Serum level of interleukin -17 and interleukin -4 in leprosy patients

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Summary and Conclusion

Leprosy is a chronic infectious disease caused by *M. leprae*. The objective of this study is to evaluate serum levels of IL-17 and IL-4 in untreated leprosy patients, compared to healthy controls, to gain further insight about the role of these cytokines in the immunopathogenesis of leprosy.

The study was conducted on eighty-six persons: Forty-three leprotic patients collected from Dermatology and Leprosy El Qal'aa Hospital, and Forty-three healthy volunteers, serving as controls.

Patients were subjected to history taking and thorough clinical examination, and were subdivided into groups according to **Ridley and Jopling classification, WHO classification,** and according to the presence or absence of RL, as well as the bacillary load.

Blood samples were collected from both patients and controls for estimation of IL-4 and IL-17 by ELISA.

We found that the level of IL-17 was significantly lowered in cases compared to controls. Although no statistically significant difference was found comparing different patients subgroups, statistically significantly lower serum IL-17 level was found on comparing each subgroup of leprosy with controls, with the lowest level in LL while the highest in TT. Therefore, we speculate that IL-17 deficiency can contribute to the development of leprosy, and even to disease progression towards the MB immunocompromised pole.

Comparing our patients and controls revealed highly significantly elevated serum IL-4 in patients, being highest

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List of Abbreviations

- **aa:** Amino acids.
- **AD**: Atopic dermatitis
- **APCs**: Antigen-presenting cells
- **BB:** Borderline borderline
- **BCG:** Bacillus Calmette-Guerin.
- **BI:** Bacteriological index
- **BL:** Borderline lepromatous
- **bp:** Base pairs.
- **BT:** Borderline tuberculoid
- ***C. albicans***: Candida albicans.
- **CCR4:** Chemokine receptors 4
- **CLE**: Conserved lymphokine element
- **CMI:** Cell-mediated immunity
- **CRF:** Case Report Form.
- **CSF:** Cerebrospinal fluid.
- **CTLA8:** T-cell hybridoma
- **CXCL10:** CXC-chemokine 10.
- **DDS;** 4,4-Diaminodiphenylsulphone
- **ELISA**: Enzyme-linked immunosorbent assay.
- **EM**: Electron microscopy.
- **EMBP**: Eosinophilic major basic protein
- **ENL:** Erythema nodosum leprosum
- **G2D:** Grade 2 disabilities.
- **HBV:** Hepatitis B virus
- **HCV**: Hepatitis C virus.
- **HIES:** Hyper-IgE syndrome
- **HLA:** Human leucocytic antigens

- **HRP:** Horse radish peroxidase.
- **ID:** Indeterminate leprosy
- **IFN-γ:** Interferon gamma
- **Ig**: Immunoglobulin.
- **IL:** Interleukin.
- **iNOS:** Inducible nitric oxide synthetase
- **IRS**: Insulin receptor substrate
- **JAK:** Janus kinase family.
- **LL:** lepromatous leprosy.
- **LLp:** Polar lepromatous leprosy.
- **LLs:** Subpolar lepromatous leprosy.
- **MB:** Multibacillary.
- **MCP-1:** Monocyte chemoattractant protein-1
- **MDT:** Multi drug therapy.
- **MHC:** Major histocompatibility complex
- **MI:** Morphological index.
- ***M. leprae***: Mycobacterium lepra.
- **MoAb:** Monoclonal antibodies.
- **NF- κβ:** Nuclear factor- κβ.
- **NK:** Natural killer.
- **Non-RL**: Non reactional
- **PAF:** Platelet activating factor
- **PB:** Paucibacillary
- **PCR:** Polymerase chain reaction.
- **PDGF:** Platelet-derived growth factor
- **PG:** Prostaglandin.
- **Pg/ml:** Picogram/milliliter**.**
- **PGL-1:** Phenolic glycolipid 1.

- **PNL:** Pure neuritic leprosy.
- **qRT-PCR**: quantitative Reverse transcriptase-PCR.
- **RA:** Rheumatoid arthritis.
- **RANK**L: Receptor activator of nuclear factor-κβ ligand
- **RL**: Reactional leprosy.
- **ROR-c:** Thymus specific nuclear receptor.
- **rRNA:** Ribosomal (r) RNA.
- **SCs:** Schwann cells.
- **SD:** Standard deviation.
- **SPSS**: Statistical program for social science.
- **SSS**: Slit-Skin Smear
- **STAT3**: Signal transducer and activator of transcription 3.
- **T-bet:** lineage-specific transcription factors required for the differentiation of Th1.
- **TCR:** T cell's receptor.
- **TGF-β:** Transforming growth factor- beta.
- **Th cells:** T helper cells
- **TLR2:** Toll-like receptor 2.
- **TMB:** Tetra methyl benzidine
- **TNF:** Tumor necrosis factor.
- **TT:** Tubercloid leprosy.
- **-ve:** Negative.
- **+ve:** Positive.
- **WHO:** World Health Organization.

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