

COVID-19 and BCG Vaccine

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Abstract

COVID-19 has been declared as a pandemic and world has been dealing with its ill effect. Several strategies are involved from drug therapy to vaccine development to contain the infection. Studies and trials are in progress the use of BCG vaccine in reducing the morbidity and mortality caused by COVID-19.

Keywords: COVID-19; Drug therapy; BCG vaccine

Introduction

Corona Virus Disease 19 (COVID-19) is a pandemic infection now attained a position to cause a threat to the global health and it is showing the ill effects on the global economy. World health organization has declared COVID-19 as a Public health Emergency of International concern. All over the world several countries are dealing with the emergence of this pandemic and COVID warriors including doctors, nurses and other health care workers have become saviours working relentlessly to save the lives [1].

Description

Scientists from all over the world are in great research activity to find the solution for COVID-19 infection. Vaccine development and clinical trials are in progress all over the world to find an everlasting solution for the COVID-19 infection. Clinical and epidemiological evaluation of people susceptible to SARS-CoV-2 infection helps in understanding the pathogenesis and in-turn aid in better development of vaccines [2]. It is noted that certain people are more susceptible to COVID-19 than other people. The COVID-19 infection has been found to be associated with high severity in persons with the comorbidities including hypertension and diabetes [3]. A study from Yang et al found that the non- survivors have been associated with the cerebrovascular disease and diabetes. Similarly a study from Guan and co-workers has found the severe disease of COVID-19 has been associated with the hypertension, diabetes, cerebrovascular disease and coronary heart disease. 4. It is postulated that the expression of Angiotensin Converting Enzyme 2 (ACE-2), which is known as a receptor for SARS-CoV-2

is increased in patients with comorbidities such as diabetes and hypertension as these patients are treated with Angiotensin Converting Enzyme (ACE) inhibitors and angiotensin II type-I receptor blockers [4]. These ACE inhibitors favours the expression of ACE-2 receptors. Thus development of any vaccine or drug which favours high expression of the ACE, leads to the down regulation of expression of ACE-2 receptors [5,6].

The Bacille-Calmette Guerin (BCG) is a tuberculosis vaccine is in use for the long time. Literature survey revealed that Schrier et al has found that the lung lavage has shown high expression of ACE with BCG induced chronic granulomatous pulmonary inflammation [7]. This concept might be applied for the reducing the number of ACE-2 receptors thereby decreasing the access ability of the SARS-CoV-2 to the receptor [8]. The BCG vaccine is known to induce trained immunity and it allows quicker inflammatory response, it is known to induce protection against experimental infection with yellow fever vaccine strain. Recent experimental evidence has shown the BCG offers protection against various DNA, RNA viruses mediated through initiation of innate immune memory and heterologous lymphocyte activation leading to enhanced cytokine production [9]. Clinical trials are underway which aim to study the effect of BCG vaccination on the healthcare workers associated with the COVID-19 patients. WHO clarified that it doesn't recommend the use of BCG vaccination for the prevention of COVID-19 and has to wait for the clinical trials results.

Conclusion

We conclude that in future due to safety, easy accessibility, low cost, its known affect in reducing the morbidity and mortality it might a possible useful strategy in dealing with COVID-19.

References

1. Rothan HA, Byrareddy SN (2020) The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *J Autoimmun* 109: 102433.
2. Cucinotta D, Vanelli M (2020) WHO declares COVID-19 a pandemic. *Acta Biomed* 91: 157.
3. Yang X, Yu Y, Xu J, Shu H, Liu H, et al. (2020) Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: A single-centered, retrospective, observational study. *Lancet Respirat Med* 8: 475-481.

4. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, et al. (2020) Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med* 382: 1708-1720.
5. Wan Y, Shang J, Graham R, Baric RS, Li F (2020) Receptor recognition by the novel coronavirus from Wuhan: An analysis based on decade-long structural studies of SARS coronavirus. *J Virol* 94: e00127-20.
6. Mahase E (2020) COVID-19: What treatments are being investigated? *BMJ* 368: m1252.
7. Schrier DJ, Ripani LM, Katzenstein AL, Moore VL (1982) Role of angiotensin-converting enzyme in Bacille Calmette-Guerin-induced granulomatous inflammation. Increased angiotensin-converting enzyme levels in lung lavage and suppression of inflammation with captopril. *J Clin Invest* 69: 651-657.
8. Arts RJ, Moorlag SJ, Novakovic B, Li Y, Wang SY, et al. (2018) BCG vaccination protects against experimental viral infection in humans through the induction of cytokines associated with trained immunity. *Cell Host Microbe* 23: 89-100.
9. Moorlag SJCFM, Arts RJW, Van Crevel R, Netea MG (2019) Non-specific effects of BCG vaccine on viral infections. *Clin Microb Infect* 25: 1473-1478.