elastography (SWE) is useful to distinguish pathological changes of the SG between early stage with normal salivary flow and advanced stage (EULAR2018). The present study we demonstrated that the tissue elasticity was increased due to inflammation and high viscosity in the SG at the early stage of SS with normal salivary flow comparing that in non-SS patients, but was decreased due to structural changes in the SG at the advanced stage of the disease. The SWE may be a useful tool for elucidation of early stage pathological changes of the SG when salivary gland functions are not impaired in SS.

Objectives: The aim of this study was to elucidate the usefulness of SWE in early-stage SS patients.

Methods: Seventeen non-SS patients and eighty patients who fulfilled the American College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) classification criteria for SS were studied. SS patients were divided into three groups according to salivary flow using gum test (VL/SS: <5mL/10min. (n=33), L/SS: 5-10mL/10min. (n=32) and N/SS: ≥10mL/10min. (n=15)). All patients were examined SGUS by a single investigator who was blinded to device (TUS-A300; Canon Medical Systems, Tokyo, Japan) with a linear transducer (7.5-10MHz). The examination consisted of conventional B-mode US (US staging score), pulsed wave Doppler US (PD grading score) and SWE with quantitative assessment. US staging scores were assessed by glandular size, inhomogeneity and contrast of diaphragm muscle (stage 0 to 3). PD grading scores were graded by pulsed wave pattern in pulsed wave Doppler US at the internal SG facial arteries (grade 0 to 2). With the region-of-interest (ROI) placed over the stiffest areas of the lesion on SWE, the quantitative mean of the elasticity values were measured by shear wave velocity (Vs: m/s) and elasticity (E: kPa) for each lesion.

Results: The Vs and E values were correlated with US staging score ($r=-0.56$, $p<0.001$, $r=-0.58$, $p<0.001$) and PD grading score ($r=-0.51$, $p<0.001$, $r=-0.52$, $p<0.001$) in all patients. There was no significant difference between non-SS and N/SS in early-stage SS by US staging score (0.77 ± 0.90 vs 1.20 ± 0.86) and PD grading score (0.18 ± 0.053 vs 0.53 ± 0.19). However, the values of Vs and E were highest in N/SS as compared with all groups, and significantly higher in N/SS than in non-SS (Vs: 1.73 ± 0.18 vs 2.03 ± 0.28 m/s, $p<0.01$, E: 9.38 ± 1.17 vs 12.73 ± 3.63 kPa, $p<0.01$).

Conclusion: The present study we demonstrated that the tissue elasticity was increased due to inflammation and high viscosity in the SG at the early stage of SS with normal salivary flow comparing that in non-SS patients. The SWE may be a useful tool for the differential diagnosis between patients with non-SS and early-stage SS with normal salivary flow in contrast to conventional SGUS.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.1518

AB0521 EVALUATION OF LARYNGEAL IMPAIRMENT IN PATIENTS WITH SJÖGREN'S SYNDROME

Benedikt Hofauer, Andreas Knopf, Carmen Unterhofer, Naglaa Mansour, Lara Kirschstein, Simone Graf. *Technical University Munich, Otorhinolaryngology/Head and Neck Surgery, Klinikum rechts der Isar, Munich, Germany*

Background: Hyposalivation in patients with Sjögren's Syndrome is causative for oral dryness, one of the main symptoms of this disease. So far only little attention has been paid to a possible impairment of laryngeal functions due to the hyposalivation, even though, especially in younger and working patients, signs of laryngeal involvement often have an impact on the patient's quality of life.

Objectives: The objective of this study is to evaluate the laryngeal impairment in patients with Sjögren's Syndrome.

Methods: Patients with Sjögren's Syndrome diagnosed according to the AECG classification criteria were included in this study. Salivary function was evaluated by the measurement of the unstimulated salivary flow (USF). The laryngeal function was evaluated according to the European Laryngological Society protocol¹, which includes five different items: perception (roughness, breathiness, hoarseness), videostroboscopy, acoustics (jitter, dysphonia severity index, DSI), aerodynamics and subjective rating by the patient (voice handicap index, VHI).

Results: Eighteen patients (15 female, mean age 63 years) were included in the examination. Mean USF was 0.6 ml/5 min (± 0.5). The auditory-perceptual assessment resulted in slight and moderate deviance in 14 and 2 patients for roughness of the voice, in slight and moderate deviance in 12 and 3 patients for breathiness and in slight, moderate and severe deviance in 14, 3 and 1 patient for hoarseness. Evaluation of acoustics resulted in abnormal values in 12 patients (67%). DSI revealed mild dysphonia in 7, moderate dysphonia in 6 and severe dysphonia in 1 patient. Evaluation of aerodynamics was abnormal in 12 (maximum phonation time) and 11 (phonation quotient) patients. Analysis of the VHI resulted

in grade 0 in 5 patients (almost certainly not noticeable suffering), grade 1 in 8 patients (more likely unnoticeable than conspicuous suffering), grade 2 in 3 patients (more probably noticeable than not) and grade 3 in 2 patients (certainly noticeable suffering).

Conclusion: The evaluation of various laryngeal functions in patients with Sjögren's Syndrome unfolded an impairment of different aspects. Questions on laryngeal involvement should be implemented in the anamnesis of these patients and the application of screening methods should be further investigated.

REFERENCES

- [1] Dejonckers PH, et al. A basic protocol for functional assessment of voice pathology, especially for investigating the efficacy of (phonosurgical) treatment and evaluating new assessment techniques. Guideline elaborated by the Committee on Phoniatrics of the European Laryngological Society (ELS). *Eur Arch Otorhinolaryngol* 2001.

Disclosure of Interests: Benedikt Hofauer Consultant for: Consultant for Galvani Bioelectronics for the area of sleep disorders., Andreas Knopf: None declared, Carmen Unterhofer: None declared, Naglaa Mansour: None declared, Lara Kirschstein: None declared, Simone Graf: None declared

DOI: 10.1136/annrheumdis-2019-eular.5558

AB0522 SEASONAL DIFFERENCE IN CEREBRAL STROKE FREQUENCY IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

Wen-Nan Huang¹, Yi-Ming Chen^{1,2}, Yi-Hsing Chen¹, Wei-Ting Hung¹, Yu-Wan Liao¹. ¹Taichung Veterans General Hospital, Division of Allergy, Immunology and Rheumatology, Taichung, Taiwan, Republic of China; ²Taichung Veterans General Hospital, Department of Medical Research, Taichung, Taiwan, Republic of China

Background: The incidence of stroke is well-known as increased in winter season in general population, but seasonal difference in the systemic lupus erythematosus remain unclear.

Objectives: The aim of study was to assess seasonal difference in cerebral stroke among patients with systemic lupus erythematosus.

Methods: We conducted a retrospective case-control study analyzing hospital database of a tertiary referral center in Taiwan. From January, 2002 to December 2017, subjects with systemic lupus erythematosus and cerebral stroke were enrolled. To examine the seasonal incidence of cerebral stroke, we analyzed data from the date of CT scan/MRI/MRA. The onset time was divided into four seasons (according Local season classification): spring (March, April, May), summer (June, July, August), autumn (September, October, November), and winter (December, January, February).

Results: In total, 4313 systemic lupus erythematosus patients were identified, 261 patients with cerebral stroke. Age of patients with cerebral stroke ranged 27 between 77 years, a mean age was 55-62 years. Female was predominant. Disease duration was longer in ischemia stroke group (4.8 years). According CT or MRI results, divided 4 types (Ischemia stroke (IS), ICH, SAH, SDH), 83% (150/180) cerebral stroke was ischemia stroke. 8.3% ICH, 5.5% SAH, 2.8% SDH found respectively. We noted a higher incidence of SLE with ischemia stroke in summer season (38.7%), the lowest incidence of ischemia stroke in winter season (18.7%). Patient with ICH has similar trend. But not found in SAH and SDH.

Conclusion: Incidence of systemic lupus erythematosus with cerebral stroke varied in different pattern. The present findings suggested an increase in the incidence of Ischemia stroke and ICH in summer season. Awareness of risk factors (esp. antiphospholipid antibodies) was essential to prevent cerebral stroke in SLE.

Table Seasonal difference in different types of cerebral stroke

	IS (n=150)	ICH (n=15)	SAH (n=10)	SHA (n=5)
Age	60 (46.8-75.0)	59.0 (35.0-68.0)	60.5 (43.3-77.3)	55.0 (27.0-71.0)
Gender% (F/M)	73.3/26.7	66.7/33.3	90.0/10.0	60.0/40.0
Disease duration	4.8(0.3-8.7)	2.5 (0.0-5.5)	3.9 (0.0-11.6)	0.0 (0.0-11.5)
Season				
Spring (3-5)	21.3%	26.7%	20.0%	60.0%
Summer (6-8)	38.7%	53.3%	20.0%	20%
Autumn (9-11)	21.3%	6.7%	30.0%	20%
Winter (12-2)	18.7%	13.3%	30.0%	0%