Detection of IgG4-Specific Autoantibodies in Rheumatoid Arthritis Serum Samples

Azra Borogovac  
*University of Massachusetts Medical School*

Younna Lahoud  
*University of Massachusetts Medical School*

Janice Weaver  
*University of Massachusetts Medical School*

*See next page for additional authors*

---

**Follow this and additional works at:** [https://escholarship.umassmed.edu/ssp](https://escholarship.umassmed.edu/ssp)

**Part of the** Amino Acids, Peptides, and Proteins Commons, Biological Factors Commons, Diagnosis Commons, Musculoskeletal Diseases Commons, Rheumatology Commons, and the Skin and Connective Tissue Diseases Commons

**Repository Citation**

Borogovac, Azra; Lahoud, Youmna; Weaver, Janice; Cooper, Sheldon M.; Rincon, Mercedes; Kay, Jonathan; and Gravallese, Ellen M., "Detection of IgG4-Specific Autoantibodies in Rheumatoid Arthritis Serum Samples" (2015). University of Massachusetts Medical School. Senior Scholars Program. Paper 192.

https://escholarship.umassmed.edu/ssp/192

---

This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in Senior Scholars Program by an authorized administrator of eScholarship@UMMS. For more information, please contact Lisa.Palmer@umassmed.edu.
Detection of IgG4-Specific Autoantibodies in Rheumatoid Arthritis Serum Samples

Authors
Azra Borogovac, Youmna Lahoud, Janice Weaver, Sheldon M. Cooper, Mercedes Rincon, Jonathan Kay, and Ellen M. Gravallese

Keywords
rheumatoid arthritis, pathogenesis, diagnosis, autoantibodies, IgG4, rheumatoid factor (RF), anti-citrullinated protein antibodies (ACPA)

Comments
Poster presented on Senior Scholars Presentation Day at the University of Massachusetts Medical School, Worcester, MA, on April 29, 2015. Medical student Azra Borogovac participated in this study as part of the Senior Scholars research program at the University of Massachusetts Medical School.

Rights and Permissions
Copyright is held by the authors, with all rights reserved.
Detection of IgG4-Specific Autoantibodies in Rheumatoid Arthritis Serum Samples

Azra Borogovac, BA1; Youmna Lahoud, MD1; Janice Weaver, CCRP1; Sheldon M. Cooper, MD2; Mercedes Rincon, PhD2; Jonathan Kay, MD1 and Ellen Gravallese, MD1
1University of Massachusetts Medical School Worcester, MA
2University of Vermont Medical Center, Burlington, VT

Introduction
• Rheumatoid arthritis (RA) is a chronic multi-system autoimmune disease characterized by inflammatory synovitis.
• Autoantibodies, such as anti-citrullinated protein antibodies (ACPA) and rheumatoid factor (RF), are important serological markers that distinguish RA from other forms of inflammatory arthritis; yet many patients with RA do not have measurable ACPA or RF.
• IgG4 is the second most abundant isotype of ACPA and RF, after IgG1; but, it is not detected by diagnostic assays typically available.
• Patients deemed “sero-negative” by standard assays may actually have high titers of the IgG4-specific isotype of ACPA and RF[1].

Objectives
• To quantitate and compare levels of IgG1- and IgG4-specific ACPA and of IgG1- and IgG4-specific RF in patients with RA.
• To correlate levels of IgG4-specific ACPA with disease activity, therapy, and serum cytokine levels.
• To assess whether a diagnostic test that detects the IgG4 isotype of ACPA or of RF will allow earlier diagnosis of RA.

Methods
• In this cross-sectional study, we aim to enroll 1000 patients with confirmed RA according to the 2010 ACR/EULAR classification criteria.
• We are collecting clinical information about each patient including demographics, current treatments, disease activity measures, laboratory test results, and radiographs.
• Concurrently, we are collecting serum samples from each patient that will be analyzed for 1) Total levels of IgG4 & IgG1; 2) Total ACPA & RF; 3) Levels of IgG1- and IgG4-specific ACPA & RF; 4) Cytokine levels (TNF, IL-1, IL-6, IL-17, IFNγ, IL-21, G-CSF).

Results
• To date, we have recruited 102 RA patients with the following demographics [Table 2].

Table 2: Demographics characteristics of recruited subjects
<table>
<thead>
<tr>
<th>Age</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Femaless</td>
</tr>
<tr>
<td></td>
<td>Males</td>
</tr>
<tr>
<td>Disease Activity Score using 28 joints (DAS28)</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Remission (DAS28 &lt;2.6)</td>
<td>12.2% (N=12)</td>
</tr>
<tr>
<td>Low Disease Activity (DAS28 ≥2.6 &amp; &lt;3.1)</td>
<td>21.2% (N=21)</td>
</tr>
<tr>
<td>Mod Disease Activity (DAS 28 ≥3.2 &amp; &lt;5.1)</td>
<td>61.2% (N=61)</td>
</tr>
<tr>
<td>High Disease Activity (DAS28 ≥5.1)</td>
<td>6.1% (N=6)</td>
</tr>
</tbody>
</table>

References