

BCG VACCINE

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Introduction

Vaccines induce direct protection from the antigens by stimulating our innate and adaptive immune system. It may also be used for non-specific stimulation of our immune system inducing non-specific protection.¹

Mechanism of Action

The BCG vaccine reprograms monocytes, leading to an up-regulation of IL-1B a proinflammatory cytokine associated with induction of trained immunity. In vivo, this leads to protection against non-related viral infections, a key role for IL-1B as a mediator of trained immunity responses.^{2,3}

Aside from its usage to protect and reduce the incidence of mycobacterial infection (e.g. Tuberculosis), BCG has been used to fight off superficial bladder carcinoma.^{4,5} Intravesical instillation of BCG into the bladder does not destroy the tumor directly but increase a local immune response against the tumor.

Clinical Studies

An epidemiological paper was published describing the effect of the presence or absence of universal BCG vaccine policies of countries affected by COVID-19. It was found that countries without universal policies of BCG vaccination (Italy, Nederland, USA) have been more severely affected compared to countries with universal and long-standing BCG policies.² Countries that have a late start of universal BCG policy (Iran, 1984) had high mortality, consistent with the idea that BCG protects the vaccinated elderly population.²

Currently, there are 15 clinical trials registered at ClinicalTrials.gov investigating the possible impact of BCG vaccine on COVID-19. Their primary outcome measure is the prevention of COVID-19 among vaccinated adults.

Conclusion

At this point in time, there is still no firm scientific evidence that supports the use of BCG vaccine in preventing and/or treating COVID-19 patients. Clinical trials are still underway.

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