Autoantibodies Present Before Symptom Onset in Primary Sjögren Syndrome

Autoantibodies are characteristic of primary Sjögren syndrome and may be involved in its pathogenesis. We investigated autoantibodies present before symptom onset in patients with Sjögren syndrome because data on this issue are limited.

Methods | All patients with primary Sjögren syndrome at Malmö University Hospital (Malmö, Sweden) have been included in a registry since 1984. To obtain presymptomatic serum samples, the registry was linked with 3 biobanks containing specimens from 625 000 individuals submitted for microbiological analyses or population-based studies of healthy individuals.

Date of symptom onset was determined retrospectively from the patient during the first office visit at which Sjögren syndrome was diagnosed. All cases provided written informed consent at inclusion in the registry. The study was approved by the ethics committee at Lund University.

All patients with available samples who met consensus criteria for Sjögren syndrome were included. When multiple samples were available for a single patient, the earliest positive sample was used. Controls were randomly selected from the biobanks and matched by sex, age, and date of earliest sampling (within 60 days before or after) to each case. None of the controls were diagnosed with Sjögren syndrome. Those serum samples that were obtained from the microbiology biobank had been submitted due to symptoms unrelated to Sjögren syndrome (eg, pregnancy screening, suspected influenza). Samples were collected from 1976 through 2001 and Sjögren syndrome was diagnosed through 2011.

Autoantibodies against Ro60/SSA, Ro52/SSA, La/SSB, Sm, RNP, Scl-70, Jo-1, ribosome P, and chromatin were detected using a multiplex immunobead assay (QUANTA SLE Profile 8, INOVA Diagnostics) and analyzed on a Luminex 100 instrument (Luminex Corp). Antinuclear antibodies (ANAs) were analyzed in a multiplex immunobead assay (Luminex Corp). Antinuclear antibodies (ANAs) were analyzed on a Luminex 100 instrument (Luminex Corp). Antinuclear antibodies (ANAs) were analyzed in a multiplex immunobead assay (Luminex Corp). Antinuclear antibodies (ANAs) were analyzed on a Luminex 100 instrument (Luminex Corp). Antinuclear antibodies (ANAs) were analyzed in a multiplex immunobead assay (Luminex Corp).

Descriptive statistics and a 2-sided Friedman test were used for statistical analysis (Statistics version 20.0; IBM SPSS). P < .05 was considered statistically significant.

Results | Of 360 cases in the registry, 44 (41 women and 3 men; mean [SD] age, 53 [13] years [range, 25-78 years] at symptom onset) provided 64 presymptomatic serum samples obtained a mean (SD) of 7 (5.5) years (range, 1-23 years) before symptom onset. They were representative of the whole registry cohort based on age, sex, and disease severity (eg, positive salivary gland biopsy, postdiagnostic presence of anti-Ro/SSA and anti-La/SSB antibodies, and systemic involvement).

The mean duration between symptom onset and the first office visit was 3.7 (median, 3.0) years. Forty-four controls (41 women and 3 men; mean [SD] age, 53 [13] years) provided 44 serum samples.

In 29 cases (66%), autoantibodies were detected before symptom onset (primarily ANA, followed by RF, anti-Ro60/SSA, anti-Ro52/SSA, and anti-La/SS-B; Table and Figure). All 29 cases had autoantibodies in their earliest available serum sample, as early as 18 years before symptom onset (median, 5 [interquartile range {IQR}, 3.0-7.5] years for ANA, 6 [IQR, 3.0-13.0] years for RF, 4 [IQR, 2.25-7.75] years for antibodies against Ro60/SSA, 5 [IQR, 3.0-8.0] years for antibodies against Ro52/SSA, and 4 [IQR, 2.75-9.0] years for antibodies against La/SSB).

There was no statistically significant difference in the time between a positive test result and symptom onset between autoantibodies (P = .41). The odds ratio (OR) for developing Sjögren syndrome was high for both anti-Ro60/SSA (OR, 15.0; 95% CI, 1.9-118.5) and anti-La/SSB (OR, 10.0; 95% CI, 1.2-81.5) antibodies (Table). For anti-Ro52/SSA, none of the controls vs 15 cases were reactive.

Discussion | To our knowledge, this is the first systematic investigation of presymptomatic autoantibodies in Sjögren syndrome. Most cases produced autoantibodies many years before clinical onset of the disease; the median time of 4 to 6 years is an underestimate because all seropositive cases had autoantibodies in their earliest available serum sample.

Table. Presence of Autoantibodies Before Symptom Onset in 44 Patients With Primary Sjögren Syndrome and 44 Matched Controls

<table>
<thead>
<tr>
<th>Type of Autoantibody</th>
<th>No. (% of Patients With a Positive Presymptomatic Test Result (n = 44)</th>
<th>Time Between a Positive Test Result and Symptom Onset, Median (Range), y</th>
<th>No. (% of Controls With a Positive Test Result (n = 44)</th>
<th>Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antinuclear antibodies</td>
<td>23 (52)</td>
<td>5 (1-18)</td>
<td>4 (9)</td>
<td>5.8 (1.8-18.0)</td>
</tr>
<tr>
<td>Rheumatoid factor</td>
<td>18 (41)</td>
<td>6 (1-18)</td>
<td>4 (9)</td>
<td>4.5 (1.4-14.4)</td>
</tr>
<tr>
<td>Anti-Ro60/SSA</td>
<td>15 (34)</td>
<td>4 (1-18)</td>
<td>0 (2)</td>
<td>15.0 (1.9-118.5)</td>
</tr>
<tr>
<td>Anti-Ro52/SSA</td>
<td>15 (34)</td>
<td>5 (1-18)</td>
<td>0 (2)</td>
<td>NA</td>
</tr>
<tr>
<td>Anti-La/SSB</td>
<td>10 (23)</td>
<td>4 (1-14)</td>
<td>1 (2)</td>
<td>10.0 (1.2-81.5)</td>
</tr>
</tbody>
</table>

* Serum samples were obtained from the Southern Sweden Microbiology Biobank and 2 biobanks established during the projects (Malmö Preventive Medicine and Malmö Diet and Cancer). Anti-RNP and antichromatin antibodies were detected in 1 patient each (2%). None of the patients were positive for autoantibodies against Sm, Scl-70, Jo-1, or ribosome P.

** Not applicable because none of the controls were reactive.
A limitation of the study is the wide confidence intervals that reflect the small sample size and may indicate unstable estimates. Also, we cannot eliminate the possibility that seropositive controls may have had undiagnosed Sjögren syndrome (3-11 years diagnostic delay has been reported)5,6 or may develop the disease in the future.

Autoantibody profiling may identify individuals at risk many years before disease onset. However, the significance of these presymptomatic autoantibodies for determining prognosis and treatment remains to be determined.

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**Author Contributions:** Dr Henriksson had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Drs Jonsson and Theander contributed equally to the article.

**Statistical analysis:** Henriksson.

**Funding/Sponsorship:** This study was supported by grants from the Malmö University Hospital Foundation, the Malmö University Hospital Cancer Foundation, the Swedish Rheumatism Association, the Strategic Research Program at Helse Bergen, the Regional Health Authority for Western Norway, the Broegelmann Foundation, and the Foundations of Kock, Österlund, and Gustaf V.

**Role of the Sponsor:** The sponsors had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

**Additional Contributions:** We are grateful to Peter Olsson, MD (Department of Rheumatology, Lund University, Malmö, Sweden), for assistance with acquisition of data and Bo Cederholm, MD, PhD (Clinical Immunology Laboratory, Skåne University Hospital, Lund, Sweden), for access to laboratory facilities for the analysis of rheumatoid factor. No compensation was received by either of these individuals.


**COMMENT & RESPONSE**

**Acute Ischemic Stroke and Timing of Treatment**

**To the Editor** Dr Saver and colleagues1 used the Get With The Guidelines-Stroke (GWTG-Stroke) registry to investigate the association of time to tissue-type plasminogen activator...