

Title: "Decreased morbidity and mortality during Covid 19 pandemic in a BCG vaccinated Pakistani population. Implications for SARS COV 2 vaccination strategies"

Abstract:

Globally, 765,222,932 confirmed cases of COVID-19, including **6,921,614 deaths** have been reported to date (WHO). Eastern Mediterranean regions including Pakistan reported relatively lower deaths with a CFR of 1.2 % compared to > 6 % in some of the Western Countries. The reasons for this discrepancy is unclear and there have been speculations that because of BCG vaccination and other viral vaccines still being administered at birth may provide some cross protection to non-related viruses such as SARS COV 2. Pakistan has a relatively younger population but the male/female distribution was approximately 60/40 during the four waves of pandemic in Pakistan which is similar to what has been reported globally.

The most relevant immune response to decrease viral replication and progressive inflammation at the first checkpoint is most likely the innate arm of the immune system which is activated within minutes of the alarm signals and probably helps in both reducing the viral load and consequently reducing the progressive inflammation at the initial stage of infection. Innate arm was considered to have little specificity and no memory until recently. However, Recall responses (Trained Immunity) have been shown in BCG vaccinated populations to conserved epitopes of BCG. These may be responsible for cross protection provided by BCG to non-related viral infection in children under 5 years of age. I will focus in this talk on BCG stimulated recall responses in the innate cellular network as well as detection of cross reactive antibodies to SARS COV 2 pre-pandemic in young Pakistani adults, the possibility of a link to the decreased mortality and disease severity observed in the Pakistani population, particularly in the young adult population. Such recognition of conserved epitopes may be used to develop a pan-vaccine strategy to combat future emergence of variant strains of COVID 19.

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