Thymic Stromal Lymphopoietin (TSLP) is Elevated in Patients with Systemic Lupus Erythematosus or Rheumatoid Arthritis (A Pilot Study)

Marven Cabling, Abby Weldon, Abigail Benitez, Ruijun Su, Keith Colburn, Kimberly Payne
Loma Linda University and Loma Linda University Medical Center

Introduction

- TSLP is an IL-7 like cytokine produced by various cells (epithelial cells, stromal cells, dendritic cells and synovial fibroblasts, among others).
- TSLP receptor (TSLP-R) is expressed on immune cells (B and T cells, NK cells, dendritic cells, macrophages, etc).
- The effect of TSLP is varied but most lead to inflammation and T cells, NK cells, dendritic cells, macrophages, fibroblasts, among others).
- The effect of TSLP is varied but most lead to inflammation.

Methods

- Peripheral blood and synovial fluid were obtained from OA, RA and SLE patients through an IRB approved protocol.
- Sandwich ELISAs performed according to manufacturer’s instructions.
- Patient samples were assayed in triplicate.
- Samples were analyzed with a 4-parameter logistic standard curve.
- Values with a coefficient of variability greater than 15% were excluded.
- TSLP-R expression on immune cells were identified by surface staining and analyzed by flow cytometry.

Results

Fig. 1 TSLP is Higher in RA Synovial Fluid than OA
Fig. 2 No significant difference between TSLP levels in the plasma of RA and OA patients
Fig. 3 TSLP levels are higher in the plasma of SLE patients compared to OA patients
Fig. 4 Mature B Cells From RA Patients Have Higher TSLP-R Expression

Conclusions

- TSLP is elevated in the synovial fluid of RA patients and is higher compared to OA patients.
- However, TSLP in the plasma of RA patients is not significantly higher than plasma of OA patients.
- In SLE patients, TSLP is significantly higher in the plasma.
- These data suggest that TSLP may act locally in the joints of RA patients and systemically in SLE patients.
- TSLP-Receptor expression is higher on CD19+IgM+ Mature B cells from RA PB.

Hypothesis and Objectives

1. TSLP levels are elevated in patients with autoimmune disease characterized by autoantibody production.
2. The objective of this study was to compare TSLP levels from:
   a. synovial fluid of OA and RA patients, and
   b. plasma of OA, RA, and SLE patients.
3. To determine the possible role of TSLP, we assessed the level of TSLP-R on immune cells.

Further Directions

- Further studies will be done on more samples and correlate TSLP levels with disease activity in RA and SLE as well as examine the effect of various medications on the levels of this cytokine.

References