Background: Diffuse alveolar hemorrhage (DAH) is a rare and potentially lethal complication of systemic lupus erythematosus (SLE) with a high mortality rate. It occurs more frequently in patients with lupus nephritis (LN).

Objectives: The aim of our study is to explore the characteristics of patients that develop DAH with lupus nephritis, risk factors that predispose DAH, treatment response and outcomes.

Methods: Multicenter retrospective cohort study was undertaken including 6 centers in Saudi Arabia from 2002 to 2018. Systemic lupus erythematosus patients meeting the SLICC criteria with lupus nephritis (biopsy proven or proteinuria or renal impairment due to lupus) presenting with diffuse alveolar hemorrhage (fulfilling a predefined criteria) were included in the study. An identical number of control group with lupus nephritis was also studied. Data was obtained from medical records by using a data sheet: demographics including age, gender, diagnosis, date of diagnosis of lupus, date of presentation of alveolar hemorrhage, clinical presentation, detection of alveolar hemorrhage proved by radiology, lavage or biopsy and laboratory parameters: including level of hemoglobin before and during DAH, sign of activity, treatment and outcome of DAH. Identification of risk factors predisposing to DAH in lupus nephritis patients was analyzed.

Results: We identified 23 cases of DAH with lupus nephritis, all fulfilling the criteria. Mean age at presentation of DAH was 31.09 ± 12.6 years ranging from 14-57 years, of which 87 % were females. 13 patients 56.5% had Class 4 LN and 21.7% had Class 4 and 5 LN on renal pathology. DAH occurred at a mean of 6.5 years ± 3.8 in 13/23 patients with LN. Shortness of breath 95%, new chest x ray finding 95.7% and mean drop of haemoglobin of $2.72 \text{ gm/dl} \pm 0.97$ were more frequent at presentation of DAH with LN patients. High SLE disease activity - SELENA SLEDAI 2K was 38.56 ± 19.3 was present at the onset of DAH. All were treated with methylprednisone, 15/23 (65.2%) underwent mechanical ventilation and plasmapheresis was done in 21/23 patients (91.3%). Cyclophosphamide was given in 14/21 patients (60.9%), Intravenous immunoglobulins were given in 14/23 patients (65.2%) and dialysis was done in 12/23 patients (52.2%). Mortality occurred 8 patients 34.8 %. In comparison with the LN group, a mean haemoglobin of 7.56 ± 1.3 , CNS involvement, vasculitis and fever >38° were of statistically significance P value: <0.001, 0.02, 0.03 and 0.03 respectively.

Conclusion: In this multicenter cohort series with DAH in LN patients CNS involvement, vasculitis and fever >38° were associated in the occurrence of DAH. Mortality was low in our cohort in comparison to previous series which may be explained by early diagnosis and use of aggressive management. Well designed prospective studies are required to identify high risk patients for preventing this serious complication.

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AB0367

USING UNSUPERVISED CLUSTERING ANALYSIS OF REAL LIFE DATA FROM AN ONLINE COMMUNITY TO IDENTIFY LUPUS PATIENTS' PROFILES REGARDS TO THEIR TREATMENT PREFERENCES

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Background: Lupus is a prototype of a chronic complex autoimmune disease. Non-adherence rate to treatment is surprisingly high and impairs its management. Adherence to drug treatment is a complicated and multifactorial phenomenon, including characteristics of treatment.

Objectives: This study used unsupervised clustering analysis to identify profiles among lupus patients with regards to their treatment preferences (apart from efficiency).

Methods: An online survey among adult lupus patients from Carenity was conducted between August 2018 and April 2019. Multiple Correspondence Analysis (MCA) of a French lupus patient dataset was used with 3 unsupervised clustering methods (hierarchical, kmeans and partitioning around medoids).

Results: The 268 participating lupus patients were mostly female (96%), with a mean age of 44.3 years, and 83% fulfilled the ACR SLE diagnostic criteria. Overall, the preferred galenic form was oral (62%), and the most important characteristic was fewer side effects (32%).

A MCA was performed using 8 profile variables and the best unsupervised clustering method for this dataset (hierarchical clustering) identified 3 clusters (Table 1). Cluster 1, main one (59%), comprised patients with few comorbidities, less capacity to identify coming flares, and that wanted mostly (84%) oral treatments with limited side effects, most of them (83%) already on oral treatments. Cluster 2, the smallest one (13%), comprised younger patients, having already participated in clinical trials, favoring implants and the compatibility of treatments with pregnancy. Cluster 3 comprised patients (28%) that had longer lupus duration but less controlled disease with more comorbidities. A third had injectable treatments, wanting mainly implants and injections and with the main goal of reducing corticosteroids. The robustness of these results was confirmed by external validation and sensitivity analyses.

Table 1. Description of the three clusters

	Overall n=268	Cluster 1 n=158	Cluster 2 n=36	Cluster 3 n=74	p-value
Most represented age group (%)	41-50 (32%)	41-50 (41%)	31-40 (42%)	51-60 (39%)	< 0.001
Comorbidities 0 / ≥ 4	20% / 37%	30% / 4%	14% / 8%	3% / 36%	< 0.001
Ability to identify coming flare	82%	73%	97%	93%	< 0.001
Current lupus control (no or poor)	26%	20%	25%	38%	< 0.05
Current galenic (inj. / oral)	12% / 76%	2% / 83%	8% / 78%	35% / 61%	< 0.001
Trial participation	7%	0%	50%	1%	< 0.001
Ideal galenic oral	62%	84%	50%	20%	< 0.001
implant	19%	9%	33%	32%	
home / auto-inj.	14% / 9%	6% / 2%	11% / 11%	32% / 22%	
hospital inj.	6%	1%	5%	15%	
Top ranked drug characteristics ^{\$}	Side effects (32%)	Side effects (41%)	Pregnancy (55%)	Cortisone sparing (24%)	< 0.001

^{\$}among the 10 following items: less side effects, compatibility with pregnancy, better long term tolerance, less costly for collectivity, more convenient place for administration, easier administration, less medical follow-up needed, less risk of infection, cortisone sparing effect, shorter time of administration. P-values obtained after χ^2 tests. Inj.: injection.

Conclusion: Most lupus patients preferred a drug galenic favoring the conservation of their autonomy. The identified clusters could help physicians to tailor their therapeutic proposition taking into account patients' preferences and to maximize therapeutic adherence. Our study also highlights the potential of using unsupervised machine learning techniques in combination with direct-access patient community data to provide new a priori knowledge in the field of rare and complex chronic diseases.

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AB0368

TREATMENT OF SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS WITH BELIMUMAB – PROSPECTIVE OBSERVATION OVER 2 YEARS

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Background: Systemic lupus erythematosus (SLE) is autoimmune connective tissue disorder of unclear etiology. It is characterized by autoantibody production and a variety of clinical manifestations. The introduction of biological treatment over the past few years provided an opportunity for a disease control.

Objectives: The aim was to assess the effectiveness and safety profile of Belimumab in the treatment programs of SLE patients during a 2 year period.

Methods: We initiated a prospective observational study of SLE patients in the Rheumatology Department in University Hospital St Marina – Bulgaria. The study comprises data from 26 patients at baseline before Belimumab treatment initiation and data after 6, 12, 18 and 24 months of treatment. All patients were with moderate disease activity according to SELENA – SLEDAI index and were on treatment with immunosuppressive drug (azathioprine) and glucocorticoids (GCs). We observed the change in the dosage of glucocorticoids over the observed period, the number of flares of SLE, as well the SELENA – SLEDAI index change. Safety profile of Belimumab was also registered.

Results: We included 26 patients with SLE over a period of 4 years – between 2015 and 2019. The mean age was 45.8 ± 11.4 years and 94% were Caucasian females. All patients were on a stable dosage of GCs at least 3 months before the first infusion of Belimumab and azathioprine 100 mg daily. Ninety percent of patients were diagnosed with SLE for more than 6 years according to ACR – SLE criteria. All of SLE patients were with moderate disease activity. Main reasons for biological treatment decision were persistent mucocutaneous manifestations

(20%), polyarthritis (15%), haematological disturbances (35%) and persistent immunological markers (30%). One patient was excluded from the study due to infusion-related flush and severe hypotension reaction while the rest 25 completed the observation. We investigated and analyzed haematological results, ANA, anti-ds DNA, anti-Sm autoantibodies and complement fractions at baseline as well on the 12th and 24th month of treatment. The mean SLEDAI – SLEDAI index changed from 8.9 to 4.5 after 12 months of treatment and remained unchanged until the end of the study. We observed a mean reduction of GCs daily dosage from 12mg to 6mg after 18 months.

Conclusion: Biological treatment with Belimumab added to the standard treatment with GCs and AZA in patients with non-lupus nephritis SLE patients adds additional benefits. Our results show that there is a reduction in SLEDAI index as well as reduction in daily GCs intake. Safety profile is not different from the one reported previously.

Disclosure of Interests: None declared

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AB0369 EFFICACY AND SAFETY OF RITUXIMAB ORIGINATOR AND BIOSIMILAR IN PRIMARY SJÖGREN'S SYNDROME IN A REAL-LIFE SETTING

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Background: Over the last 2 decades rituximab (RTX) has been widely used, albeit off-label, in primary Sjögren's syndrome (pSS). Several studies reported that B-lymphocyte depletion with RTX is effective in this disease not only by reducing disease activity but also by affecting the inflammation and the lymphoid organization that occur in target tissues. With the recent release of several RTX biosimilars (bRTX) on the market, the demonstration of their interchangeability with RTX originator (oRTX) is required.

Objectives: To compare efficacy and safety of oRTX and bRTX in pSS patients in a real-life setting.

Methods: Clinical records of pSS patients referring to a tertiary rheumatology clinic were retrospectively evaluated. Patients having received at least 2 courses of either oRTX or bRTX (1000mg IV infusion, repeated after 2 weeks -1 course- and the course repeated after 24 weeks) with complete data at baseline and after 3, 6, 9 and 12 months of treatment were enrolled. Disease activity was assessed with the EULAR SS disease activity index (ESSDAI) and its clinical version without the biological domain (ClinESSDAI). Patient-reported symptoms were assessed with the EULAR SS Patient Reported Index (ESSPRI).

Results: Seven patients that received oRTX and 7 patients that received bRTX were enrolled. Baseline clinical features, including ESSDAI and ESSPRI were similar in the 2 treatment groups. Both compounds significantly reduced ESSDAI and ESSPRI as early as 3 months and no difference between the groups was observed at any time point (Figure 1). Of interest, ESSDAI slowly decreased until month 6 when the most pronounced reduction was observed. Conversely, ESSPRI dropped to its lowest values already at month 3. With regard to safety, at 12 months of follow-up no adverse event was observed in any of the treatment groups.

Conclusion: At 12 months of follow-up, oRTX and bRTX display similar efficacy and safety profiles. The improvement of patient reported outcomes is faster than the improvement of disease activity with both compounds. Our data support interchangeability of oRTX and bRTX in pSS.

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Figure 1 ESSDAI and ESSPRI values at every time point in the 2 treatment groups. Asterisks indicate p values <0.05 compared to the other treatment group at the same time point

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AB0370 SAFETY OF CS20AT04, A HAPLOIDENTICAL ALLOGENEIC BONE MARROW-DERIVED MESENCHYMAL STEM CELLS, IN A PHASE 1 STUDY IN LUPUS NEPHRITIS

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Background: Mesenchymal stem cells are known to have immunomodulatory properties and may potentially have therapeutic effect in lupus nephritis. Mesenchymal stem cells form a haploidentical donor are an attractive cell source

Objectives: CS20AT04, a haploidentical allogeneic bone marrow-derived mesenchymal stem cell, was evaluated in patients with lupus nephritis for safety and tolerability.

Methods: This was a single-arm phase 1 dose-escalation trial of CS20AT04 in adult patients with lupus nephritis (NCT03174587). A 3+3 design was used for dose escalation. The starting dose was 2.0 x 10⁶ cells/kg and was escalated to 3.0 x 10⁶ cells/kg if there no dose-limiting toxicity. The primary objective was to determine the maximum tolerated dose and evaluate the safety and tolerability at 28 days after the infusion.

Results: Seven patients were enrolled in the study. Patients received CS20AT04 through intravenous infusion. The initial dose of 2.0 x 10⁶ cells/kg was administered for the first 3 patients without any dose limiting toxicity. There was 1 patient who were not administered the full 2.0 x 10⁶ cells/kg dose due to technical error during infusion. The patient did not show dose limiting toxicity, but 1 additional patient was enrolled to have 3 patients who received the full 2.0 x 10⁶ cells/kg dose before escalating to the next level dose. The dose of 3.0 x 10⁶ cells/kg was administered for the next 3 patients without any dose limiting toxicity. Three adverse events were reported (1 diarrhea, 1 toothache, and 1 arthralgia) and they were all NCI-CTC grade I events.

Conclusion: CS20AT04 was well tolerated in single dose up to 3.0 x 10⁶ cells/kg in patients with lupus nephritis.

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AB0371 HYDROXYCHLOROQUINE AS VIEWED BY LUPUS PATIENTS – WHAT IMPACT FOR DOCTORS?

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Background: Hydroxychloroquine (HCQ) is recommended for all patients with systemic lupus erythematosus (SLE) and is typically considered as having a good safety profile¹. Yet, patient organisations observe that concerns about eye impact or “allergies to HCQ” are often raised on social media. This could contribute to the non-adherence, which varies from 3 to 76% in SLE patients depending on assessment method and drug².

Objectives: To understand if/how some patients' beliefs impact adherence to HCQ treatment.

Methods: In May 2019, LUPUS EUROPE launched a 29 questions on-line survey in 13 languages including questions on HCQ adherence. 2938 responses were analysed. 67.8% (1990 patients) were current HCQ users, 17.8% had stopped using it, 8.1% never had HCQ (6.4% did not respond to this question). 1820 users reported their adherence level. 314 (17.3%) were classified as “low” adherence as they reported missing/forgetting HCQ “always” (1.8%), “more than twice a week” (5.2%) or “once a week” (10.3%)

Results: The prescribed HCQ dose, kidney involvement or duration of treatment (beyond the 1st year) were found to have no impact on low adherence. Similarly, the user belief that HCQ has significant side effects, without experiencing these, was not found to impact adherence (p=.74).

The following factors were associated with better adherence: (p<.0001)