



ORIGINAL RESEARCH PAPER

Medical Science

WAY TO LIVE WITH COVID-19

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Nobody knows what will be in future during COVID-19 delta surge and appearance of new Mu variant of COVID-19. But, everyone hopes the pandemic will end soon. The recent and current rising trend in cases and deaths not only in Southeast Asia region but also around the world warns that any travel restriction must be necessary to conduct. If people gain some immunity through either vaccination or infection, it will change into endemic stage. Unfortunately, vaccination coverage is not so high compared with world population. Thus, local people living in developing countries face the COVID-19 delta surge by fighting against with only naïve immune system. SARS-CoV-2, which is responsible for COVID-19 infection, is a novel emerging contagious agent that has found a way into human civilization. Generally, emerging and reemerging of viral infections belong to the RNA family of viruses since these viruses have high mutation rates that allow their eminent environmental adaptation with rapid evolution. Up to date, little knowledge is available about SARS-CoV-2 (1,2).

The rapid and well-coordinated innate immune response is the first line of defense against viral infections, but dysregulated and excessive immune responses may cause immunopathology (3). Therefore, the innate immune response plays a crucial role in the protective or destructive responses and it may open as window for immune intervention in COVID-19 infection management (2). In addition, there are potential challenges in immune system development concerning with COVID-19 infection (4).

An efficient immune system must have the ability to adapt the strange environmental changes to fight against infections. A healthy immune system has symbiotic microbial farms and reacts to a harmful infection. When pathogens enter the body, they attempt to use it as a host, and the immune system poses many threats. A different door is used for every infection to enter a cell, and blocking these routes of entry can stop an infection before it begins. The immune system neutralizes an infection by producing antibodies; however, this must be conducted at the proper time. An immune system ideally must stop an infection before it has established a foothold in the body (5-9). Thus, it is realized that there will be fewer cases, fewer hospitalizations and fewer deaths from COVID-19 when we get initial immunity by prescribing immune modulator drugs in early infection phase and as prophylaxis for contacts.

Azithromycin, macrolide antibiotic, is an immunomodulatory drug that has been shown to have antiviral effects and potential benefit in patients with COVID-19 (10,11). In addition, metronidazole, nitroimidazole antibiotic, could counteract majority of the immunopathological manifestations of the Covid-19 infection and displays immunopharmacological behavior (12, 13). The exact way of immune responses against SARS-Co V-2 and its precise immunopathological mechanisms need to be explored. Moreover, the effects of new emerging virus variants of COVID-19 upon vaccines production and strategies as well as the impacts of bench to bedside effective and safe vaccine development with high technology should be reconsidered for better understanding of Covid-19 disease and long term therapeutic solution.

In Myanmar, vaccination coverage was very low when we faced the third wave of COVID-19 especially with emerging

delta variant and variants of concern (VOCs) although reducing transmission through established and proven strict disease control measures and methods. Albeit COVID-19 vaccine booster doses could not be introduced, the incidence of overall cases is in descending trend and some regions of Myanmar continue to rise and fall in this scenario. By using telemedicine, few early symptomatic COVID-19 patients and contacts persons, who live in remote rural areas, were prescribed to take easily available antibiotic immune-modulator drugs as drug regimen like azithromycin followed by metronidazole± vitamin supplements and steroid. They recovered quickly and contacts did not suffer from COVID-19. Therefore, the worst outcomes were avoided.

In conclusion, I realized that coronavirus could not be eliminated forever and we have to live with them. All human beings must prepare to live together with coronavirus by modulating and adapting our immune responses, via antibiotic immune modulatory drugs, in this COVID-19 society and COVID-19 era.

REFERENCES

- Hui EK. Reasons for the increase in emerging and re-emerging viral infectious diseases. *Microbes Infect.* 2006;8(3):905-16.
- Vafaiezhad A, Atashzar MR, Baharlou R. The Immune Responses against Coronavirus Infections: Friend or Foe? *Int Arch Allergy Immunol.* 2021;182(9): 863-876. doi: 10.1159/000516038.
- Channappanavar R, Fehr AR, Vijay R, Mack M, Zhao J, Meyerholz DK, et al. Dysregulated type I interferon and inflammatory monocyte-macrophage responses cause lethal pneumonia in SARS-CoV-infected mice. *Cell Host Microbe.* 2016;19(2):181-93.
- Mohammad Chowdhury A, Hossain N, Kashem M A, Shahid MA, Alam S. Immune response in COVID-19 . *Journal of Infection and Public Health.* 2020; 13:1619-29.
- Paul WE. *Immunity.* Baltimore: Johns Hopkins University Press; 2015.
- Mukherjee S. The emperor of all maladies: a biography of Cancer. New York: Scribner; 2010.
- Nicholson Lindsay B. The immune system. In: *Essays in Biochemistry*; 2016.
- Field CJ, Johnson IR, Schley PD. Nutrients and their role in host resistance to infection. *J Leukoc Biol* 2002; 71:16-32.
- Nonnecke BJ, McGill JL, Ridpath JF, Sacco RE, Lippolis JD, Reinhardt TA. Acute phase response elicited by experimental bovine diarrhea virus (BVDV) infection is associated with decreased vitamin D and E status of vitamin-replete preruminant calves. *J Dairy Sci* 2014; 97:5566-79.
- Venditto VJ, Haydar D, Abdel-Latif A, Gensel JC, Anstead MI, Pitts MG, et al. Immunomodulatory Effects of Azithromycin Revisited: Potential Applications to COVID-19. *Front Immunol.* 2021; 12:574425.
- Smith T, Bushek J, LeClaire A, Prosser T. COVID-19 Drug Therapy. *Clinical Drug Information | Clinical Solutions.* 2020.
- Gharebaghi R, Heidary F, Moradi M, Parvizi M. Metronidazole; a Potential Novel Addition to the COVID-19 Treatment Regimen. *Arch Acad Emerg Med.* 2020; 8(1): e40.
- Shakir L, Javeed A, Ashraf M, Riaz A. Metronidazole and the immune system. *Pharmazie.* 2011; 66:393-398.