Conclusions Based on our results we suggest that autoantibodies that are able to neutralize the circulating levels of all IFNα subtypes may have a beneficial effect to SLE disease course.

S12.3 TYPE I INTERFERONS INDUCE TIE2-MEDIATED ENDOTHELIAL CELL DYSFUNCTION IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Purpose Endothelial cell (EC) dysfunction is a hallmark of SLE and has been generally accepted to be one of the important factors contributing to the higher risk of thrombosis and atherosclerotic events observed in SLE patients. Although the presence of traditional factors (smoking, diabetes, increased age, obesity) and the presence of autoantibodies are associated with atherosclerosis and thrombotic events, they do not completely explain the higher risk of these events in SLE, suggesting the existence of other mechanism/factors.

Tie2 is a tyrosine kinase receptor essential for vascular development and blood vessel remodeling through interaction with its ligands angiopoietin-1 (Ang-1) and Ang-2. In homeostatic conditions, both Ang-1 and Ang-2 activate Tie2 signaling and induce vascular stabilization in a Tie1-dependent manner. However, inflammatory processes induce Tie1 cleavage, leading to the inhibition of Ang-1-induced Tie2 activation, and to the increase of Ang-2 now acting as a Tie2 antagonist, culminating in vascular dysfunction and EC activation 9–11. Importantly, this process has been implicated in both atherosclerosis and thrombosis.

As type I Interferons (IFN-α and IFN-β) are key cytokines in the pathogenesis of SLE, the aim of this study is to determine whether these cytokines induce Tie2 signalling-mediated endothelial cell dysfunction.

Methods Serum levels of Ang-1, Ang-2 and sTie1 in SLE patients (n=48) and healthy control (HC, n=29) were measured by ELISA. Human Umbilical Vein Endothelial Cells (HUVEC) were stimulated with IFN-α and IFN-β (both 1000 International Units –I.U.-) for 1, 2, 4, 6, 8, 12, 24, 48 and 72 hours. mRNA and protein expression of Ang-1, Ang-2, Tie1 and Tie2 were determined by quantitative PCR (qPCR) and ELISA, respectively. The phosphorylation of Tie2 determined by western blot and HUVEC viability was determined by calcein assay.

Results Type I IFNs, mainly IFN-β, significantly reduced the mRNA levels of TIE1 and TIE2. At level protein, IFN-β stimulation induced a significant increase in the secretion of the Tie1 ectodomain (sTie1). On the other hand, IFN-α and IFN-β did not modulate the mRNA expression of ANG1 or ANG2. However, both IFNs significantly reduced the protein secretion of Ang-1 after 24 h of stimulation. In the case of Ang-2, IFN-β induced Ang-2 secretion at early time points (<4h). Furthermore, IFN-α and IFN-β stimulation reduced Tie2 activation (Figure 1). At the functional level, both type I IFNs significantly reduced the viability of HUVEC (Figure 2).

Finally, and similarly to previous studies, we found reduced levels of Ang-1 and elevated levels Ang-2 in SLE patients compared to HC. Importantly, we showed for first time (to our knowledge) that sTie1 levels were also significantly elevated in SLE patients (Figure 3).

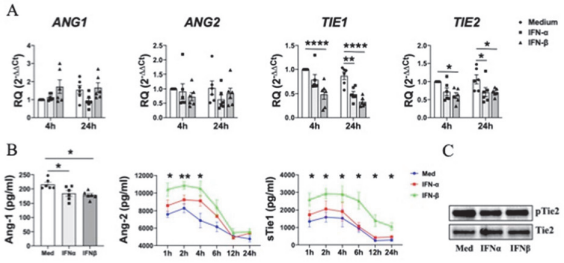

Figure 1. (A-B) Ang-1, Ang-2, Tie1 and Tie2 mRNA expression (A) and protein secretion (B) in HUVEC stimulated with IFN-α or IFN-β (1000 IU/ml) for the indicated time points. Means and SEM are shown. * p<0.05 , ** p<0.01 and **** p<0.0001. **(C)** Representative immunoblot of Tie2 phosphorilacion in HUVEC stimulated with IFN-α or IFN-β (1000 IU/ml) for 24 h.

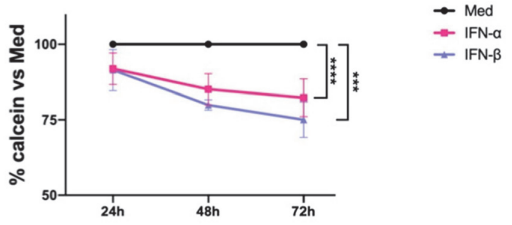

Figure 2. Cell viability in HUVEC stimulated with IFN-α or IFN-β (1000 IU/ml) for the indicated time points. Means and SEM of 6 independent experiments are shown. *** p<0.01 and **** p<0.0001.

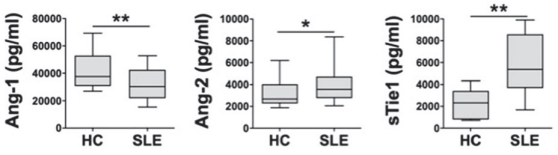

Figure 3. Ang-1, Ang-2 and sTIE1 levels in serum of HC (n=29) and SLE (n=48) patients. Data is presented as a box plot, where the boxes represent the 25th–75th percentiles, the lines within the box mark the median value, and lines outside the boxes denote the 10th and 90th percentiles. * p<0.05 and ** p<0.01.

Abstract S12.3 Figure 1

Conclusions Our results demonstrate that type I IFNs play a relevant role in the stability of endothelial cells by inhibiting Tie2 signaling, suggesting that these processes may be implicated in the cardiovascular events observed in SLE patients.

Friday 07 October 2022 from 08:30 to 09:30
S13 antiphopholipid syndrome

S13.1 DEVELOPING SYSTEMIC AUTOIMMUNE DISEASES IN HEALTHY SUBJECTS PERSISTENTLY POSITIVE FOR ANTIPHOSPHOLIPID ANTIBODIES: LONG-TERM FOLLOW-UP STUDY

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Purpose Longitudinal studies specifically addressed to describe the development of systemic autoimmune diseases in anti-phospholipid (aPL) positive healthy subjects are not available. Thus, we longitudinally followed a single-center aPL carriers cohort to evaluate the rate of disease evolution, focusing on anti-phospholipid syndrome (APS) and Systemic Lupus Erythematosus (SLE).

Methods Healthy subjects positive for aPL in at least two consecutive determinations were enrolled. Medical history was recorded and laboratory evaluation was performed [aCL and anti-β2GPI IgG/IgM, lupus anticoagulant (LA), antinuclear antibody (ANA), C3/C4 levels, genetic thrombophilia screening]. All subjects were evaluated every six months to register the occurrence of clinical and laboratory features suggestive of APS or SLE.

Results Ninety-five subjects (M/F 20/75, median age at first determination 46 years, IQR 19) were enrolled; aCL were identified in 75 carriers (78.9%), aβ2GPI in 60 (62.5%) and LA in 45 (47.3%). We prospectively followed our cohort for a median period of 72 months (IQR 84). In detail, eight aPL carriers (8.4%) were lost to follow up. At the last visit, 6 (6.3%) subjects became persistently negative after a median interval of 21 months (IQR 43.5); all of them were female with aCL positivity at low titer in 83.3% of cases. During a total follow-up of 7692 person-months, we found an absolute risk for systemic autoimmune diseases development equal to 0.9%. In detail, four patients (4.2%) developed a thrombotic event and were classified as affected by APS. Notably, all of these subjects shared a laboratory phenotype, characterized by LA and ANA positivity. Interestingly, this phenotype was observed only in two out of the remaining persistently positive carriers (2.7%, p= 0.0001). Furthermore, three patients could be classified as affected by SLE according to the 2019 ACR/EULAR classification criteria. All these patients were then treated by HCQ 5 mg/Kg/daily.

Conclusions In the present study, we evaluated the progression from asymptomatic aPL positivity condition to clinically manifested autoimmune disease. The tight and prolonged monitoring of our cohort allowed to observe the evolution to APS or SLE in almost 7% of cases. To the best of our knowledge, this is the first longitudinal cohort study specifically addressing the transition to systemic autoimmune diseases in aPL positive healthy individuals. Of note, it should be considered not only the expected APS development, but also the progression to SLE.

S13.2 ANTI-PHOSPHATIDYLSERINE/PROTHROMBIN ANTIBODIES AND THROMBOSIS ASSOCIATE POSITIVELY WITH HHLA-DRB1 *13 AND NEGATIVELY WITH HLA-DRB1*03 IN SLE

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10.1136/lupus-2022-elm2022.29

Purpose Emerging evidence demonstrate that anti-phosphatidylserine/prothrombin complex antibodies (anti-PS/PT) associate with thrombotic events. Genetic predisposition, including HLA-DRB1 alleles, is known to contribute to the occurrence of conventional antiphospholipid antibodies (aPL, anti-beta2glycoprotein-I (beta2GPI) and anti-cardiolipin (CL)). We investigated associations between anti-PS/PT and HLA-DRB1* alleles and thrombosis in SLE. Conventional aPL were included for comparison.

Methods We included 341 consecutive SLE patients, with information on general cardiovascular risk factors, including blood lipids, lupus anticoagulant and thrombotic events. Anti-PS/PT, anti-beta2GPI and anti-CL of IgA/G/M isotypes and lupus anticoagulant were quantified.

Results Anti-PS/PT antibodies associated positively with HLA-DRB1*13 (OR 2.7, P=0.002), whereas anti-beta2GPI and anti-CL antibodies associated primarily with HLA-DRB1*04 (OR 2.5, P=0.0005). These associations remained after adjustment for age, gender and other HLA-DRB1* alleles. HLA-DRB1*13, but not DRB1*04, remained as an independent risk factor for thrombosis and APS, after adjustment for aPL and cardiovascular risk factors. The association between DRB1*13 and thrombosis was mediated by anti-PS/PT positivity. HLA-DRB1*03, on the other hand, associated negatively with thrombotic events as well as all aPL using both uni- and multi-variate analyses. HLA-DRB1*03 had thrombo-protective effect in aPL positive patients. Additionally, HLA-DRB1*03 was associated with a favorable lipid profile regarding high-density lipoprotein and triglycerides.

Conclusions HLA-DRB1*13 confers risk for both anti-PS/PT and thrombotic events in lupus. The association between HLA-DRB1*13 and thrombosis is largely, but not totally, mediated through anti-PS/PT. HLA-DRB1*03 was negatively associated with aPL and positively with favorable lipid levels. Thus, HLA-DRB1*03 seems to identify a subgroup of SLE patients with reduced vascular risk.

Friday 07 October 2022 from 09:50 to 11:20

S14 NPSLE and associated symptoms with patients

S14.1 THE EFFECT OF ANTI-RIBOSOMAL-P AND ANTI-DWEYS ANTIBODIES ON DEPRESSION AND BEHAVIORAL COGNITIVE PROCESSES IN SYSTEMIC LUPUS ERYTHEMATOSUS : AN INTEGRATED CLINICAL AND FUNCTIONAL MRI STUDY

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10.1136/lupus-2022-elm2022.30

Purpose Cognitive dysfunction (CD) and mood disorders (MD) are among the most frequent neuropsychiatric (NP) events in Systemic Lupus Erythematosus (SLE), but their pathogenesis has not been fully clarified yet. A potential role of antineuronal antibodies in NP-SLE patients is currently being investigated. The primary aim of the study was to explore the effects of anti-ribosomal-P (anti-Rib-P) and anti-DWEYS antibodies on CDs and MDs and their relationship with