Increased expression of Regulatory T Cells in Lepromatous Leprosy Patients.

TGF-β Secretion in CD4\(^+\) and NOT in CD8\(^+\) FOXP3\(^+\) T cells

Chaman Saini
V Ramesh and
Indira Nath

National Institute of Pathology and
Safdarjung Hospital,
New Delhi, India
Clinical and methodological details of the study

<table>
<thead>
<tr>
<th>Freshly diagnosed Clinical types</th>
<th>Number of Patients</th>
<th>Sex</th>
<th>Age (years)</th>
<th>BI</th>
<th>Duration of leprosy (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borderline Tuberculoid (BT)</td>
<td>28</td>
<td>22</td>
<td>06</td>
<td>20-57</td>
<td>0-0.5</td>
</tr>
<tr>
<td>Lepromatous Leprosy (LL)</td>
<td>28</td>
<td>21</td>
<td>07</td>
<td>19-60</td>
<td>4.5-6</td>
</tr>
<tr>
<td>Healthy contacts (HC)</td>
<td>05</td>
<td>03</td>
<td>02</td>
<td>22-40</td>
<td>-</td>
</tr>
<tr>
<td>Normal Skin (N)</td>
<td>04</td>
<td>03</td>
<td>01</td>
<td>22-28</td>
<td>-</td>
</tr>
</tbody>
</table>

1. Expression of FoxP3 and associated genes/markers by qRT-PCR
   - *In situ* dermal lesions
   - Stimulated 48hrs PBMC cultures with armadillo derived MLSA
2. Phenotyping of T cells by flow cytometry
3. ELISA for cytokines
Increase in FOXP3⁺, TGF-β⁺ and IL-10⁺ cells in lepromatous leprosy skin lesions.
qPCR
Increased expression in FOXP3, TGF-β and IL-10 in ML stimulated PBMC cultures of LL patients

ELISA
Increase in suppressive cytokines in the culture supernatants of ML stimulated PBMC of LL patients
CD4<sup>+</sup> but NOT CD8<sup>+</sup> FOXP3<sup>+</sup> cells show intracellular TGF-β in stimulated PBMC.
Unstimulated PBMC also show increase in CD4+Tregs in lepromatous leprosy.
TGF-β in CD4^+CD25^{hi} Treg population is associated with phosphorylation of STAT5 (p-STAT5).
1. FoxP3 alone does not discriminate leprosy types
2. FoxP3+ cells with both CD25+ and TGF β are increased and discriminate LL from BT and HC
1. Increase in both CD 25\textsuperscript{hi} and CD25\textsuperscript{low} FoxP3+ cells in LL
2. CD25- FoxP3+ cells do not show discrimination between leprosy types.
3. Both ‘natural’ and induced iTregs are increased in LL
4. ‘natural’ may be \textit{in vivo} induced Tregs?
IFN-γ and IL-17A are not produced by CD4+CD25^{hi} Treg cells in lepromatous leprosy.
FoxP3 regulatory T cells
- are of CD4+ lineage
- increased in LL,
- act primarily through TGFβ
- which requires phosphorylation of STAT 5.

They exist in vivo during the natural immune response-
- nTreg iTreg

They are induced in vitro by ML antigens- iTregs