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Efficacy of BCG vaccines in mycobacterial and non mycobacterial diseases

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Pakistan has >90% coverage of BCG vaccination through the EPI program which was introduced in 1965. Despite this high coverage, Pakistan reported an incidence of 231/100,000 population of new TB cases highlighting TB as a major public health issue. This is because of the failure of BCG vaccine to protect against the transmissible form of pulmonary tuberculosis in high TB endemic countries. However, BCG vaccination continues in these countries because BCG confers protection against the disseminated form of TB in children. BCG has also shown some protection against leprosy. Interestingly, BCG has also shown protection against certain forms of cancers. One reason for such non-specific protection may be that BCG activates APCs via PAMPS that interacts with TLRs (2, 4 & 8) which initiate the inflammatory cascade thereby recruiting inflammatory cells to the site of infection and providing maturation signals for neutrophils, macrophages and dendritic cells. Such activation may be crucial for restricting the infection at the initial site. Although activation of the innate arm may not provide subsequent memory, activation of T cells may introduce a certain level of memory response and therefore may form a rational basis for BCG immunotherapy. We have studied the inflammatory cytokine profiles activated in tuberculosis infection in BCG vaccinated endemic setting and shown association of resistance and susceptibility with differing cytokine profiles that may be also responsible for specific and non specific immunity.

Biography

Rabia Hussain has completed her PhD in 1973 from University of Western Ontario, Canada, Post-doctoral studies from Naval Medical Research Institutes and Johns Hopkins University and held senior positions at The National Institutes of Health, USA and was Chairperson at Department of Microbiology, Aga Khan University, Pakistan. She has published 137 full length papers in international journal and has an impact factor of 4320, H-index 37 and i10-index of 93 (2014). She is a Distinguished National Professor in Pakistan and is a fellow of several national and international scientific academies.

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