ANTIBODIES AGAINST COMMENSAL STREPTOCOCCAL SPECIFIC PROTEIN (SSP) AND MITOCHONDRIAL IMMUNO-DOMINANT PROTEIN(MIP) IN DIAGNOSIS OF SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) AND OTHER SYSTEMIC AUTOIMMUNE DISEASES

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Background: Streptococcal infection has well known to cause rheumatic fever with various presentations similar to SLE. Besides, both streptococcal-blood stream infection and SLE had aggravated neutrophil extracellular traps (NETs) formation. Previously, we did report a streptococcal induced endocarditis rat model, and identified layers of neutrophil extracellular traps (NETs). According to our findings, specific immunoglobulin G (IgG) could bridge bacteria to host and these IgGs are required to induce the formation of NETs. Whether oral commensal bacteria could induce pathogenic bacteria which promote NET formation remained unknown.

Objectives: So we aimed to search for novel autoantibodies in SLE through antibody repertoire screening which recognize whole proteins derived from Streptococcus mutans, and investigated to find cross-reactive antibodies presented in the serum of lupus patients and do the correlation between serum MPO(myeloperoxidase)-DNA, a marker of NETosis.

Methods: The streptococcal specific protein (SSP) was identified through LC-MS and by a proteomics survey. We then purified the target protein in streptococci with expression vector, and antibody titer level will be determined quantitatively. We recruited patients with SLE, other systemic autoimmune diseases (AIDs) patients to elucidate the performance of this biomarker. Besides, we pursued the Basic Local Alignment Search Tool (BLAST) and searched for cross-reactive autoantigens.

Results: 79 lupus patients and 95 patients with other systemic autoimmune disease were enrolled. By using cut-off value 100(set according to area under the receiver operating characteristic curve) of anti-SSP o.d. value (174 samples), 27 of 79 (34.2%) SLE patients have positive results while only 7/95 (7.4%) was detected in control group. The specificity and sensitivity of the anti-SSP for diagnosis of SLE was 92.6% and 34.2% respectively. According to BLAST and B cell–epitope prediction algorithms, The P32-55 epitopes were identified and we synthesized a highly immunogenic and surface-accessible epitope related protein. We named the protein to be MMP (mitochondrial immunodominant protein). Most of the sera from SLE patients could recognize MIP and anti-MIP correlated with serum MPO-DNA (r=0.41, p=0.039).

Conclusion: The novel anti-SSP antibody against commensal streptococcal specific protein can differentiate SLE and other AIDs. Further investigation to determine whether the anti-SSP antibody or the associated immune complex could induce or aggregate NETs formation is warranted.

References:


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VITAMIN D AND INTERFERON SIGNATURE GENE EXPRESSION IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Background: Vitamin D deficiency is more prevalent in patients with systemic lupus erythematosus (SLE) as a result of sun avoidance. The potential negative impact of vitamin D deficiency on SLE disease activity has been shown in a number of studies.2 The expression of the interferon signature genes in SLE correlates positively with disease activity, and these genes are thought to mediate the clinical manifestations of the disease.3

Objectives: The aim of this study was to establish whether a relationship exists between serum 25-hydroxyvitamin D level and the interferon signature gene expression in whole blood of SLE patients.

Methods: Informed consent was obtained from 92 SLE patients who were over the age of 18 and who fulfilled the SLICC classification criteria for SLE. The patients were interviewed and blood samples were taken. SLE disease activity was measured by SLE disease activity index-2K (SLEDAI-2K). RNA extraction was performed from whole blood. QuantGene Piex technology