Repeated testing was 3.5 times higher in tANA tested patients than in those tested with MAP.

Linked EHR-Medicare data revealed a greater decrease in post-test vs. pre-test mean annualized outpatient lab testing in MAP(+) (-$985, p < 0.0001) vs. tANA(+) (-$356, p < 0.0001) patients. A similar analysis of outpatient lab testing in EHR-HealthCore linked data revealed similar numerical trends but did not reach significance (p > 0.05).

Conclusions The significantly greater likelihood of SLE diagnosis and SLE medication initiation in MAP(+) vs. tANA(+) patients is consistent with improved clinical actionability, potentially shortening time to diagnosis. MAP(-) patients experienced a greater decrease in outpatient lab testing post-test relative to tANA(-) patients, supporting the improved negative predictive value of MAP vs. tANA, and MAP patients were tested 3.5 fewer times than tANA patients, reducing valuable health-care dollars.

Abstracts

1803 THE CLINICAL CHARACTERISTICS OF SLE PATIENTS WITH INCREASED LEVELS OF CELL-BOUND COMPLEMENT ACTIVATION PRODUCTS

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Background Cell-bound complement activation products (CB-CAPS), including erythrocyte-bound C4d (EC4d) and B-lymphocyte-bound C4d (BC4d), in a multi-analyte assay with algorithm (MAP) represent an important addition to the diagnostic armamentarium of SLE. The clinical and serologic phenotype of SLE patients with elevated levels of CB-CAPS has not been well described. Herein, we assessed the demographics, clinical manifestations, medical therapy, and laboratory variables of SLE patients with and without elevated CB-CAPS.

Materials and Methods This was a cross-sectional study of adult SLE patients (2012 SLICC or 2019 ACR/EULAR criteria) from June 2020 to July 2022. Patients completed the polysymptomatic distress scale. The managing physician scored the PGA and SLEDAI scores. Autoantibodies including ANA and anti-RNA-binding proteins were determined by ELISA. Anti-dsDNA was measured by immunofluorescence using the PGA and SLEDAI scores. Autoantibodies including ANA and anti-RNA-binding proteins were determined by ELISA. Anti-dsDNA was measured by immunofluorescence using the C. luciliea assays. CB-CAPs were determined by flow cytometry. The multi-analyte assay panel (MAP) was determined using a 2-tier algorithm. All autoantibodies, EC4d, and BC4d were tested in Exagen’s clinical laboratory. Fisher’s exact test and Kruskal-Wallis test were used to analyze differences in clinical and laboratory variables between CB-CAPS positive and CB-CAPS negative patients.

Results In this cohort of 185 SLE patients (90% female, 60% Black, mean age 44 years), 70% were MAP positive and 46% were BC4d and/or EC4d positive. CB-CAPS positive patients were younger, but there were no differences in sex, ethnicity, race, or mean length of disease between CB-CAPS positive and negative patients. Although almost all patients met both SLICC and ACR/EULAR classification criteria, the total ACR/EULAR classification score was greater for CB-CAPS positive patients. Higher rates of nephritis, serositis, alopecia and hematologic criteria were observed in the CB-CAPS positive patients.

Additionally, CB-CAPS positive patient demonstrated evidence of SLE disease activity with significantly higher SLEDAI scores (n=151). The SLICC and ACR/EULAR classification criteria, the total ACR/EULAR classification score was greater for CB-CAPS positive patients. Higher rates of nephritis, serositis, alopecia and hematologic manifestations were observed in the CB-CAPS positive patients.

Abstract 1803 Table 1 Demographics and SLE Disease Manifestations

<table>
<thead>
<tr>
<th>BC4d and/or EC4d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pos n=85</td>
</tr>
<tr>
<td>Neg n=100</td>
</tr>
<tr>
<td>Overall n=185</td>
</tr>
<tr>
<td>p-value</td>
</tr>
</tbody>
</table>

**Demographics**

<table>
<thead>
<tr>
<th>Mean length of disease</th>
<th>13.0 (8.8)</th>
<th>14.0 (10.0)</th>
<th>13.5 (9.5)</th>
<th>0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (y)</td>
<td>39.8 (13.9)</td>
<td>47.0 (13.1)</td>
<td>43.7 (13.9)</td>
<td>0.0004</td>
</tr>
<tr>
<td>% Female</td>
<td>78 (92%)</td>
<td>89 (89%)</td>
<td>167 (90%)</td>
<td>0.6</td>
</tr>
<tr>
<td>Black (n=179)</td>
<td>55 (67%)</td>
<td>53 (55%)</td>
<td>108 (60%)</td>
<td>0.09</td>
</tr>
<tr>
<td>Ethnicity Hispanic</td>
<td>6 (7%)</td>
<td>4 (4%)</td>
<td>10 (6%)</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**SLE History and Classification**

2012 SLICC Criteria 84 (99%) 99 (99%) 183 (99%)
2019 ACR/EULAR Criteria 84 (99%) 93 (93%) 177 (96%)
2019 ACR/EULAR Total 26 (21-33) 18 (13.5-24.5) 22 (17-29) <0.0001
Score [Median (IQR)]
Renal 47 (55%) 38 (38%) 85 (46%) 0.03
Serositis 30 (35%) 19 (19%) 49 (26%) 0.02
Alopecia 54 (64%) 47 (47%) 101 (55%) 0.03
Hematologic 61 (72%) 53 (53%) 114 (62%) 0.01

**Medications**

Hydroxychloroquine 71 (84%) 82 (82%) 153 (83%) 0.8
Methotrexate 8 (9%) 14 (14%) 22 (12%) 0.4
Azathioprine 17 (20%) 15 (15%) 32 (17%) 0.4
Mycophenolate 35 (41%) 33 (33%) 68 (37%) 0.3
Prednisone >5mg 32 (38%) 26 (26%) 58 (31%) 0.1
Belimumab, Rituximab, or Cyclophosphamide 16 (19%) 13 (13%) 29 (16%) 0.3

**Physician Assessments**

PGA 0.7 (0.7) 0.5 (0.6) 0.6 (0.6) 0.08
SLEDAI 2012 4.1 (3.9) 2.1 (2.6) 3.0 (3.4) <0.0001
SLEDAI Renal 13 (16%) 7 (7%) 20 (11%) 0.1
SLEDAI Rash 21 (25%) 13 (13%) 34 (18%) 0.06

**Patient Assessments**

Polysymptomatic Distress Score
(n=167) 8.1 (6.9) 10.0 (6.7) 9.1 (6.8) 0.09
Widespread pain index
(n=167) 3.6 (4.5) 4.7 (4.2) 4.2 (4.3) 0.1
Fatigue (mod-severe)
(n=151) 33 (49%) 45 (54%) 78 (52%) 0.6
Depression (yes)
(n=147) 31 (46%) 38 (48%) 69 (47%) 1.0
scores. Numerically more CB-CAPs positive patients had SLE-DAI rash and met SLEDAI renal criteria. There was no difference in medication use or features of polysymptomatic distress such as widespread pain, fatigue, or depression (table 1).

Serologic activity emerged as a hallmark of CB-CAPs positivity. CB-CAPs positive patients were more likely to have positive ANA, anti-Sm, anti-U1RNP, anti-RNP70, and anti-phospholipid antibodies than those who were CB-CAPs negative (table 2). Serologic markers of disease activity including elevated levels of anti-dsDNA and decreased C3 or C4 also tracked with CB-CAPs positivity (table 2).

Conclusion Narrowing the heterogenous clinical and immunologic features of SLE into endotyypical subgroups is a crucial step toward precision medicine and personalized care in SLE. CB-CAPs positive patients represent an important subset of patients who are characterized by greater serologic activity and internal organ pathology. Moreover, the cumulative burden of SLE activity is greater in those with CB-CAPs positivity, as measured by the ACR/EULAR criteria score. CB-CAPs positivity could provide both diagnostic and prognostic information with implications for improved disease monitoring. Further studies are needed to assess the effects of targeted therapeutics and the long-term outcomes of the CB-CAPs positive endotype.

Acknowledgements None.