Background: Sjögren's syndrome (SS) affects mainly individuals of the 4th or 5th decade of life, although patients with early (≤ 35 years old) or late (≥ 65 years old) disease onset have been described in the literature. The clinical spectrum of the disease extends from mild dryness to severe systemic vasculitis and lymphoproliferative disorders. The phenotypic diversity of SS is defined by many factors, including age, since many parameters related to age may affect the clinical expression of the disease. Few studies have been conducted to study the effect of age on the clinical phenotype of SS, though with limited number of patients. Large and well-defined groups of SS are required to address such questions.

Objectives: To study the clinical phenotype of SS patients with early and late disease onset and to explore the association of age with lymphoma development in a unified multicenter cohort.

Methods: From a total cohort of 1997 consecutive SS patients who fulfill the 2016 EULAR/ACR criteria and are followed up in 5 clinical centers ([Universities of Udine, Pisa and Athens, Harokopio and Ioannina, (UPAH)], those with either early (≤ 35 years) or late (≥ 65 years) disease onset were identified and matched according to gender and disease duration with middle aged controls whose disease onset was at the 4th or 5th decade of life. Glandular manifestations, extra-glandular manifestations, serologic characteristics and histologic features were compared between the 2 age groups and the middle-aged control groups. Statistical analysis for categorical variables was performed by Fisher exact or chi-square tests and for continuous variables with t test or Mann-Whitney accordingly.

Results: Three hundred seventy-nine (19%) SS patients with early and 293 (15%) with late disease onset were identified and compared with 353 and 285 middle aged SS controls respectively. The median disease duration of patients with early onset was 12 years (range: 0-68) and for those with late disease onset was 5 years (range: 0-27). SS patients with early disease onset had statistically significant higher frequency of Raynaud's phenomenon, lymphadenopathy, hypergammaglobulinemia, anti-Ro/SSA, anti-La/SSB, rheumatoid factor, salivary gland enlargement, low C4 complement levels, leukopenia and lymphoma (10.3% vs 5.7%, $p=0.03$, OR= 1.91, 95% CI: 1.11-3.27) while SS patients with late disease onset had more frequently dry mouth, interstitial lung disease and lymphoma (6.8% vs 2.1%, $p=0.01$, OR= 3.4, 95%CI: 1.35-1.81).

Conclusion: In a multicenter cohort of 1997 consecutive SS patients, those with early and late disease onset comprise more than one third of the total SS population. Patients with early disease onset, exhibit robust B cell responses with traditional risk factors for lymphoma as opposed to patients with late disease onset. Both age groups have increased lymphoma prevalence but presumably for different reasons, since late onset patients lack classical predictors of lymphoma. Therefore, these predictors deserve further study in different disease subsets.

Disclosure of Interests: Andreas Goules: None declared, Ourania Argyropoulou: None declared, Vasileios Pezoulas: None declared, Francesco Ferro: None declared, Saviana Gandolfo: None declared, Valentina Donati: None declared, Marco Binutti: None declared, Sara Zandonella Callegher: None declared, Loukas Chatzis: None declared, Aliko Venetsanopoulou: None declared, Evangelia Zampeli: None declared, Maria Mavromati: None declared, Paraskevi Voulgari: None declared, Clio Mavragani: None declared, Chiara Baldini: None declared, Fotini Skopouli: None declared, Dimitris Fotiadis: None declared, Salvatore De Vita Consultant of: Roche, Human Genome Science, Glaxo Smith Kline and Novartis, Haralampos M. Moutsopoulos: None declared, Athanasios Tzioufas: None declared
DOI: 10.1136/annrheumdis-2020-eular.4094

FRI0150

USEFULNESS OF SALIVARY GLAND ULTRASONOGRAPHY IN THE ASSESSMENT OF SALIVARY GLAND ACTIVITY AND DAMAGE IN PRIMARY SJÖGREN'S SYNDROME: A SINGLE CENTER EXPERIENCE

F. Ferro¹, G. Governato¹, V. Donati¹, G. Fulvio¹, S. Fonzetti¹, E. Elefante¹, N. Luciano^{1,2}, M. Mosca¹, A. Cecchetti¹, C. Baldini¹. ¹University of Pisa, Clinical and Experimental Medicine, Pisa, Italy; ²IRCCS Istituto Clinico Humanitas, Milano, Italy

Background: Salivary gland ultrasonography (SGUS) has an emerging role in the diagnosis of primary Sjögren's syndrome (pSS); however, it is still an open issue whether distinct sonographic abnormalities may indicate reversible glandular activity or irreversible disease-induced damage.

Objectives: To assess the association between SGUS abnormalities, salivary gland disease activity and loss of function in pSS patients over a long-term follow-up.

Methods: Patients with pSS fulfilling the AECG 2002 criteria were included in this observational study. Both parotid and submandibular glands were examined at the time of the study inclusion and during the follow-up. SGUS findings (i.e gland size, echogenicity, homogeneity, hyperechoic bands, number and location of the hypoechoic/anechoic areas, number of lymph nodes, calcification, posterior border visibility) were defined according to previous studies and monitored over the time. Patients demographics, clinical, histological and laboratory data were routinely collected. ESSDAI and ESSPRI were used to assess disease activity and PROs.

Results: We included 419 (402 F:17M) pSS patients: 206/419 at the diagnosis and 213/419 with a median disease duration of 7 (IQR 4-11) years. SGUS

examination was repeated in 81/206 and in 108/213 patients, after a median follow-up of 30 (IQR 12-42) months, respectively. Noteworthy, 18/419 pSS patients were treated with rituximab (RTX) during the study period. The overall SGUS score correlated directly with the minor salivary focus score ($r=0.366$, $p=0.000$) and with the ESSDAI ($r=0.482$, $p=0.000$); the parotid inhomogeneity score correlated directly with the glandular domain of the ESSDAI ($r=0.530$, $p=0.000$). The unstimulated salivary flow rate (USFR) correlated inversely with the overall SGUS score ($r=-0.257$, $p=0.000$) and with the presence of hyperechoic bands in both the parotid ($r=-0.210$, $p=0.03$) and the submandibular glands ($r=-0.316$, $p=0.000$). When compared to patients with an established pSS, newly diagnosed patients presented less frequently a gross inhomogeneity in their parotid glands (30/206, 14.6% vs 53/213, 24.9%, $p=0.01$) and less hyperechoic bands in both their parotid (33/206, 16% vs 61/213, 29%, $p=0.001$) and submandibular glands (53/206, 26% vs 110/213, 52%, $p=0.001$). However, over a median 30 month-follow-up we did not observe any significant change neither in the number of hypo-anechoic areas nor in the inhomogeneity score in both newly diagnosed patients and in those with an established disease. Out of the 18 pSS patients treated with RTX, 14 (78%) presented at the baseline a moderate to gross inhomogeneity in their glands: no changes in the number of hypo-anechoic areas were observed also in these patients with the exception of a variation in the number of intra-parotid lymph nodes.

Conclusion: SGUS abnormalities appeared to be associated to both salivary gland disease activity and damage. Namely, the presence of hyperechoic bands significantly correlated with salivary loss function. Diffuse-scattered hypoechoic areas did not change over a median 30-month follow-up indicating that additional studies are required to better elucidate the correlation between SGUS abnormalities and the corresponding histopathologic lesions.

Disclosure of Interests: Francesco Ferro: None declared, Gianmaria Governato: None declared, Valentina Donati: None declared, Giovanni Fulvio: None declared, Silvia Fonzetti: None declared, Elena Elefante: None declared, Nicoletta Luciano Speakers bureau: Paid as speaker for Eli Lilly, Sanofi, Marta Mosca: None declared, Antonella Cecchetti: None declared, Chiara Baldini: None declared
DOI: 10.1136/annrheumdis-2020-eular.4594

FRI0151

COMORBIDITY IN INCIDENT SYSTEMIC LUPUS ERYTHEMATOSUS: ANALYSIS OF A CLAIMS DATA COHORT

K. Albrecht¹, I. Redeker¹, M. Aringer², U. Marschall³, A. Zink^{1,4}, J. Callhoff¹.

¹German Rheumatism Research Centre, Berlin, Germany; ²TU Dresden, Dresden, Germany; ³Barmen, Wuppertal, Germany; ⁴Charité University Medicine, Berlin, Germany

Background: Systemic lupus erythematosus (SLE) targets many tissues including heart, kidney, bone and brain, causing a variety of comorbidities. Epidemiological studies assessing comorbidity in SLE facilitate earlier detection to limit its progression.

Objectives: To analyze comorbidities in individuals with an incident diagnosis of systemic lupus erythematosus (SLE) in claims data in comparison to matched controls.

Methods: Individuals with ≥ 2 outpatient or 1 inpatient SLE diagnosis (M32.1, M32.8, M32.9, ICD10) in 2016-2018 and no diagnosis in 2015 or 2014 were identified in a German statutory health insurance fund covering 7.2 million people > 18 years old. Comorbidities defined by the Elixhauser index, medical prescriptions, hospitalization and sick leave were analyzed in the year prior to diagnosis and during a two year follow-up in comparison to age and sex-matched controls without related autoimmune diseases (1:10). To account for detection bias, a second age and sex-matched control group with incident diabetes mellitus (E10-14) was drawn (1:5). To consider diagnostic uncertainty, two sensitivity analyses were performed, namely (i) excluding cases with ICD diagnosis of Sjögren's syndrome, mixed connective tissue disease, systemic sclerosis and tubulointerstitial nephritis and (ii) excluding cases without any prescription of antimalarials.

Results: A total of 559 persons were included (87% female, mean age 55 years). The mean Elixhauser score increased from 1.1 in 2015 to 4.2 in the index year and to 4.5 in the 2nd year after diagnosis. Hypertension (47%), depression (31%), hyperlipidemia (25%), osteoarthritis (25%) and osteoporosis (21%) were among the most frequent comorbidities in the index year. Drug prescriptions (mean 9.7, $\Delta+6.3$), among these glucocorticoids (56%), HCQ (50%) and azathioprine (13%), and hospitalization (40%, $\Delta+26\%$) increased in the 1st year after the SLE diagnosis. The increase in comorbidity diagnoses was low in controls without related autoimmune disease, while controls with incident diabetes showed a more pronounced increase in cardiovascular risk factors and a lesser increase in osteoporosis and cerebrovascular disease (figure 1). Comparable results were found in the sensitivity analyses, where patients with HCQ were younger and had less general comorbidity.

Figure 1. Comorbidity claims in persons with incident systemic lupus erythematosus in 2016 (N=559, M32.1,8,9) and age and sex-matched controls (N=5,590 without related autoimmune disease, N=2,795 with incident diabetes, E10-14)

Conclusion: Cardiovascular, bone and neurologic comorbidities are frequently detected already at the time of diagnosing SLE. High numbers of medical prescriptions and hospitalization following SLE diagnosis reflect the comprehensive disease burden. Differences to controls without autoimmune disease are overestimated by detection bias.

References: **Funding** The study was supported by the Wolfgang Schulze Foundation of the German Rheuma-Liga

Disclosure of Interests: Katinka Albrecht: None declared, Imke Redeker: None declared, Martin Aringer Consultant of: Boehringer Ingelheim, Roche, Speakers bureau: Boehringer Ingelheim, Roche, Ursula Marschall: None declared, Angela Zink Speakers bureau: AbbVie, Amgen, BMS, Gilead, Hexal, Janssen, Lilly, MSD, Pfizer, Roche, Sanofi Aventis, UCB, Johanna Callhoff: None declared

DOI: 10.1136/annrheumdis-2020-eular.991

FRI0152

PULMONARY HYPERTENSION IN NEWLY DIAGNOSED SPANISH PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS: DATA FROM THE RELES COHORT

J. Álvarez Troncoso¹, Á. Robles Marhuenda¹, F. Mitjavila Villero², F. J. García Hernández³, A. Marín Ballvé⁴, A. Castro⁵, G. Salvador Cervelló⁶, E. Fonseca⁷, I. Perales Fraile⁸, G. Ruiz-Irastorza⁹ on behalf of GRUPO RELES Investigators, Autoimmune Diseases Study Group (GEAS). ¹Hospital Universitario La Paz, Department of Internal Medicine, Madrid, Spain; ²Hospital Universitari de Bellvitge, Department of Internal Medicine, L'Hospitalet de Llobregat, Barcelona, Spain; ³Hospital Virgen del Rocío, Department of Internal Medicine, Sevilla, Spain; ⁴Hospital Clínico Universitario Lozano Blesa / IIS Aragón, Grupo Autoinmunidad Clínica, Department of Internal Medicine, Zaragoza, Spain; ⁵Hospital Universitari Sant Joan de Reus, Department of Internal Medicine, Tarragona, Spain; ⁶Hospital Universitario La Fe, Department of Internal Medicine, Valencia, Spain; ⁷Hospital de Cabueñes, Department of Internal Medicine, Gijón, Spain; ⁸Hospital Infanta Sofía, Department of Internal Medicine, Madrid, Spain; ⁹Hospital Universitario de Cruces, Unit of Autoimmune Diseases, Department of Internal Medicine, Baracaldo, Vizcaya, Spain

Background: Systemic lupus erythematosus (SLE) is a systemic autoimmune disease characterized by multiorgan involvement. Pulmonary hypertension (PH) is an uncommon manifestation with high morbidity and mortality whose characteristics, prevalence and evolution in SLE are not completely defined.

Objectives: Using data of patients from the inception cohort Registro Español de Lupus Eritematoso Sistémico (RELES), we aimed to identify the factors associated with pulmonary hypertension (PH) in systemic lupus erythematosus (SLE).

Methods: Prospective observational study on a multicenter Spanish inception cohort. Patients with SLE, diagnosed by the American College of Rheumatology

(ACR) criteria, since January 2009, who had at least one transthoracic echocardiogram (TTE) performed were selected. Demographic data, diagnostic criteria, follow-ups, treatments and SLEDAI were analyzed.

Results: Of 289 patients diagnosed with SLE with TTE performed, 15 (5.2%) patients were identified to have PH. Mean age was 56.9±7.7 years, of which 93.3% (14) were women and 80% (12) Caucasian. The ACR score at diagnosis was 4.66. Mean SLEDAI was 15. Only 5 patients had dyspnea at the time of diagnosis. Mean pulmonary arterial systolic pressure was 49.2±5.6 mmHg. Among the PH, 4 patients had pericarditis (26.6%), 3 (20%) valvulopathies (1 antiphospholipid syndrome), 1 patient pulmonary embolism and 1 shrinking lung. Multivariable analysis indicated that pericarditis (odds ratio (OR)=2.53), and valvulopathies (OR 8.96) were independently associated with the development of PH in SLE. Having PH was associated with older age at diagnosis (p<0.001), more dyspnea (p<0.001), higher ESR (p=0.007), more serositis (p<0.001), higher SLEDAI (p=0.011), higher SLICC (p<0.001), higher number of admissions (p=0.006) and higher mortality (p=0.003).

Conclusion: PH in SLE is a serious comorbidity with high mortality. In the RELES cohort it was associated with increased disease activity, pericarditis and valvulopathies. Performing TTE in patients with SLE may favor early diagnosis and treatment.

References:

- [1] Kim JS, Kim D, Joo YB, et al. Factors associated with development and mortality of pulmonary hypertension in systemic lupus erythematosus patients. *Lupus*. 2018;27(11):1769–1777.
- [2] Bazan IS, Mensah KA, Rudkovskaia AA, et al. Pulmonary arterial hypertension in the setting of scleroderma is different than in the setting of lupus: A review. *Respir Med*. 2018;134:42–46.

Disclosure of Interests: Jorge Álvarez Troncoso: None declared, Ángel Robles Marhuenda: None declared, Francesca Mitjavila Villero: None declared, Francisco José García Hernández: None declared, Adela Marín Ballvé: None declared, Antoni Castro Consultant of: Actelion pharmaceuticals, GSK, MSD., Gonzalo Salvador Cervelló: None declared, Eva Fonseca: None declared, Isabel Perales Fraile: None declared, Guillermo Ruiz-Irastorza: None declared

DOI: 10.1136/annrheumdis-2020-eular.4906

FRI0153

ULTRA HIGH-RESOLUTION ULTRASOUND (UHFUS) OF LABIAL SALIVARY GLANDS: POTENTIAL APPLICATIONS IN PRIMARY SJÖGREN'S SYNDROME

C. Baldini¹, F. Ferro¹, R. Izzetti¹, S. Vitali¹, S. Fonzetti¹, G. Governato¹, G. Aringhieri¹, E. Elefante¹, M. Mosca¹, V. Donati¹, D. Caramella¹. ¹University of Pisa, Clinical and Experimental Medicine, Pisa, Italy

Background: Major salivary gland ultrasonography has an established role in diagnosis and assessment of pSS. Nowadays, however, interest is also growing in last-generation ultra high resolution ultrasound (UHFUS) transducers, which can produce frequencies up to 70 MHz and achieve tissue resolution up to 30 µm, opening up new possibilities for the study labial salivary glands (LSG).

Objectives: To investigate the usefulness of UHFUS in LSG ultrasound-guided biopsy and preoperative planning.

Methods: Consecutive patients undergoing a LSG for clinically suspected pSS were included in this study from January 2018 to December 2019. UHFUS of LSG was performed by using VEVO MD, equipped with a 70 MHz probe, scanning first the central compartment of the inferior lip, and then both peripheral compartments. The following parameters were evaluated: distribution of the glands, parenchymal inhomogeneity (score 0-3, from normal to evident), and fibrosis. UHFUS imaging was used to help locate the LSG for the US-guided biopsy. The same expert pathologist calculated the surface area of gland sections examined, the LSG focus score (FS), the number of foci and evaluated the presence of ectopic germinal centers (GCs). Consecutive patients that had undergone a traditional LSG biopsy from December 2016 to December 2017 were included as controls.

Results: We included a total of 249 patients with suspected pSS: 137 undergoing the UHFUS-guided LSGs and 112 the traditional LSG biopsy procedure. No demographic differences were observed between the two groups. No differences were also observed in the distribution of the final diagnosis. A diagnosis of pSS according the ACR 2016 criteria was made in 60/137 (43.8%) and 36/112 (32.1%) patients, respectively whereas a diagnosis of no-SS sicca was made in 44/137 (32.1%) and in 43/112 (38.4%) patients; the remaining diagnosis included secondary SS (4/137, 3% and 9/112, 8%) and undifferentiated connective tissue disease (UCTD) (29/137, 21.2%, and 24/112, 21.4%). With respect to no-SS sicca controls and UCTD patients, pSS patients presented higher UHFUS inhomogeneity scores in both central and peripheral labial compartments (p=0.001). There were no complications from the UHFUS-guided LSG biopsy. The mean glandular surface area obtained was significantly higher than the area obtained by traditional LSG biopsy procedure (7.4 ±4.0 mm² vs 6.3±3.7 mm², p=0.02) thus facilitating the assessment of the FS. Interestingly, the latter showed a good correlation with the UHFUS inhomogeneity (r=0.509**, p=0.000).