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THU0396 COMBINED POSITRON EMISSION TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING FOR THE ASSESSMENT OF SYSTEMIC SCLEROSIS GASTROINTESTINAL INVOLVEMENT

¹S.-A. Ng, S. Marcheseau³, Y. Wang⁴, J. Schaefferkoetter³, W. Xie⁵, D. Ng⁵, J. Totman³, A.H. Low^{1,2}, ¹Rheumatology and Immunology, Singapore General Hospital; ²Duke-National University of Singapore; ³Clinical Imaging Research Center, A*STAR and National University of Singapore; ⁴Gastroenterology and Hepatology; ⁵Nuclear Medicine and PET, Singapore General Hospital, Singapore, Singapore

Background: The gastrointestinal (GI) tract is affected in 90% of patients with systemic sclerosis (SSc), a disease characterised by excessive fibrosis. Baseline GI involvement is an independent predictor of 2 year mortality in patients with early diffuse cutaneous SSc. There is an urgent need to develop non-invasive methods of assessing SSc GI involvement for early diagnosis and monitoring. Novel non-invasive tools such as fluorodeoxyglucose-positron emission tomography (FDG-PET) and magnetic resonance imaging (MRI) have been used in oncology. Development of a new MRI sequence, T1 MOLLI (modified look-locker inversion recovery) mapping, has been used in cardiac imaging for detection and quantification of diffuse fibrosis.

Objectives: In this pilot study comparing SSc patients with healthy controls, we investigated whether FDG-PET-MRI is able to detect fibrosis and inflammation associated with SSc GI tract involvement.

Methods: We recruited 16 patients fulfilling the 2013 ACR/EULAR criteria for SSc and 15 healthy age-matched (within 5 years) controls. Severity of GI involvement was determined by the total Gastrointestinal Tract score (GIT, from University of California Los Angeles Scleroderma Clinical Trials Consortium).

All subjects fasted 6 hours prior and had non-spicy low-residue diet 3 days prior. Subjects were injected with FDG (6mCi) 1 hour prior and 10 mg hyoscine butylbromide (to reduce peristalsis) immediately before scanning. Breath-hold native T1 MOLLI mapping was acquired. FDG uptake was quantified by specific uptake value (SUV). All SSc patients and 5 controls underwent PET-MRI protocol. The remaining 10 controls only had MRI scanning. Student t-test was performed and statistical significance was taken to be $p < 0.05$.

Results: Demographics and clinical features of our study cohort are shown in table 1. Mean T1 values on MRI for the large and small bowels were significantly higher in SSc patients than healthy controls (large bowel: 1113 ± 189 ms vs 856 ± 182 ms respectively, $p = 0.0006$; small bowel: 1331 ± 246 ms vs 1169 ± 123 ms respectively, $p = 0.0296$), indicating the presence of GI fibrosis.

Mean PET SUV values for the large bowels were also higher in SSc patients than healthy controls (1.12 ± 0.23 vs 0.82 ± 0.23 respectively, $p = 0.0217$).

Abstract THU0396 – Table 1. Demographics and clinical features

	SSc patients (n=16)	Controls (n=15)
Limited/Diffuse SSc, n	11/5	Not applicable
Female, n (%)	14 (87.5%)	11 (73.3%)
Age, years	49.2±13.9	45.3±14.4
Mean disease duration from Raynaud's phenomenon onset, years	6.1±7.3	Not applicable
Mean disease duration from non-Raynaud's phenomenon onset, years	6.6±7.4	Not applicable
Mean GIT score	0.43±0.31	0

Conclusions: MRI T1-MOLLI mapping demonstrated evidence of bowel fibrosis in SSc patients. FDG-PET showed increased large bowel inflammation in patients. FDG-PET-MRI may potentially be a useful diagnostic and monitoring tool for SSc GIT disease.

Disclosure of Interest: None declared

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THU0397 THE PROGNOSTIC VALUE OF AUTOANTIBODIES IN SYSTEMIC SCLEROSIS AND A TWO-YEAR FOLLOW-UP OF FORCED VITAL CAPACITY

A.A.A. Mohamed, M. Hassanien. *Rheumatology and Rehabilitation, Assiut University, Assiut, Egypt*

Background: Systemic sclerosis (SSc) is a connective tissue disease involving the skin and internal organs of the body. Affection of the lungs and the vascular system significantly increases the morbidity and mortality. Controlling disease progression represents a challenge in clinical practice.

Objectives: We aimed to address prognostic factors of disease activity and study the progress of interstitial lung disease (ILD) under conventional disease modifying anti-rheumatic drugs (DMARDs) therapy.

Methods: Data of SSc patients (limited or diffuse) followed up in the Rheumatology Department Clinics throughout the past 2 years were collected for a retrospective study. The positivity of Antinuclear (ANA), Anti-centromere (ACA) and Anti-Scl70 antibodies was gathered from patients' data. Disease activity was assessed by the European Scleroderma Study Group (EScSG) activity index. Forced vital capacity (FVC) was used to mark the progress of ILD. Friedman and Wilcoxon signed rank tests were used for comparison of paired data as appropriated. Mann-Whitney U test, Kruskal-Wallis test and Chi-Square test were used to compare between two or more groups.

Results: The data of 42 SSc patients (59.5% limited SSc and 40.5% diffuse SSc) with a mean age 40 ± 12 years were enrolled. 83.3% of the patients showed ANA positivity. ACA was positive in 28.6% of the patients and Anti-Scl70 in 23.8% while 47.6% of the patients were negative for both. DMARDs were indicated according to organ involvement, and changes were made according to breakthrough events. Low scores of EScSG were noticed in the ACA +ve group compared to intermediate scores in the Scl70 +ve group and high scores in the negative group at baseline ($p = 0.082$) and 24 month follow-up ($p = 0.045$). The frequency of pitting digital ulcers at baseline was lowest in the ACA +ve group compared to the highest frequency in the negative group ($p = 0.026$), however, there was no difference between the groups at the 24 month follow-up. ANA did not affect the activity throughout the studied period. Follow up of FVC in the two years with different DMARDs is illustrated in figure 1. Patients followed on methotrexate (MTX) after cyclophosphamide (CYC) or mycophenolate (MMF) had raised FVC ($p = 0.033$ and $p = 0.054$ respectively) comparable to azathioprine (AZA) after CYC or MMF ($p = 0.031$ and $p = 0.27$ respectively).

Conclusions: ACA is proposed to be a marker of low disease activity and good response to therapy. Despite the risk of inducing ILD, MTX maintained a favourable effect on FVC throughout a follow-up period.

Disclosure of Interest: None declared

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THU0398 UNEXPLAINED IRON DEFICIENCY IS FREQUENT IN SYSTEMIC SCLEROSIS

A. Sari, A. Gill, S.I. Nihtyanova, V.H. Ong, C.P. Denton. *Rheumatology, Royal Free Hospital, University College London, London, UK*

Background: Prevalence of iron deficiency (ID) in systemic sclerosis (SSc) is unclear and can occur related to several causes.

Objectives: This cross sectional study aims to analyse association between ID and disease characteristics in SSc patients who does not have an overt cause for ID.

Methods: We identified 227 consecutive SSc patients who had iron laboratory studies (serum iron, total iron binding capacity and ferritin) with concurrent full blood count and serum C-reactive protein (CRP) measurement between May

2015 and November 2017. Exclusion criteria were as follows: not having serum CRP levels within 1 month of iron studies, chronic kidney disease (eGFR <60 ml/min), haemoglobinopathies, major surgery within one year, overt gastrointestinal (GI) or genitourinary blood loss, active GI cancer and vascular lesions of GI (GAVE, intestinal telangiectasia). Patients who have ferritin levels below cut-off values or were already on iron replacement were considered as iron deficient. To define iron deficient status, threshold levels of serum ferritin 30 ng/mL and 100 ng/mL were used to denote those with normal and high CRP levels (>5 mg/L) respectively. WHO classification system was used to determine the presence and severity of anaemia. Relationship between demographic and disease characteristics and serum iron status was analysed using Fisher's exact and Mann-Whitney U test.

Results: 178 patients (76.4% female) were eligible for final analysis. Clinical characteristics are reported in table 1. Median age and disease duration (interquartile range, IQR) were 54.6 (44.8–66.1) and 4.9 (2.1–4.8) years, respectively. ID was present in 43.2% of the patients and 41.6% of these patients was not anaemic. Iron deficient patients were more frequently female and had longer disease duration. Among female patients, ID was significantly more prevalent before the age of 50 (77.6% vs 0%, $p<0.001$).

Abstract THU0398 – Table 1. Comparison of demographics and disease characteristics between iron deficient and iron replete patients

	Iron replete (n=101)	Iron deficient (n=77)	p
Age, years, median (min-max)	56.8 (48.9–66.2)	51.9 (35.7–65.9)	0.06
Female, n (%)	70 (69.3)	66 (85.7)	0.01
Disease duration, years, median (min-max)	3.8 (1.7–8.1)	6.1 (3.0–24.6)	<0.01
Diffuse disease, n (%)	67 (66.3)	46 (62.2)	0.56
Anaemia, n (%) ¹	39 (38.6)	45 (58.4)	0.01
Moderate/severe anaemia, n (%) ²	11 (10.9)	24 (31.2)	<0.01
*GI involvement, n (%) ³	6 (6.0)	3 (3.9)	0.73
*Digital ulcer (DU), n (%)	23 (22.8)	20 (26.0)	0.62
*Severe DU, n (%) ⁴	14 (13.9)	12 (15.6)	0.74
*PAH, n (%)	2 (2.2)	3 (4.5)	0.65
ILD, n (%)	29 (30.9)	26 (36.6)	0.43
Proton pump inhibitor use, n (%)	81 (88.8)	64 (87.0)	0.94
Antibody specificity			
Scl-70, n (%)	21 (23.6)	11 (31.8)	0.25
Centromere, n (%)	20 (22.5)	13 (19.7)	0.67
RNA polymerase III, n (%)	16 (18.0)	9 (13.6)	0.46

* Diagnosed between May 2015 and November 2017

¹ Serum haemoglobin level of <13 mg/dL for men and <12 mg/dL for women

² Serum haemoglobin level of <11 mg/dL for both sex

³ Required antibiotics or bosentan, critical digital ischaemia, gangrene

⁴ Intestinal pseudoobstruction requiring hospitalisation, >2 courses of small bacterial overgrowth, PEG insertion or parenteral nutrition

Conclusions: Unexplained iron deficiency is frequent in scleroderma patients and a significant number of these patients do not have frank anaemia. Female sex and longer disease duration is associated with iron deficiency. Increased frequency in young female patients can be related to menstrual blood loss and further study to evaluate this association is required.

Disclosure of Interest: None declared

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THU0399 FEMALE SEXUAL DYSFUNCTION IN PATIENTS WITH IDIOPATHIC INFLAMMATORY MYOPATHIES

^{1,2}B. Hermankova, M. Spiritovic^{1,2}, H. Smucrova¹, S. Oreska¹, H. Storkanova¹, K. Pavelka¹, L. Senolt¹, H. Mann¹, J. Vencovsky¹, M. Tomcik¹. ¹Department of Rheumatology, 1st Medical Faculty, Charles University, Institute of Rheumatology, ²Department of Physiotherapy, Faculty of Physical Education and Sport, Charles University, Prague, Czech Republic

Background: Idiopathic inflammatory myopathies (IIM) are characterised by inflammation and atrophy of skeletal muscles, pulmonary and articular involvement, which leads to functional impairment, reduced quality of life including sexual life.

Objectives: To assess sexual functions/quality of life and pelvic floor function in female IIM patients compared to age-/sex-matched healthy controls (HC).

Methods: In total, 22 women with IIM [mean age: 55.1, disease duration: 7.9 years, dermatomyositis (DM, 8)/polymyositis (PM, 10)/necrotizing myopathy (IMNM, 3)/inclusion body myositis (IBM, 1)], who fulfilled the Bohan/Peter 1975 criteria for DM/PM, and 22 healthy controls (mean age: 55.1 years) without rheumatic diseases filled in 12 well-established and validated questionnaires assessing sexual function/quality of life, pelvic floor function, fatigue, physical activity and depression. Data are presented as mean $\pm$ SEM.

Results: Compared to HC, patients with IIM had significantly higher prevalence and greater severity of sexual dysfunction (FSFI, BISF-W: in all subscales as well as total scores), dysfunction of pelvic floor (PISQ-12), and worse sexual quality of life (SQoL-F) (table 1). Worse scores in IIM patients were associated with elevated muscle enzyme levels [lactate dehydrogenase: FSFI ($r=-0.524$, $p=0.0123$), BISFW ($r=-0.528$, $p=0.0115$)], greater fatigue [FIS: FSFI ($r=-0.434$, $p=0.0438$), BISF-W ($r=-0.488$, $p=0.0211$), SQoL-F ($r=-0.488$, $p=0.0070$), PISQ-12 ($r=0.643$, $p=0.0013$)], more severe depression [BDI-II: PISQ-12 ($r=0.474$, $p=0.0258$)], deteriorated quality of life [HAQ: PISQ-12 ($r=0.476$, $p=0.0252$)], and worse ability to perform physical activities [HAP: FSFI ($r=0.437$, $p=0.0417$), BISF-W ($r=0.451$, $p=0.0351$), PISQ-12 ($r=-0.494$, $p=0.0195$)].

Questionnaire: score range	Idiopathic inflammatory myopathies (n=22)	Healthy controls (n=22)	p-value
FSFI: Female Sexual Function Index: 2 (worst)–36(best)	14.2 $\pm$ 2.7	23.5 $\pm$ 2.5	$p=0.0146$
BISF-W: Brief Index of Sexual Function for Women: –16(worst)–75(best)	15.5 $\pm$ 3.9	28.9 $\pm$ 3.8	$p=0.0193$
PISQ-12: Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire short form: 0(best)–48(worst)	13.8 $\pm$ 1.1	8.0 $\pm$ 1.0	$p=0.0003$
PFQ17: Pelvic Floor Distress Inventory Questionnaire – short form 7: 0(best)–300(worst)	15.8 $\pm$ 4.5	5.6 $\pm$ 2.3	$p=0.1450$
SQoL-F: Sexual Quality of Life Questionnaire – Female: 0(worst)–100 (best)	54.9 $\pm$ 6.0	83.1 $\pm$ 3.4	$p=0.0006$
FSS: Fatigue Severity Scale: 9(best)–63 (worst)	46.9 $\pm$ 2.8	26.7 $\pm$ 2.5	$p<0.0001$
FIS: Fatigue Impact Scale: 0(best)–160 (worst)	60.6 $\pm$ 6.9	29.0 $\pm$ 4.2	$p=0.0003$
MAF: Multidimensional Assessment of Fatigue Scale: 1(best)–50(worst)	26.1 $\pm$ 2.3	17.8 $\pm$ 1.4	$p=0.0129$
BDI-II: Beck's Depression Inventory II: 0 (best)–63(worst)	14.5 $\pm$ 2.2	5.3 $\pm$ 1.1	$p=0.0003$
HAP: Human Activity Profile – adjusted activity score: 0(worst)–94(best)	53.7 $\pm$ 4.3	81.1 $\pm$ 1.5	$p<0.0001$
HAQ: Health Assessment Questionnaire: 0 (best)–3(worst)	1.0 $\pm$ 0.2	0.0 $\pm$ 0.0	$p<0.0001$

Conclusions: Women with IIM reported significantly impaired sexual function, sexual quality of life and pelvic floor function than age-matched healthy controls. Worse scores in IIM were associated with disease activity, physical activity, fatigue, depression and quality of life.

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