Interstitial lung disease (ILD) is the leading cause of morbidity and mortality in patients with systemic sclerosis (SSc). SSc-ILD affects approximately 70-80% of SSc patients. This disease is largely irreversible, so the goal is stabilization usually with immunosuppressive therapy. 60% of SSc patients in our cohort have CT-defined ILD. 5 distinct FVC% trajectory patterns for SSc-ILD patients. Low baseline FVC% (Group 1) was more likely to have patients with younger age, higher proportions of men, African Americans, limited cutaneous SSc and UIP pattern on chest CT. Work is ongoing to quantify the degree of ILD on chest CTs (with thoracic radiologists) and the impact of immunosuppressive therapy on long-term outcomes.

**OBJECTIVES**

- Define the prevalence of ILD in patients with SSc in the University of Michigan (UM) Scleroderma cohort
- Explore the forced vital capacity (%FVC) trajectories in SSc patients with ILD

**RESULTS**

**Baseline Demographics by Trajectory Groups for SSc-ILD**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Overall n = 188</th>
<th>Group 1 n = 28</th>
<th>Group 2 n = 38</th>
<th>Group 3 n = 42</th>
<th>Group 4 n = 56</th>
<th>Group 5 n = 56</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years, Mean (SD)</td>
<td>52.3 (12.2)</td>
<td>56.0 (11.8)</td>
<td>50.7 (12.7)</td>
<td>54.6 (12.4)</td>
<td>50.4 (11.3)</td>
<td>53.2 (12.0)</td>
<td>0.007</td>
</tr>
<tr>
<td>Female Sex, n (%)</td>
<td>144 (76.6%)</td>
<td>22 (78.6%)</td>
<td>16 (42.1%)</td>
<td>16 (38.1%)</td>
<td>16 (28.6%)</td>
<td>32 (57.1%)</td>
<td>0.029</td>
</tr>
<tr>
<td>Race, n (%)</td>
<td>146 (78.1%)</td>
<td>22 (78.6%)</td>
<td>16 (42.1%)</td>
<td>16 (38.1%)</td>
<td>16 (28.6%)</td>
<td>32 (57.1%)</td>
<td>0.002</td>
</tr>
<tr>
<td>Disease Duration at diagnosis of ILD, median (range)</td>
<td>2.0 (0.5-4.2)</td>
<td>2.0 (0.5-4.2)</td>
<td>2.0 (0.5-4.2)</td>
<td>2.0 (0.5-4.2)</td>
<td>2.0 (0.5-4.2)</td>
<td>2.0 (0.5-4.2)</td>
<td>0.642</td>
</tr>
<tr>
<td>SSc Classification, n (%)</td>
<td>Diffuse (54%)</td>
<td>16 (57%)</td>
<td>8 (21%)</td>
<td>10 (24%)</td>
<td>12 (21%)</td>
<td>16 (29%)</td>
<td>0.383</td>
</tr>
<tr>
<td>Limited</td>
<td>13 (35%)</td>
<td>3 (10%)</td>
<td>4 (10%)</td>
<td>2 (5%)</td>
<td>5 (9%)</td>
<td>4 (7%)</td>
<td>0.184</td>
</tr>
<tr>
<td>NSIP Pattern</td>
<td>16 (42%)</td>
<td>4 (14%)</td>
<td>3 (8%)</td>
<td>3 (7%)</td>
<td>5 (9%)</td>
<td>3 (5%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>UIP Pattern</td>
<td>24 (64%)</td>
<td>8 (28%)</td>
<td>8 (21%)</td>
<td>7 (17%)</td>
<td>10 (18%)</td>
<td>4 (7%)</td>
<td>0.051</td>
</tr>
<tr>
<td>PFT% Predicted, Mean</td>
<td>FVC % 72.0 %</td>
<td>53.7 %</td>
<td>55.6 %</td>
<td>58.9 %</td>
<td>57.7 %</td>
<td>50.9 %</td>
<td>0.002</td>
</tr>
<tr>
<td>Autoantibodies</td>
<td>Anti Centromere</td>
<td>17 (11%)</td>
<td>3 (9%)</td>
<td>3 (7%)</td>
<td>6 (13%)</td>
<td>4 (7%)</td>
<td>0.763</td>
</tr>
<tr>
<td>Anti Topoisomerase</td>
<td>5 (32%)</td>
<td>2 (6%)</td>
<td>3 (8%)</td>
<td>2 (5%)</td>
<td>4 (7%)</td>
<td>2 (3%)</td>
<td>0.564</td>
</tr>
</tbody>
</table>

**CONCLUSION**

- 60% of SSc patients in our cohort have CT-defined ILD
- 5 distinct FVC% trajectory patterns for SSc-ILD patients
- Low baseline FVC% (Group 1) was more likely to have patients with younger age, higher proportions of men, African Americans, limited cutaneous SSc and UIP pattern on chest CT
- Work is ongoing to quantify the degree of ILD on chest CTs (with thoracic radiologists) and the impact of immunosuppressive therapy on long-term outcomes

**STRENGTHS**

- Universal screening for ILD with High Resolution Computed Tomography (HRCT)
- Careful longitudinal follow-up at a University Hospital
- Retrospective Analysis
- Despite universal screening, not all patients completed an HRCT-only 80% had an HRCT
- Missing data in EMR
- Outside hospital information not readily available

**LIMITATIONS**

- Retrospective Analysis
- Obtained patient list using the Slicer Dicer tool in EMR database
- Searched for keyword “scleroderma” in senior author’s patient population
- An overall %FVC change trend was fitted using the smoothing-splines mixed-effect model that accounts for all available data
- The individual %FVC change trends among patients with ILD were categorized into different trajectory groups using PROC TRAJ, a group-based modeling, and clinical decision making
- Baseline characteristics were explored by %FVC trajectory groups

**METHODS**

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**INTRODUCTION**

- Interstitial lung disease (ILD) is the leading cause of morbidity and mortality in patients with systemic sclerosis (SSc)
- SSc-ILD affects approximately 70-80% of SSc patients
- This disease is largely irreversible, so the goal is stabilization usually with immunosuppressive therapy

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