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PRECLINICAL AND CLINICAL CHARACTERIZATION OF CENERIMOD, A POTENT, SELECTIVE, AND ORALLY ACTIVE SPHINGOSINE-1-PHOSPHATE RECEPTOR 1 MODULATOR IN SLE

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Background Reported here is the characterization of cenerimod, a novel, potent, selective, and orally active sphingosine-1-phosphate receptor 1 (S1P₁) modulator in the context of SLE.

Methods Lymphocytes from patients with SLE and healthy subjects were assessed for cenerimod-induced S1P₁ receptor internalization. Efficacy of cenerimod was evaluated in the MRL/lpr lupus mouse model. In a 12-week phase 2 clinical trial in SLE subjects treated with multiple doses of cenerimod (NCT02472795), lymphocyte subsets and inflammatory biomarkers were characterized.

Results Cenerimod was potent and efficacious at inducing S1P₁ receptor internalization in T and B lymphocytes with an EC₅₀ of ~15 nM in both healthy subjects and patients with SLE. In lupus-like MRL/lpr mice treated with cenerimod, circulating T and B lymphocytes were reduced, which resulted in reduced immune infiltrates into tissue, reduced autoantibody production and inflammation, preserved organ function, and increased survival. In SLE subjects treated with cenerimod for 12 weeks, a dose-dependent reduction of circulating T cells (95%), B cells (90%), and antibody-secreting cells (85%) was evident. Furthermore, a reduction in anti-dsDNA antibodies and IFN- α , two key inflammatory molecules, was observed.

Conclusion Cenerimod was potent and efficacious in reducing S1P₁ receptor surface expression on lymphocytes, resulting in reduced circulating T and B lymphocyte populations, including antibody-secreting cells, and a decrease in inflammatory biomarkers in SLE subjects. Furthermore, cenerimod significantly ameliorated systemic and organ-specific autoimmunity in a mouse model of SLE. These results warranted the further investigation of the clinical efficacy and safety of cenerimod in the ongoing phase 2b clinical trial (NCT03742037).

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Poster presentations

P1

ANTIPHOSPHOLIPID SYNDROME IN QATAR: EPIDEMIOLOGICAL, CLINICAL, AND IMMUNOLOGICAL CHARACTERISTICS

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Purpose The aim of this study is to analyze epidemiological, clinical, and immunologic characteristics of primary and secondary antiphospholipid syndrome (APS) cases in Qatar.

Methods All patients with primary and secondary APS attending rheumatology clinics from January 2017 to May 2019 at Hamad General Hospital were identified and medical records were retrospectively reviewed.

Results 131 patients with APS who fulfilled revised Sapporo APS classification criteria were included- 116 women (88.5%) and 15 men (11.5%). 79 patients (60.3%) had primary and 52 patients (39.7%) had secondary APS. 41 patients (31.3%) had thrombotic event only, 64 patients (48.9%) had pregnancy morbidity only, and 26 patients (19.8%) had both thrombosis as well as pregnancy morbidity. 7 patients (5.4%) had arterial thrombosis only, 48 patients (36.6%) had venous thrombosis only and 12 patients (9.1%) had both arterial and venous thrombosis. 103 (78.6%) patients had pregnancy morbidity out of the 116 female patients. Early fetal loss was the commonest pregnancy morbidity seen in 73 patients (70.9%), followed by late fetal loss in 57 patients (55.3%).

48 patients (36.6%) had aCL IgG positive and 15 patients (11.5%) had aCL IgM positive, either one was positive in 54 patients (41.2%). 42 patients (32.1%) had B2GP IgG positive and 19 patients (14.5%) had B2GP IgM positive, either one was positive in 53 patients (40.7%). LA was positive in 121 patients (92.4%). There were 71 patients (54.2%) with single positive aPL test, 21 patients (16%) with double positive and 37 patients (28.2%) with triple positive aPL test results. LA was the most common single positive aPL test, seen in 65 patients (50.3%).

Conclusion The clinical manifestation and immunological characteristics of patients with APS in Qatar are diverse. Our cohort has much higher prevalence of LA positivity compared to other cohorts around the world. We also have a higher incidence of pregnancy morbidities.

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P2

DIFFICULTIES IN MANAGING A PATIENT WITH MULTI-ORGAN DAMAGE IN SYSTEMIC LUPUS ERYTHEMATOSUS AND A HIGH RISK OF THROMBOTIC EVENTS IN ANTIPHOSPHOLIPID SYNDROME (CASE REPORT)

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Background Systemic lupus erythematosus (SLE) is a multisystem disease with many clinical manifestations. Late diagnosis, kidney damage, neuropsychiatric disorders, high risk of thrombotic events, resistance to therapy worsen the prognosis of the disease and increase mortality.

Methods Description of a clinical case of multiple organ damages in a patient with SLE and concomitant antiphospholipid syndrome (APS).

Results We describe a case report of organ damage in a patient with SLE and concomitant APS. The clinical and laboratory manifestations for the entire period of the disease are given below (table 1). Now the main manifestation of the disease in

Abstract P2 Table 1 The clinical and laboratory manifestations for the entire period of the disease

Age	16 years old, 2000	17 years old, 2001	21 years old, 2005	25 years old, 2009	26 years old, 2010	28 years old, 2012	30 years old, 2014	31-21 years old, 2015-2016	35 years old, 2018	36 years old, 2019
Manifestations										
Arthritis/arthritis		knee joints		joints of the hands, knee joints			wrist joints, knee joints			
Thrombosis	DVLL	DVLL, SVLL								DVLL
Proteinuria (g/day)						✓	0,2	✓	✓	1,700
Change in urinary sediment					✓	✓	✓	✓	✓	✓
Fever, erythema					✓					
Pericarditis, pleuritis							✓			
Kidney Biopsy - Grade IVC (A) Glomerulonephritis						AI-8, CI-2				
Bleeding after a kidney biopsy → Nephrectomy						✓				
Epilepsy, MRI-changes in the brain								✓	✓	✓
Antinuclear factor						✓	✓	✓	✓	1/320
At-ds-DNA (IU/ml)					>200	✓	>300	✓	257,9	> 200,0
Smith antigen					✓					
IgG aK (GPL) / IgM aK (MPL)					>190	✓	>120	✓	>120/>80	>120/49,8
IgG aβ2GP1 (U/ml) / IgM aβ2GP1 (U/ml)					>100	✓	>100	✓	>100/>100	>100/41
Hypocomplementemia							✓	✓	✓	✓
Diagnosis	Acute thrombosis	Reactive arthritis	Reactive arthritis	Reactive arthritis	SLE, APS	SLE, APS	SLE, APS	SLE, APS	SLE, APS	SLE, APS
Treatment tactics		NSAID, Antibiotic therapy	NSAID, Antibiotic therapy	Sulfasalazine 2 g/day (7 month)	Prednisolone 20 mg/day (5 month) → 4 mg/day, Azathioprine 100 mg/day (3 month) Hydroxychloroquine 200 mg/day (3 month)	Methylprednisolone 60 → 4 mg/day, Human Immunoglobulin, Warfarin (without control INR)	Methylprednisolone 16 mg/day, Hydroxychloroquine 200 mg/day, Warfarin (without control INR)	Methylprednisolone 4 mg/day, Hydroxychloroquine 200 mg/day, Dabigatran etexilate 300 mg/day, Warfarin (INR >2), Acidi valproici	Methylprednisolone 4 mg/day, Hydroxychloroquine 200 mg/day, Rivaroxaban 20 mg/day, Acidi valproici	Rituximab 1000 g, Methylprednisolone 16 mg/day, Hydroxychloroquine 200 mg/day, Rivaroxaban 20 mg/day → Nadroparin calcium 0,6/day → Apixaban 10 mg/day, Acidi valproici

*DVLL – deep veins lower leg, SVLL – superficial veins lower leg, AI – activity index, CI – chronicity index, SLE – systemic lupus erythematosus, APS – antiphospholipid syndrome, NSAID – nonsteroidal anti-inflammatory drugs, INR – international normalized ratio

clinical finding are: active lupus nephritis of a kidney, relapse of venous thrombosis as a result of APS, thrombotic microangiopathy, cognitive impairment and somatogenic asthenodepressive syndrome.

Conclusions This clinical case demonstrates a patient with SLE presented in clinical features thrombosis, lupus glomerulonephritis class IV, AI 8, CI 2, high immunological disorders and concomitant APS. The difficulty in treating the patient is the consistently high immunological activity of the disease, the resistance of the therapy cytostatic and glucocorticoids, the inefficiency and intolerance of a number of oral anticoagulants: dabigatran etexilate and rivaroxaban — relapses of thrombosis, warfarin — the inability to reach the target levels of the international normalized ratio (INR) due to recurrent nosebleeds.

P3 IS THERE A RELATIONSHIP BETWEEN LUPUS ANTICOAGULANT AUTOANTIBODY AND FATIGUE IN JSLE?

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Background Fatigue is a common symptom in systemic lupus erythematosus (SLE) and is associated with poorer quality of

life and higher depression scores. Lupus anticoagulant (AcL) refers to a subset of autoantibodies to phospholipids interfering with clotting tests, which major clinical association is thrombosis. Physical activity reduces thrombotic risk in general and is a potential therapeutic strategy for managing fatigue in SLE patients. Purpose: To compare fatigue outcomes according to AcL status in juvenile-onset SLE (JSLE).

Methods A cross-sectional sample of JSLE patients, currently aged ≥ 16 years, completed SF-36, HADS and FSS questionnaires between October 2018- May 2019. The study was approved by the local Ethics Committee. All patients fulfilled both 2012 and 2019 EULAR/ACR classification criteria for SLE. Juvenile-onset was defined as age at diagnosis <18 years. Demographics and clinical characteristics were collected. Statistical analysis was performed with SPSS®.

Results JSLE patients (n=30) were studied (90%female) with median age of 21 years, range 16–35, with mean (SD) age of diagnosis of 15.8 ± 2.1 . Mean values (SD) of psychological assessment were: FSS 4.27 ± 1.36 ; Physical health SF-36 of $66.8(9.9)$ and Mental health SF-36 of $68.9(17.5)$. 56.7% JSLE showed clinically relevant fatigue, 63.3% anxiety and 13.3% depression. Four patients (13.3%) had positive AcL autoantibody. Those had lower Fatigue Severity Scale (FSS) average scores: $3.0(0.16)$ vs $4.5(0.28)$, comparing to those who were negative for AcL ($p=0.036$). Likewise, positive AcL JSLE patients had better results in SF-36 Physical Health questionnaires ($p=0.034$).

Conclusions The relationship between AcL status and fatigue was not previously known. We hypothesize that the present finding may be related to physical activity, a major indication