

to assess whether IgG/IgM autoantibody ratios are related to progression from iSLE to SLE.

**Methods** In total, 34 iSLE patients, 41 SLE patients with quiescent disease and 22 HC were included in this cohort study. Patients were classified as iSLE if they met one clinical and one immunological criterion but less than four criteria of the Systemic Lupus International Collaborating Clinics (SLICC) criteria. Clinical assessment and blood collection was performed at baseline. Patients with iSLE received follow-up every six months up to five years or until progression to SLE. IgG and IgM levels for anti-dsDNA, anti-Ro52 and anti-Ro60 were measured by fluoro-enzyme-immuno-assay in serum samples obtained at baseline and follow-up. Optical density values were used for calculating the autoantibody ratios.

**Results** Cross-sectionally, anti-Ro52, anti-dsDNA and total IgG/IgM ratios did not differ between groups. Anti-Ro60 IgG/IgM ratios were significantly elevated in iSLE patients and SLE patients compared to HCs. There was no correlation between IgG/IgM ratios and interferon signature, SLE-DAI score, complement levels or number of SLICC classification criteria at baseline. Of the 34 iSLE patients, six patients progressed to SLE and one patient developed primary Sjögren's syndrome within five years. One patient that progressed to SLE showed an increase in anti-Ro52 and anti-Ro60 IgG/IgM ratio prior to progression. This increase was mainly due to an increase in anti-Ro52 and anti-Ro60 IgG autoantibodies. This finding was not observed in the other five progressors. IgG/IgM ratios were relatively constant during follow-up in non-progressors.

**Conclusion** Anti-Ro60 IgG/IgM ratios were significantly elevated in iSLE and SLE patients compared to HCs at baseline. IgG/IgM autoantibody ratios did not differ between iSLE patients that progressed to SLE and iSLE patients that did not progress.

## PO.2.31 DIFFERENT PATTERNS OF LONGITUDINAL CHANGES IN ANTINUCLEAR ANTIBODIES TITRES IN CHILDREN WITH SYSTEMIC LUPUS ERYTHEMATOSUS

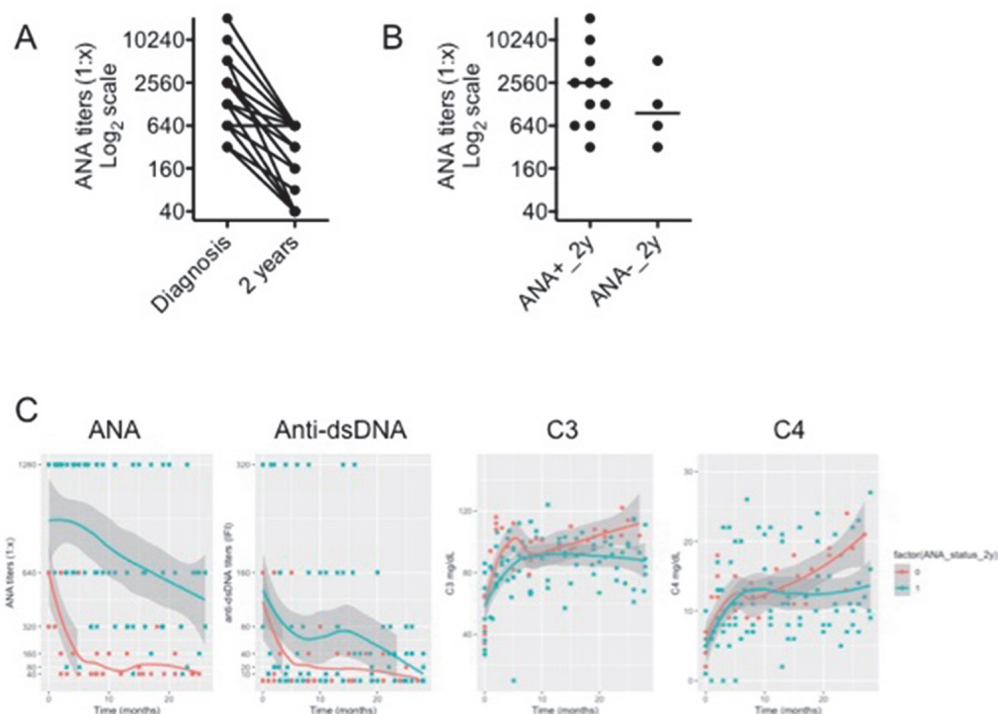
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**Purpose** to investigate the trend of antinuclear antibodies (ANA) and anti-dsDNA autoantibodies titers over time in children with a diagnosis of systemic lupus erythematosus (SLE).

**Methods** We enrolled 15 children with a diagnosis of SLE, fulfilling the SLICC criteria. For all patients included in the study ANA and anti-dsDNA antibodies testing was carried out from diagnosis every 3–4 months for 2 years. ANA were defined as negative for titers lower than 1:80. Laboratory parameters, clinical and demographic data was retrieved and analyzed. Statistical analysis was performed with software R\_v. 4.0.3.

**Results** Following two years of follow-up, all patients had ANA titers significantly lower than at time of SLE diagnosis (Mann Whitney test,  $p=0.0002$ ) (figure 1A). After two years of follow-up, 11 patients (73%) still had positive ANA (group 1), while 4 patients (26%) had negative ANA (group 0). At time of diagnosis no significant differences in ANA titers (Mann Whitney test,  $p=0.74$ ) (figure 1B) nor in disease activity, as measured by SLEDAI, (Mann Whitney test,  $p=0.88$ ) were observed (table 1). No significant differences in organ involvement were observed (table 1). Assessing the change over time in ANA titers, the 2 groups of patients showed two different patterns: in group 0, ANA titers quickly declined and disappeared in the first 6 months after diagnosis; in group 1, ANA titers declined more slowly, remaining positive at 2-year follow-up (Figure 1C). Both C3 and C4 increased in the follow-up period, with no different patterns between the



Abstract PO.2.31 Figure 1

Abstract PO.2.31 Table 1

|   | ANA- at 2 years  | ANA+ at 2 years   |
|---|------------------|-------------------|
| Patients, n                             | 4                | 11                |
| Female, n (%)                           | 3 (25)           | 10 (9)            |
| Age, mean $\pm$ SD                      | 13.80 $\pm$ 1.91 | 13.45 $\pm$ 2.72  |
| Disease duration, mean $\pm$ SD         | 6.47 $\pm$ 4.22  | 6.17 $\pm$ 2.71   |
| SLECC criteria                          |                  |                   |
| Acute cutaneous, n (%)                  | 4 (100)          | 6 (54.5)          |
| Chronic cutaneous, n (%)                | 0 (0.0)          | 0 (0.0)           |
| Alopecia, n (%)                         | 0 (0.0)          | 1 (9.1)           |
| Oral or nasal ulcers, n (%)             | 2 (50)           | 7 (63.6)          |
| Arthritis, n (%)                        | 3 (75)           | 4 (36.4)          |
| Serositis, n (%)                        | 0 (0.0)          | 2 (18.2)          |
| Renal, n (%)                            | 1 (25)           | 2 (18.2)          |
| Neurological, n (%)                     | 0 (0.0)          | 0 (0.0)           |
| Hemolytic anemia, n (%)                 | 1 (25)           | 4 (36.4)          |
| Leukopenia, n (%)                       | 4 (100)          | 9 (81.8)          |
| Thrombocytopenia, n (%)                 | 3 (75)           | 5 (45.5)          |
| ANA+, n (%)                             | 4 (100)          | 11 (100)          |
| Anti-dsDNA+, n (%)                      | 4 (100)          | 11 (100)          |
| Anti-Sm+, n (%)                         | 1 (25)           | 2 (18.2)          |
| LAC, n (%)                              | 0 (0.0)          | 1 (9.1)           |
| anti-cardiolipin+, n (%)                | 2 (50)           | 2 (18.2)          |
| anti-beta2GPI+, n (%)                   | 2 (50)           | 2 (18.2)          |
| Low complement, n (%)                   | 4 (100)          | 11 (100)          |
| C3, mean $\pm$ SD (mg/dL)               | 40.25 $\pm$ 5.51 | 52.73 $\pm$ 20.81 |
| C4, mean $\pm$ SD (mg/dL)               | 3.67 $\pm$ 2.89  | 4.60 $\pm$ 2.72   |
| SLEDAI at diagnosis, mean $\pm$ SD      | 12.75 $\pm$ 4.50 | 12.18 $\pm$ 7.14  |
| SLEDAI at last follow-up, mean $\pm$ SD | 0.00 $\pm$ 0.0   | 1.36 $\pm$ 1.43   |
| Treatment                               |                  |                   |
| PDN, n (%)                              | 3 (75)           | 11 (100)          |
| HCO, n (%)                              | 4 (100)          | 11 (100)          |
| MMF, n (%)                              | 4 (100)          | 11 (100)          |
| RTX, n (%)                              | 0 (0.0)          | 2 (18.2)          |

Table 1. Clinical and laboratory parameters of patients with SLE divided in two groups according to antinuclear antibodies (ANA) status after 2 years of follow-up. Anti-beta2GPI, anti-beta2glycoprotein-I antibodies; Anti-Sm, anti-Smith antibodies; HCO, hydroxychloroquine; LAC, lupus anticoagulant; MMF, mycophenolate; PDN, prednisone; RTX, rituximab; SD, standard deviation; SLEDAI, systemic lupus erythematosus disease activity index.

2 groups (Figure 1C). Similarly, anti-dsDNA antibodies titers declined over time with no clear different patterns between the 2 groups (Figure 1C).

**Conclusions** Our analysis showed two different patterns in the reduction of ANA titers over time in patients with childhood onset SLE, with 26% of patients becoming ANA negative after 6 months from diagnosis and remaining persistently negative during follow-up. Our data have important implications, specifically for the recruitment of patients into clinical trials, where the latest classification criteria of SLE require ANA positivity as entry criterion. Moreover, a seronegative state may represent a different subcategory of patients with SLE with specific pathogenetic pathways involved, possibly independently from autoantibodies. Therefore, further studies are needed to confirm and expand our data.

#### PO.2.32 DISEASE ACTIVITY CORRELATION OF ANTI-DSDNA, ANTI-SM AND ANTI-RIBO-P AUTOANTIBODIES IN SYSTEMIC LUPUS ERYTHEMATOSUS USING THE NOVEL PMAT TECHNOLOGY

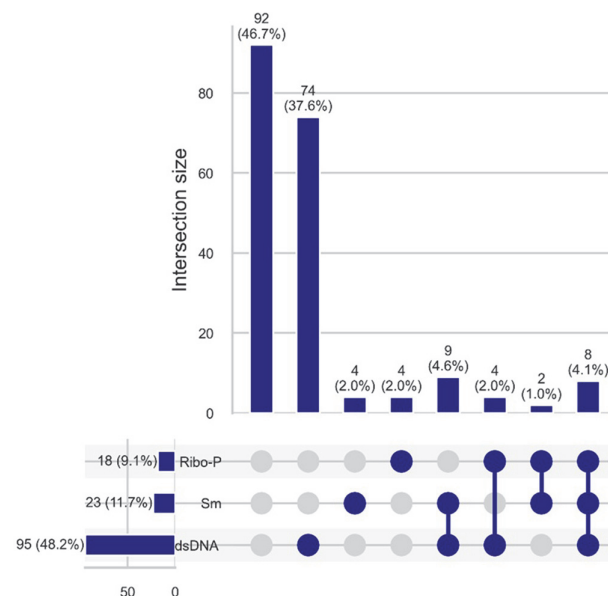
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**Purpose** The immunologic domain of the 2019 EULAR/ACR classification criteria for Systemic Lupus Erythematosus (SLE) includes the presence of anti-Sm and anti-dsDNA autoantibodies as well as low complement (C3 and/or C4) levels. Anti-dsDNA, anti-Sm and anti-Ribo-P autoantibodies are highly specific for SLE and depending on the assay used can correlate with disease activity. Low C3 and C4 levels have been associated with renal involvement and disease activity. The aim of the present study was to evaluate the association of anti-dsDNA, anti-Sm and anti-Ribo-P autoantibodies determined on a particle-based multi-analyte technology (PMAT) platform with disease activity measured by SLEDAI (SLE Disease Activity Index) score or cSLEDAI (clinical SLE Disease Activity Index) and C3 and C4 levels in a Spanish SLE cohort.

**Methods** A total of 197 SLE patients were tested for anti-dsDNA, anti-Sm and anti-Ribo-P autoantibodies by the novel PMAT system using the Aptiva CTD Essential Reagent (research use only) (Inova Diagnostics, USA). The correlation between anti-dsDNA, anti-Sm and anti-Ribo-P autoantibodies and SLEDAI/cSLEDAI scores, as well as between anti-dsDNA autoantibodies and complement levels were assessed by Spearman's correlation analysis.

**Results** Of the 197 SLE samples, 41.6% (n=82) were single positive for each of the autoantibodies evaluated: 37.6%



**Abstract PO.2.32 Figure 1** Combined of anti-dsDNA, anti-Sm and anti-Ribo-P antibodies on SLE patients using Upset plot

**Abstract PO.2.32 Table 1** Spearman's rank correlation and p-values between Aptiva dsDNA, Sm or Ribo-P PMAT (particle-based multi-analyte technology) and SLEDAI/cSLEDAI scores and/or complement levels (C3 or C4)

| Clinical Parameter | Spearman's rank correlation coefficient (p-value) |                         |                    |
|--------------------|---|-------------------------|--------------------|
|                    | Aptiva dsDNA                                      | Aptiva Sm               | Aptiva Ribo-P      |
| SLEDAI             | 0.618<br>( $<0.0001$ )                            | 0.359<br>( $<0.0001$ )  | 0.260<br>(0.0002)  |
| cSLEDAI            | 0.210<br>(0.0031)                                 | 0.244<br>(0.0006)       | 0.164<br>(0.0217)  |
| C3                 | -0.406<br>( $<0.0001$ )                           | -0.276<br>( $<0.0001$ ) | -0.252<br>(0.0004) |
| C4                 | -0.472<br>( $<0.0001$ )                           | -0.306<br>( $<0.0001$ ) | -0.252<br>(0.0004) |