Interleukin-6: a potential biomarker of the success of tuberculosis treatment

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Background: The present measure of the success of TB treatment is fraught with problems. A cytokine biomarker(s), a qualitative and quantitative reflection of the treatment success, is thus warranted. Because TB treatment is expected to affect macrophage and mycobacteria interactions and, consequently cytokine(s) elaboration, a biomarker(s) seems crucial to assess its success.

Methods & Materials: We studied the serum levels of interleukin-2 (IL-2), IL-4, IL-6, IL-8, IL-10, tumor necrosis factor-α (TNF-α), GM-CSF and interferon-γ (IFN-γ) in TB patients, at Day 0, after one month, and after six month, by using a multiplex (Bioplex) suspension cytokine array system. The standard curves for all the cytokines were generated as per the protocol of the supplier.

Results: Results showed that after six month, only IL-2, IL-4, IL-6, IL-8, TNF-α, GM-CSF and IFN-γ showed a major increase; IL-10 showed the least increase only in a few patients. On the other hand, IL-6, IL-8 and GM-CSF showed a maximum increase (IL-6, 140-fold; IL-8, 180-fold; GM-CSF, 140-fold). The remaining cytokines showed relatively lesser increase (IL-4, 1.1-fold; IL-10, 5-fold; IFN-γ, 80-fold and TNF-α, 65-fold).

Conclusion: We conclude that as stand-alone IL-6, IL-8 and GM-CSF may function as potential biomarkers or together, as a group, may be considered as a biosignature for the diagnosis of TB.