AB0548

ASSESSMENT OF THE PHYSICAL ACTIVITY IN SYSTEMIC SCLEROSIS PATIENTS BY USING COMMERCIAL SMART BANDS AND ITS ASSOCIATION WITH DISEASE CHARACTERISTICS: A PILOT STUDY

A. Avanoğlu Güler¹, H. Karadeniz¹, R. Bilici Salman¹, H. Satiş¹, H. Babaoglu¹, N. Atas¹, S. Haznedaroglu¹, B. Goker¹, M. A. Ozturk¹, A. Tufan¹. ¹Gazi University Faculty of Medicine, Department of Rheumatology, Ankara, Turkey

Background: Systemic sclerosis (SSc) is a complex disease, characterized by multi-system organ involvement including interstitial lung disease (ILD) and pulmonary arterial hypertension (PAH). The decrease in physical activity in SSc patients with lung involvement has been demonstrated by self-reported physical capacity and 6 min-walking test (6MWT) (1, 2). Commercial smart bands can provide data on daily physical activity, sleep characteristics, blood oxygen concentration and heart rate measurement, therefore may aid in monitoring disease activity.

Objectives: The aim of this study is to evaluate physical activity in SSc patients by using a commercial smart band and investigate its association with clinical characteristics and patient-reported outcome measures of disease activity

Methods: This prospective observational study included SSc patients with having a smartphone. Patients characteristics including age, sex, and organ involvements were recorded. Each participant was subjected to pulmonary function tests and 6MWT. All of patients answered Scleroderma Health Assessment Questionnaire (SHAQ, consisting of HAQ-Disability Index (DI) and visual analog scales (VAS) domains). All patients received Fitbit inspire HR smart band® which records the number of steps, heart rate, distance and was instructed to wear it continuously for one week. Tracked data was collected from smartphones via Fitbit application.

Results: Fifteen SSc patients (14 females and 1 male) participated in the study, 8 (53.3%) had limited SSc and 7 (46.7) had diffuse SSc. The mean age was 48.5±15.5 and the median disease duration was 4 (min-max:1-9) years. Eleven (73.3%) patients had ILD and one patient had PAH. Musculoskeletal complaints were evident in two patients. Forced vital capacity (FVC, % predicted), diffusion capacity of lung for carbon monoxide (DLCO, %) in patients with ILD were significantly lower than patients without ILD median (IQR) 102 (30) vs 80 (27) p= 0.026, 57 (20) vs 95 (13), p= 0.002, respectively. The median distance of 6MWTs were 450 (225) vs 568 (102) in ILD and non-ILD groups. The median total weekly step counts of ILD patients were remarkably lower in ILD patients compared to non-ILD 36.137 (17.879) vs 58.114 (80.681) steps/week, (p= 0.01). Patients with ILD had a bit higher median heart rate compared to non-ILD, 73 (9) vs 67.5 (12). The total weekly step counts were correlated with pulmonary function tests, including forced expiratory volume in one second (FEV1%) (r= 0.57, p= 0.025), FVC (%) (r= 0.65, p= 0.009), and DLCO (%) (r= 0.70, p= 0.005), patient-reported disease severity (r= -0.66, p= 0.007), and breathing problem (r= -0.55, p= 0.03) domains of SHAQ. There was no correlation between weekly step counts and 6MWT

Conclusion: The assessment of physical activity with smart activity bands may help to identify SSc patients with ILD. Tracked physical activity using smart bands correlates with pulmonary function tests and performs better than 6MWT, suggesting it as a useful tool for the assessment of disease activity.

References:

- [1] Battaglia S, Bellia M, Serafino-Agrusa L, Giardina A, Messina M, Cannizzaro F, et al. Physical capacity in performing daily activities is reduced in scleroderma patients with early lung involvement. *Clin Respir J* (2017) 11(1):36-42.
- [2] Mainguy V, Provencher S, Maltais F, Malenfant S, Saey D. Assessment of daily life physical activities in pulmonary arterial hypertension. *PLoS One* (2011) 6(11):e27993.

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AB0549

THE RELEVANCE OF AORTIC STENOSIS AND OUTCOME OF TAVI PROCEDURE FOR VALVE REPAIR IN SCLERODERMA PATIENTS

A. Balbir-Gurman¹, Y. Braun-Moscovici¹. ¹Rambam Health Care Campus, Rappaport Faculty of Medicine, Technion, Haifa, Israel

Background: Patients with systemic sclerosis (SSc) are at risk for developing aortic valve changes. The prevalence of aortic valve stenosis (AS) in SSc patients is unknown. Previously, patients with AS were treated with valve replacement; in recent years, Trans Catheter Aortic Valve Implantation (TAVI) is widely used in general population. The safety of Trans Catheter Aortic Valve Implantation (TAVI) in SSc has not been assessed.

Objectives: A retrospective study on aortic valve pathology and treatments including TAVI performance.

Methods: We reviewed 374 records of SSc patients at our site EUSTAR cohort and extracted cases with reported AS confirmed by ECHO cardiography and heart catheterization.

Results: We found data on 13 (3.4%) patients with AS: 12 females (92.3%); mean age 70.3 (SD 7.7) years, disease duration 15.4 (SD 6.3) years. Ten patients had limited SSc (76.9%, all cared anti-centromere antibodies) and 3 diffuse SSc (1 patient had RNAP3 and 2 had anti-topoisomerase antibodies); 5 (38.5%) patients had significant coronary disease (3 underwent CABG, 2 had several PTCA). Eight (61.5%) patients died during years 2004 - 2019. Aortic valve replacement was performed in 5 patients (4 – metal and 1 – biological); 2 patients did not undergo AS repair due to impaired general condition; 6 patients underwent TAVI between January 2013 and December 2019 (5 at Rambam Cardiology Institute). All SSc patients underwent trans femoral TAVI under conscious sedation. The procedure was successful in all patients. The length of hospitalization was 5-14 days (mean 8.2 days); 3 (50%) patients needed pacemaker implantation (they did not have previous conduction abnormalities). The follow-up duration after TAVI was between 5 and 67 months (mean 20.7). During follow-up one patient developed bacterial endocarditis related to pacemaker device two months after the procedure; the event resolved after removing the device and according antibiotics treatment; the same patient had transient ischemic attack two years later and another pacemaker implantation 3 years later due to complete AV block. One patients died from urosepsis 11 months after TAVI, the death was not related to procedure. One patient developed anemia due to large hematoma after the procedure.

Conclusion: Screening for aortic valve pathology is essential as AS is not rare in SSc patients especially in those with long standing limited disease and positivity to centromere antibodies. AS in SSc patients may be associated with clinically significant coronary artery disease. TAVI was safe in our SSc patients without in-hospital mortality and benign long-term outcome.

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AB0550

DIFFUSING CAPACITY OF THE LUNG FOR CARBON MONOXIDE (DLCO) VS FORCED VITAL CAPACITY (FVC): SYSTEMATIC LITERATURE REVIEW AND META-ANALYSIS TO EXAMINE THEIR ABILITY TO MEASURE CHANGE IN CLINICAL TRIALS IN SYSTEMIC SCLEROSIS (SSC)

S. Bellando Randone¹, E. Cappellini², L. Nidiaci², G. Lepri¹, M. G. Lazzaroni³, C. Campochiaro⁴, G. Bagnato⁵, D. Sambataro⁶, G. Sambataro⁶, M. Matucci-Cerinic¹, D. Furst⁷. ¹Department of Experimental and Clinical Medicine, University of Florence, Division of Rheumatology AOUC, Florence, Italy; ²University of Florence, Florence, Italy; ³Rheumatology and Clinical Immunology, ASST Spedali Civili di Brescia, University of Brescia, Brescia, Italy; ⁴Unit of Immunology, Rheumatology, Allergy and Rare Diseases (UnIRAR), San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, Italy; ⁵P.O. G. Fogliani, ASP 5, Milazzo, Messina, Italy; ⁶University of Catania, Catania, Italy; ⁷Los Angeles, USA UCLA (emeritus); University of Washington, Seattle, Washington, Los Angeles, United States of America

Background: Lung involvement remains the main cause of morbidity and mortality in SSc. In 1 year clinical trials to assess lung involvement, FVC is usually evaluated and changes while the DLCO usually remains unchanged. In longer term observational studies, the DLCO often changes more than the FVC.

Objectives: To examine, through a systematic literature review (SLR) and meta-analysis, whether DLCO%pred or FVC%pred (both to be designated solely as DLCO and FVC henceforth), responds more in assessing SSC interstitial lung disease in first year and longer term follow-up (FU).

Table 1. Results from Random Effect Meta-Analysis

	21 studies				5 studies			
	FVC % pred mean value	SE	DLCO % pred mean value	SE	FVC % pred mean value	SE	DLCO % pred mean value	SE
BASELINE	78.8	3.43	59.7	5.52	81.1	5.68	55.6	11.59
1 YEAR FOLLOW UP	81.5	3.85	63.4	6.07	-	-	-	-
>1 YEAR FOLLOW UP	-	-	-	-	83.4	4.68	54.7	12.37

Methods: PubMed, EMBASE and COCHRANE databases were searched for english language articles on SSc published between 1960 and 31st October 2018. Any study that made reference to FVC and DLCO evaluation in SSc and reported their changes over the years was included. Reviewers double extracted articles to obtain agreement on >95% of pre-defined critical outcomes: DLCO and FVC at baseline, 1 yr of FU and at the last assessment interstitial lung disease by HRCT of the lungs study design, duration of FU. Other variables included demographics. In all cases I² test for heterogeneity was used and a result from 75 to 100% was considered as high heterogeneity. A random effects meta-analysis was used. Differences in the degree of change in FVC and DLCO were tested with t-test without compensation for repeated analysis.

Results: 1870 articles were screened for eligibility and 21 were selected for the SLR and meta-analysis. The analysis used 21 studies to evaluate changes of FVC and DLCO at 1 yr of FU. Only 5 studies were eligible to evaluate changes during longer FU (24.7 months (SD=20.4)). Heterogeneity was high at baseline and FU, (at 1 yr and >1 yr), both for the 21 studies at 1 yr (FVC: I² 99.74%, 99.78%; DLCO: I² 99.91%, 99.92%) and the 5 studies at > 1 year (FVC: I² 92.86%; DLCO: I² 99.54%), diminishing the confidence in the results. Table 1 gives the results of the random effects meta-analysis both for 21 and for the 5 studies evaluated. Regarding changes over 1 yr in the 21 studies, change of mean FVC was 2.7 (78.8 vs 81.5) while change in mean DLCO was 3.07 (SE 8.20) (59.7 vs 63.4). Considering the 5 studies during long term follow up, change in mean FVC was 2.0 (7.36) (81.1 vs 83.1), and change in mean DLCO was -0.96 (16.95) (55.6 vs 54.7). Comparing the 1 yr changes in the 21 studies, change in mean FVC was 2.7 (5.2) and change in mean DLCO was 3.07 (8.2); difference in changes was not statistically significant (p=0.5791). During long term FU (24.7 months), change in mean FVC was 2.0 (7.36) and change in mean DLCO was -0.96 (16.95); difference in changes was not statistically different (p=0.4698).

Conclusion: Our data are limited by great heterogeneity. Given this limitation, this SLR and meta-analysis indicates that there is no difference in the changes comparing FVC to DLCO at either 1 yr or during longer term follow-up. Corroboration of these results in prospective studies and in registries to make clear, comparable comparisons will be needed.

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AB0551

CLINICAL SIGNIFICANCE OF COGNITIVE IMPAIRMENT AND MALNUTRITION IN PATIENTS WITH SYSTEMIC SCLEROSIS

D. Benfaremo¹, L. Manfredi¹, I. Paterno¹, C. Dichiarà¹, A. M. Risa¹, G. Silvi¹, A. Gabrielli¹. ¹Università Politecnica delle Marche, Dipartimento di Scienze Cliniche e Molecolari, Ancona, Italy

Background: Previous studies reported a high prevalence of cognitive dysfunction in systemic sclerosis (SSc). Cognitive impairment was estimated to involve 60% to 80% of SSc patients and to be correlated with older age, disease severity, diffuse cutaneous subset and poor quality of life.

Objectives: The aim of our study was to evaluate the association between cognitive impairment, nutritional status and the quality of life of SSc patients.

Methods: Sixty-eight consecutive SSc patients followed at our Institution were evaluated for cognitive impairment using the validated Italian version of the Montreal Cognitive Assessment (MoCA). Scores <26 were considered abnormal. We also assessed other domains and quality of life measures such as UCLA SCTC GIT 2.0 for gastrointestinal involvement, BDI-II and PHQ-9 for anxiety and depression, EAT-10 for dysphagia symptoms, SHAQ and SF-36 for function and quality of life (QoL). The risk and the presence of overt malnutrition were assessed using the MUST questionnaire and the GLIM criteria, respectively. Clinical and demographic parameters such as age, sex, BMI, disease subset, organ involvement, autoantibody profile and modified Rodnan Skin Score

were also recorded for each patient. Data were analysed by Student t-test or chi-square test and regression analyses were used to assess the association between variables.

Results: A total of 68 SSc patients [47 (69.1%) limited SSc (lSSc) and 21 (30.9%) with diffuse SSc (dSSc), 59 female; mean age 60.2 (±13.4) years; mean disease duration 9 (±8.2) years; mean mRSS 8.1 (±7.6)] were included in the study.

Cognitive impairment was identified in 30 (44.1%) SSc patients; the mean MoCA score was 24.7 (±4.3). According to GLIM criteria, 16 (23.5%) patients were malnourished. Compared to patients with a MoCA ≥26, patients with cognitive impairment were older (p<0.001), had more comorbidities (p<0.0001) and a worse QoL as assessed by the physical and general health domains of the SF-36 (p<0.05). Malnourished patients were significantly more dysphagic (p<0.01) and had a worse HAQ (p<0.01) compared to well-fed patients. On regression analyses, cognitive impairment was related to increasing age (OR 1.08, 95%CI 1.03 to 1.14, p=0.001), but not to malnutrition, disease subset or symptoms. Malnutrition was associated with dysphagia (OR 1.10, 95%CI 1.01 to 1.20, p=0.01) and HAQ score (OR 2.69, 95%CI 1.24 to 5.82, p=0.01), but was not predicted by cognitive impairment.

Conclusion: Cognitive dysfunction is frequently observed in SSc patients and mostly associated with increasing age and number of comorbidities. Malnutrition and cognitive impairment are both associated to QoL but seem to be unrelated.

Disclosure of Interests: None declared

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AB0552

CHARACTERISTICS OF MYOSITIS SPECTRUM DISEASE - RHEUMATOID ARTHRITIS OVERLAP CASES IN A HUNGARIAN COHORT

L. Bodoki¹, Z. Griger², M. Nagy-Vincze², Z. E. Betteridge³, K. Dankó².

¹Debrecen, University of Debrecen, Faculty of Medicine, Department of Rheumatology, Debrecen, Hungary; ²Debrecen, University of Debrecen, Faculty of Medicine, Department of Clinical Immunology, Debrecen, Hungary; ³University of Bath, Bath, United Kingdom

Background: Overlap syndromes are autoimmune disorders in which classification criteria of at least two connective tissue diseases (CTDs) are fulfilled. The Division of Clinical Immunology in Debrecen, Hungary oversees patients with idiopathic inflammatory myopathies (IIMs) since the 1980's.

Objectives: In a work called The Myositis Antibody Research Project, which is coordinated together with the Bath Institute for Rheumatic Diseases (UK), authors investigated 330 patients with myositis, all treated in this Hungarian center.

Methods: The aim of this retrospective study was to investigate the frequency, clinical and serological parameters and therapeutic options in myositis – rheumatoid arthritis overlap cases in this group of 330 patients.

Results: The frequency of overlap cases, as seen in literature, was 13.64%. The importance of myositis-associated antibodies (MAAs) can be seen on this results: 44.44% of overlap patients, while only 7.02% of not overlap patients were MAA positive. Out of our 45 overlap patients twenty-seven myositis - RA overlap patients could be identified. Among these 27 patients the women:men ratio was 12.5:1, PM:DM ratio was 2.375:1. Muscle weakness and skeletal involvement was present in every patient, myalgia in 77.78% and Raynaud's phenomenon in 48.15% of the patients; general symptoms during disease relapse (fatigue, weight loss, fever) were present in 59.26%, 18.52% and 14.82%, respectively. Ten cases had seropositive rheumatoid arthritis, with high titer of rheumatoid factor. Authors underline the importance of lung involvement as internal organ manifestation: 8 patients had anti-synthetase antibodies (six anti-Jo-1, one anti-PL-7 and one anti-PL-12). In anti-PL-7 and anti-PL-12 positive patients interstitial lung disease (ILD) appeared some years before myositis and early aggressive management of ILD resulted in fast remission of muscle weakness. Anti-Mi-2 and anti-SRP could be detected in two patients. Most frequent used disease modifying antirheumatic drugs were cyclophosphamide, methotrexate and cyclosporine, 19 patients received DMARD combination therapy. Biological therapy was used in 3 patients, intravenous or subcutaneous immunoglobulin in 4 patients and one patient with RA – myositis – antiphospholipid syndrome died because of aspartum pneumonia.

Conclusion: Authors conclude that it is really challenging to treat these overlap cases: they form a very heterogenous group of patients and management has to be personalized.

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