Dormancy of M tuberculosis in stem cells: possible new approach for target

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Dormancy or Latency phase of Mycobacterium tuberculosis (Mtb) is surprisingly the least known period in the entire life span of Mtb bacilli. Traditionally it was believed that macrophages are the cells where Mtb completes it dormant phase. However, many observations including variable and long period of latency vis-à-vis short life span of macrophages, goes against this notion. Role of CD271 + Mesenchymal stem cell (MSC) especially in bone marrow as niche of dormancy of Mtb is recently being studied by some groups (this author being a member of one of such groups).[1] There is clear evidence of role of hypoxia in Mtb taking a dormancy pathway [2]. CD271 + MSC provide an optimal and safe environment for Mtb to thrive for long time e.g. absence of reactive radicles/molecule, very effective efflux pump for drugs, slow metabolism. Long cell span etc. [1]. Studies carried out both in mice and human being (cured cases of pulmonary TB) clearly indicate these facts.

This phenomenon has a robust potential for future vaccine and drug development targeting dormant Mtb inside CD271+ MSC in bone marrow and some similar targets. Same model may be applicable for many other infectious diseases e.g. salmonella.

Publication (Relevant)

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3. Sarma J, Bhattacharya P, Kalita D, Rajbangshi M. Multidrug-resistant Enterobacteriaceae including metallo-β-lactamase producers are predominant pathogens of healthcare-associated infections in an Indian teaching hospital. Indian journal of medical microbiology. January 2011;29(1):22-7

Biography:

Dr Deepjyoti Kalita is an Associate Professor of Microbiology and heading the immunology/serology lab and co-heading the virology lab at All India Institute of Medical Sciences, Rishikesh (AIIMS- Rishikesh) in India. He has done MBBS, MD (Microbiology) and Ph.D (Virology). He is a full member of American Society for Microbiology, European Society of clinical Microbiology and Virology (regular paper

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