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Anti-inflammatory cytokines IL-27, IL-10, IL-1Ra and TGF-β in subjects with increasing grades of glucose intolerence (DM-LTB-2)

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Abstract

Anti-inflammatory cytokines act as double edged swords- they can dampen inflammation but can also suppress immunity. The role played by these cytokines in latent TB infected (LTBI) subjects, with various grades of glucose intolerance was studied. Both serum levels and recall-secretion of IL-27, IL-10, IL-1Ra and TGF- β in Normal Glucose Tolerance (NGT), Pre-Diabetes (PDM), Newly diagnosed Diabetes (NDM) and Known Diabetes (KDM) subjects, both with and without LTBI (n = 382), were quantified by ELISA. All the subjects were screened for LTBI by QuantiFERON-TB Gold test. Serum levels of IL-27, IL-10 and IL-1Ra were significantly elevated in the LTB⁻PDM, compared to LTB⁻NGT group. Increased IL-27 and IL-10 levels and decreased levels of TGF- β were seen in the LTB⁻NDM, compared to LTB⁻NGT group. Decreased serum levels of IL-27 and increased levels of IL-1Ra and TGF- β were seen in the LTB⁻KDM, compared to LTB⁻NGT group. TB antigens induced the secretion of IL-1Ra in LTB⁺ subjects in the NGT, PDM and NDM groups, but not in the KDM group. Co-morbidity with LTBI brought about (diabetic) stage-specific modulation, in these cytokine levels. Major defects in the circulating levels and recall secretion of anti-inflammatory cytokines, as seen in LTB⁺KDM subjects, could fuel DM-TB synergy.

Keywords: Diabetes; IL-10; IL-1Ra; IL-27; Impaired immunity; Inflammation; Latent tuberculosis; Quantiferon; TGF-b.

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