombination strategies. The world is in dark about progress made by China in Synthetic biology, genomics and proteomics and its capacity to engineer viral capsid proteins and rewrite and recode and reprogram the hybrid synthetic viruses. We don't know the truth about how recombination detected in the virus and its ability to attack ACE receptors on human cells.

Figure 1 is based on a study of 3644 genomes of Covid19 between December 2019 to July 2020 and it indicates variants of the Covid-19 but the fact remains that it has a powerful S or Spike protein with high specificity for human ACE receptors. How this happened, when and where is still a mystery if the virus originated in the bats.



(Figure 1- distribution of variants of the Covid-19 since December 2019- source https://nextstrain.org/ncov/global accessed on July 16, 2020)

Present pandemic as a biosecurity paradigm shift

The present Covid19 pandemic is a fundamental paradigm shift in our understanding of biosecurity issues associated with previous pandemics because of its still mysterious virologic dimension. The Chinese state is like a “wicked man saturated with poison”. What makes the present global pandemic special is its unresolved origin from China- an authoritarian country which has created a huge trust deficit. There was clarity when the world had encountered viruses originating from different regions -these include pandemic H1N1 2009, MERS, Zika Congenital Syndrome, Ebola, Yellow Fever, Plague, and “Disease X,” and Disease Y. Among the seven infectious Coronavirus strains, COVID-19 is unique because it is weaponized in the special architecture of the S protein. What it means for biosecurity doctrine of India is henceforth the country would have to anticipate emergence and release of such viral strains with lethal proteins and have a counter defence strategy to deal with both natural and artificially engineered strains. This means a tremendous need for capacity building in areas of synthetic biology, synthetic genomics, synthetic proteomics, viral nanoengineering, protein engineering, genetically engineered vaccine research with a focus on detection, deterrence, prevention, control and elimination. Big investments would be

required in biosensor technologies for the development of a range of biosensors to detect any new strains of lethal viruses.

Viral bioweapons may be a new form of waging nano-scale wars

Due to their insignificant size dispersible viral bioweapons to be delivered by drones or other aerial platforms or space-based payloads has increased. People need not carry the infection inside any country.

Previous viral outbreaks in India need deep forensic investigation

Molecular forensic investigations are needed in the genesis of outbreaks of Kyasnur Forest Disease Virus KFDV and recent bat-borne Nipah virus in Kerala. Both these outbreaks have taken place along the Western Ghats on India's strategically important western seaboard where vast foreign funds are flowing in the name of social work to support numerous NGOs and movement of non-state actors has also increased. It is not difficult to release infected animals in such areas in a clandestine manner and such covert operations are easy to mask.

India needs a national virologic database

The knowledge of viral diversity and their hosts is extremely poor in our country. The immediate need is to sample all the regions of the country and produce a complete virological

database, detail genome sequences and establish selective cultures for vaccine research. Top priority is needed to map all viruses from bats and other wild mammals and birds.

Pathetic biosecurity at national borders

Multilayered biodefense needs to begin from India's exclusive economic zone and cover all the island territories, waters and coastlines. The measures against bio-invasion are very weak at all the harbours and airports. Phytosanitary and quarantine measures are inadequate. This calls for an omnibus 'National biosecurity act". The country needs to be divided into different bio-vulnerability zones based on biosecurity threat perception. Sound ecological policies are needed to keep the local wild type viruses confined to their hosts in the natural quarantine.

Why India needs a new geo-biostrategic game plan?

Microminiaturization has made tabletop technologies available for the development of novel viral bioweapons. Non-state actors such as bioterrorists are likely to develop and deliver such bioweapons in crowded and civilian areas. Enemy countries may develop tactical battlefield bioweapons in the form of sprays, aerosol, smoke grenades, long-distance bio-projectiles etc. to be employed at the battlefields. India needs to advocate something similar to Missile Technology Control regime -MTCR for denying access to raw material for the production of bioweapons by state or non-state rogue actors.

Roadmap to reform or replace U.N. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BWC)

Membership of UN security council allows India to put forth its roadmap for the Ninth Review Conference of the Convention in 2021. India needs to influence the agenda of that meeting. In that direction, there has to be a focused national discourse aimed at permanently eliminating the possibility of bioweapons development as new weapons of mass destruction (WMD). A special charter on restriction and regulation of research in tactical nanobiotechnology, synthetic biology, designer viruses, viral gene editing and protein engineering technologies directed at military application etc would be needed. India must take a strong ethical stand on total and irreversible elimination of all types of bioweapons and press for strong and exemplary sanctions for countries refusing to join the new or reformed convention.

References

A Vinod Kumar (2020). Virus As Bio-Weapon: Contested Origins of Novel Coronavirus, accessed from https://idsa.in/idsacomments/virus-as-bio-weapon-vkumar-120520

Amjed Javed (2020). COVID19 and conspiracy theories: A Chinese virus or a bio-weapon? accessed from https://moderndiplomacy.eu/2020/04/29/covid19-and-conspiracy-theories-a-chinese-virus-or-a-bio-weapon/

Becker MM, Graham RL, Donaldson EF, Rockx B, Sims AC, et al. 2008. Synthetic recombinant bat SARS-like coronavirus is infectious in cultured cells and in mice. Proc. Natl. Acad. Sci. USA 105:19944–49

Dodd, Kimberly A et al. (2011) “Ancient ancestry of KFDV and AHFV revealed by complete genome analyses of viruses isolated from ticks and mammalian hosts.” PLoS neglected tropical diseases vol. 5,10, e1352.

McRoy WC, Baric RS. 2008. Amino acid substitutions in the S2 subunit of mouse hepatitis virus variant V51 encode determinants of host range expansion. J. Virol. 82:1414–24

Panghal, Archna, and S. J. S. Flora. “Viral agents including threat from emerging viral infections.” Handbook on Biological Warfare Preparedness. Academic Press, 2020. 65-81.

Rao, Nithyanand (2016) The Seven-Decade Transnational Hunt for the Origins of the Kyasanur Forest Disease,

accessed from https://science.thewire.in/health/kyasanur-kfd-rajagopalan-boshell/

Singh, Anup K. Workshop report on Making Bioweapons Obsolete. No. SAND2020-2472R. Sandia National Lab. (SNL-CA), Livermore, CA (United States), 2020.

Taubenberger JK, Morens DM, Fauci AS. 2007. The next influenza pandemic: Can it be predicted?, JAMA 297:2025–27

Varma Vivek, Brig, 2020, an assessment of china's biological warfare capabilities and need for global approach to bio-security Accessed from https://usiofindia.org/publication/cs3-strategic-perspectives/an-assessment-of-chinas-biological-warfare-capabilities-and-need-for-global-approach

Wimmer E, Paul AV. Synthetic poliovirus and other designer viruses: what have we learned from them?. Annu Rev Microbiol. 2011;65:583-609

Yadav PD, Shete AM, Kumar G, et al. Nipah Virus Sequences from Humans and Bats during Nipah Outbreak, Kerala, India(2018). Emerging Infectious Diseases. 2019;25(5):1003-1006.

Yadav, P.D., Patil, S., Jadhav, S.M. et al. (2020). Phylogeography of Kyasanur Forest Disease virus in India (1957–2017) reveals evolution and spread in the Western Ghats region. Sci Rep 10, 1966

Yi Fan, Kai Zhao, Zheng-Li Shi, Peng Zhou (2019) Bat Coronaviruses in China, Viruses. 2019 Mar; 11(3): 210.

Manupriya (2014). India's biosecurity regulations face criticism https://www.natureasia.com/en/nindia/article/10.1038/nindia.2014.89