THU0474 PREVALENCE OF THYROID DISORDERS IN A POPULATION WITH FIBROMYALGIA

Marco Antonio G Pontes Filho, DOMICIANO DIOGO SOUZA, Rafael Pontes Andreussi, Leonardo Rodrigues Da Silva. *Hospital Das Clinicas, Rheumatology, São Paulo, Brazil*

Background: Fibromyalgia (FM) is a clinical syndrome characterized by diffuse pain associated with other symptoms such as fatigue, sleep disturbance and mood. It presents a series of differential diagnoses such as thyroid disorders, hypoparathyroidism, systemic inflammatory diseases and myopathies. Hypothyroidism is a disease with a prevalence of 4-6% of the population, having many symptoms in common with FM, such as fatigue, mood changes, constipation, and diffuse pain in some cases.

Objectives: The purpose is to evaluate the association between FM and thyroid disorders.

Methods: A retrospective monocentric case-control study in a tertiary hospital, with patients and controls having regular follow-up. The cases were composed of women over 40 years old, diagnosed with FM by the criteria ACR 1990 and ACR 2010, without autoimmune disease or other confounding diseases for pain. The control consisted of women over 40 years old, without autoimmune diseases. Laboratory tests included TSH and free T4 in all patients. Evaluation by ANA, anti-TPO and anti-thyroglobulin antibodies, only when appropriate. The sample was classified into euthyroid, clinical and subclinical hyperthyroid, clinical and subclinical hypothyroid. Statistical analysis included Fischer's T-tests and others where appropriate. The p value was significant when ≤ 0.05 .

Results: The sample consisted of 142 patients (median age of 58 years) and controls with 136 patients (median age of 67 years). Patients with FM had a greater number of thyroid disorders (31.7%) than controls (14.7%) ($p = 0.001$). FM patients had a TSH higher than the controls (mean 9.06 vs 2.96; $p = 0.0026$), with a lower free T4 (mean 1.06 vs 1.31; $p = 0.0001$). ANA, anti-TPO and anti-thyroglobulin antibodies analysis showed no differences between both groups ($p = 1$; $p = 0.08$, $p = 1$; respectively), when performed. Because of the small difference in median age between the two groups, a sub analysis was performed separating patients between the ages of 40 to 60 years and over 60 years. The same results previously seen were found.

Conclusion: Patients with FM had a greater association with clinical hypothyroidism. However, we did not find any association with autoantibodies in our casuistic.

REFERENCES:

- [1] Claw, DJ, JAMA, volume 311, página 1547, 2014.
- [2] Hollowell JG, J Clin Endocrinol Metab, 87:489, 2002.
- [3] Suk, JH, Experimental and Clinical Endocrinology and Diabetes, 120: 401, 2012.
- [4] J.Rodríguez-Espinosa, Reumatologia Clinica, 2:70, 2006.
- [5] J. Ahmad, Rheumatology International, 35:1415, 2015.

Disclosure of Interests: Marco Antonio G Pontes Filho Speakers bureau: Novartis and Janssen, DIOGO SOUZA DOMICIANO: None declared, Rafael Pontes Andreussi: None declared, Leonardo Rodrigues da Silva: None declared
DOI: 10.1136/annrheumdis-2019-eular.1767

THU0475 THE EFFECT OF SUPERVISED DYNAMIC EXERCISE PROGRAM ON SOMATOSENSORY TEMPORAL DISCRIMINATION IN PATIENTS WITH FIBROMYALGIA SYNDROME

Tugce Ayyildiz¹, İlnur Onurlu², Alperen Korucu³, Zafer Günenli¹. ¹Gazi University Faculty of Medicine, Ankara, Turkey; ²Gazi University Hospital, Ankara, Turkey; ³Numune Research and Training Hospital, Ankara, Turkey

Background: Somatosensory temporal discrimination (STD) is the detection of two separate stimuli applied to the body over a short period of time (1). It is thought that STD provides information about the central processing of sensory stimuli. It has recently been reported that STD is impaired in fibromyalgia syndrome (FMS), which is considered to be the prototype of central sensitization syndromes (2).

Objectives: To evaluate the effect of dynamic exercise program on STD in patients with FMS.

Methods: The study included 48 female FMS patients diagnosed according to the ACR 2010 classification criteria who applied to outpatient

clinics of Physical Medicine and Rehabilitation Department. Patients with inflammatory rheumatic disease, peripheral and central neurological disease, history of malignancy and cardiac problems, and those who started a new medical therapy or exercise program related to FMS in the last 3 months were excluded. Before the study, local ethics committee approval was obtained. The study was designed as a prospective, randomized, single blind and controlled study. The patients were divided into two groups. Those included in the supervised exercise group (SEG) were given an exercise program that consisted of submaximal aerobic exercise (treadmill) and low-medium resistant isotonic exercises under the supervision of a physiotherapist, 1-hour per day, 3 days in a week for 4-weeks. Those included in the home exercise group (HEG) were given a home exercise program that consisted of low-to-medium resistance isotonic exercises and aerobic exercises 1-hour per day, 3 days in a week for 4-weeks. All patients were evaluated at baseline and after 4 weeks of treatment. Visual analogue scale (VAS) for pain, hospital anxiety and depression scales (anxiety: HADA, depression: HADD), fibromyalgia effect questionnaire (FIQ), symptom severity scale (SSS) were used for clinical assessment. Additionally somatosensory temporal discrimination threshold (STDT) was measured by a blinded investigator. In order to achieve a difference of 25ms in STDTs between two groups, we calculated 20 FMS patients per group (power: 80%, alpha: 0.05 two sided) (2). However, 24 patients were included in the study because of the 20% chance of discontinuation. For the demographic, basal clinical and neurophysiological comparisons between the two groups, the independent sample-T test was used for the normally distributed data, and the Mann Whitney U test was used for the non-normally distributed data. In order to assess the effect of treatment on outcome measures, 2-way repeated measures of variance analysis (Treatment group x time) was used. Intention to treat analysis was performed.

Results: There were statistically significant changes in the VAS, HADA, HADD, FIQ and SSS scores and STDTs in both groups after treatment programs ($p < 0.001$). In the 2-way repeated measures of variance analysis, the treatment group x time interactions for VAS, HADA, HADD, FIQ and SSS scores were found to be significant in favor of the supervised exercise group ($p < 0.05$). However, no statistically significant interaction (treatment group x time) was found for STDT ($p: 0.18$).

Conclusion: We demonstrated that STD improves with exercise in patients with fibromyalgia for the first time. However, this change was similar in both groups. Additionally, we showed that dynamic exercise program ameliorates pain, psychological status, function and other symptoms related to fibromyalgia syndrome.

REFERENCES:

- [1] Lacruz F, Artieda J, Pastor M A, Obeso J A. The anatomical basis of somesthetic temporal discrimination in humans. J Neurol Neurosurg Psychiatry. 1991;54:1077-1081
- [2] Günenli Z, Polat M, Vurali D, Cengiz B. Somatosensory temporal discrimination is impaired in fibromyalgia. J Clin Neurosci. 2019; 60:44-48

Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2019-eular.4199

THU0476 NEW PARADIGMS IN FIBROMYALGIA RESEARCH: INFLAMMATORY CELLS-TO-LIPOPROTEINS RATIOS AS PREDICTIVE AND DISCRIMINATOR MARKERS

Marwan Alnimer¹, Talar Merza¹, Avin Maroof². ¹Hawler Medical University, College of Pharmacy, Erbil, Iraq; ²Rizgary Teaching Hospital, Rheumatology, Erbil, Iraq

Background: Fibromyalgia (FM) is a chronic idiopathic disease characterized by diffuse pain, fatigue, sleep disturbances, stiffness, anxiety and depression. Compared to healthy subjects. FM patients have significant high ratios of mean platelet volume, Neutrophil-to-lymphocyte, and platelet to lymphocyte. Fibromyalgia showed a significant abnormal lipid profile characterized by higher levels of fasting serum triglyceride and cholesterol.

Objectives: This study aimed to derive ratios from the circulating inflammatory cells and serum lipoprotein levels as markers of disease-severity in newly diagnosed fibromyalgia.

Methods: We carried out a cross-sectional study with 90 newly-diagnosed fibromyalgia patients and 25 aged-matched healthy subjects to determine the haematological indices and serum lipoprotein profile. Revised

fibromyalgia impact questionnaire (FIQR), Tender points (TPs), fatigue severity scale, insomnia severity index, and the Hamilton's scale for depression were used to assess the disease severity.

Results: Monocyte- to- high density lipoprotein ratio (MHDR) correlated significantly and inversely with tender points and FIQR scores while lymphocyte- to- high density lipoprotein ratio(LNHDLR) and lymphocyte-to-apo-lipoprotein-B100 (LAPOR)ratio correlated significantly and directly with FIQR. None of the circulating inflammatory cells-to-lipoprotein ratios correlated with fatigue, insomnia, and depression-related symptoms.

Multi-variable regression analysis revealed a significant mean score of FIQR-symptoms equal to 63.2 with prediction of 11.9% ($R=0.346$, $F=5.903$, $p=0.004$, β -coefficients for MHDRL=-0.257, and for LNHDLR=3.789). The area under the curve and 95% confidence intervals of LNHDL is 0.658 (0.545-0.771) at the cut-off score of the FIQ3-related symptoms at 63.2.

Test Result Variable(s)	AUC	p-value	95% confidence interval
MHDR	0.490	0.868	0.360 0.631
LNHDL	0.658	0.010	0.545 0.771
MAPOR	0.589	0.148	0.468 0.710
LAPOR	0.658	0.010	0.545 0.771

Figure 1: The area under the curve and 95% confidence intervals of the circulating inflammatory cells-to-lipoprotein ratios taking the cutoff score of symptoms-related disease at 63.2 as a discriminator. AUC: Area under the curve, MHDRL: monocyte to high density lipoprotein ratio, LNHDLR: lymphocyte to non-high density lipoprotein ratio.

Abstract THU0476 – Figure 1

Conclusion: Circulating inflammatory cell-to-lipoprotein ratios can serve as prognostic markers in the assessment of disease-severity in fibromyalgia patients.

REFERENCES:

- Al-Nimer MSM, Mohammad TAM. Correlation of haematological indices and ratios derived from them with FIQR scores in fibromyalgia. *Pak J Med Sci.* 2018;34(5):1219-1224.
- Aktürk S, Büyükcavı R Evaluation of blood neutrophil-lymphocyte ratio and platelet distribution width as inflammatory markers in patients with fibromyalgia. *Clin Rheumatol.* 2017;36(8):1885-1889.
- Cordero MD, Alcocer-Gómez E, Cano-García FJ, Sánchez-Domínguez B, Fernández-Riejo P, Moreno Fernández AM, Fernández-Rodríguez A, De Miguel M. Clinical symptoms in fibromyalgia are associated to overweight and lipid profile. *Rheumatol Int.* 2014;34(3):419-422.
- Wolfe F, Clauw DJ, Fitzcharles M, Goldenberg DL, Katz RS, Mease P, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. *Arthritis Care Res.* 2010;62(5):600-610.
- Abu-Dahab S, AbuRuz SM, Mustafa K, Sarhan Y. Validation of the Arabic version of the revised Fibromyalgia Impact Questionnaire (FIQR_A) on Jordanian females with fibromyalgia. *Clin Rheumatol.* 2014;33(3):391-396.

Abstract THU0476 – Table 1. Correlations between disease-related symptoms with the ratios of circulating inflammatory cells-to-lipoproteins.

Disease-related symptoms scoring	MHDRL	LNHDLR	MAPOR	LAPOR
FIQR-Function	-0.352	0.170	0.016	0.167
	<0.001	0.110	0.879	0.116
FIQR-Global	-0.071	-0.018	-0.016	-0.015
	0.504	0.865	0.884	0.881
FIQR-Symptoms	-0.022	0.290	0.162	0.292
	0.839	0.006	0.126	0.005
FIQR-Overall total	-0.207	0.261	0.111	0.261
	0.050	0.013	0.298	0.013
Tender points	-0.254	0.078	0.018	0.076
	0.016	0.467	0.868	0.477
Fatigue severity scale	-0.102	-0.071	-0.104	-0.067
	0.340	0.506	0.329	0.528
Insomnia severity index	-0.086	0.031	-0.072	0.034
	0.424	0.776	0.500	0.749
The Hamilton's scale for depression	0.103	0.014	0.085	0.012
	0.334	0.896	0.425	0.912

Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2019-eular.2487

THU0477

A FIBROMYALGIA ASSESSMENT SCREENING TOOL ON A MULTIDIMENSIONAL HEALTH ASSESSMENT QUESTIONNAIRE (MDHAQ) WHICH DOES NOT INCLUDE A SELF-REPORT PAINFUL JOINT COUNT (PAINFUL JC), FAST3nJC, RECOGNIZES FIBROMYALGIA SIMILARLY TO OTHER FAST3 INDICES WHICH INCLUDE A PAINFUL JC

Theodore Pincus, Isabel Castrejon. Rush University Medical Center, Chicago, United States of America

Background: Fibromyalgia (FM) generally is easily recognized, but a diagnosis may be difficult, particularly in patients with secondary FM who have other primary diagnoses. Criteria for FM initially were reported in 2000, and revised in 2011 and 2016, based entirely on a patient self-report questionnaire. However, FM criteria are not collected in most routine clinical care, as it is not feasible to use multiple patient questionnaires in busy clinical settings. MDHAQ/RAPID3 (multi-dimensional health assessment questionnaire/routine assessment of patient index data) has been found informative in all diseases in which it has been studied. Cumulative indices based on MDHAQ scales known as FAST3 (fibromyalgia assessment screening tool3) recognize FM at levels of agreement with revised FM criteria of >80% and correlations of >0.80, $p<0.001$). Pragmatic recognition of FM in non-rheumatic diseases based on MDHAQ may be possible, as most components of the MDHAQ (as well as the HAQ) appear generic rather than disease-specific. One component of MDHAQ/FAST indices, a self-report painful joint count (painful JC), is rheumatology-specific. Therefore, a FAST3-nJC (no painful JC) index was analyzed vs revised FM criteria as gold standards for possible use in non-rheumatology patients to recognize FM.

Objectives: To analyze FAST3-nJC versus 2011 and 2016 FM criteria, and compared to other FAST3 indices which include a painful JC, to recognize FM.

Methods: All patients with all diagnoses complete an MDHAQ at all visits in routine care at one setting. The self-report questionnaire to recognize the 2011 and 2016 FM Criteria was added over a 6-month period to be completed by consecutive patients. The MDHAQ includes 0-10 scores for physical function, pain and patient global visual analog scales (VAS), compiled into 0-30 RAPID3, as well as a 0-10 fatigue VAS, 0-54 self-report painful joint count, and 0-60 symptom checklist. All MDHAQ scales were analyzed for agreement with FM Criteria according to receiver-operator-characteristic (ROC) curves for area under the curve (AUC). Optimal cut points for each measure were identified, based on specificity and sensitivity, to develop optimal cumulative indices for clues to FM versus the 2011 and 2016 Criteria as gold standards.

Results: Among 502 patients with complete data, primary ICD-10 diagnoses were FM in 49, OA in 74, RA in 78, SLE 88 and other rheumatic diseases in 213. Primary or secondary FM was identified in 131 (26%) who met 2011 FM criteria, and 112 (22%) who met 2016 FM criteria. The 4 MDHAQ scales with the highest AUC vs FM Criteria (0.829-0.889) were symptom checklist, painful JC, fatigue, and pain. Three cumulative FAST3 measures were: FAST3-P with symptom checklist, painful JC and pain VAS; FAST3-F with symptom checklist, painful JC and fatigue VAS; FAST3nJC with symptom checklist, pain and fatigue VAS, but no painful JC. All FAST3 indices agreed with FM Criteria >79% and kappas were >0.52, indicating good agreement (Table). As expected, lowest agreement was seen for FAST3nJC, since the FM criteria include a self-report painful joint count, but differences are quite small.

Abstract THU0477 –Table 1. Percent agreement and kappa of 3 FAST3 (fibromyalgia assessment screening tool) indices vs 2011 and 2016 FM Criteria

FAST Index:	FAST3-P (pain)	FAST3-F (fatigue)	FAST3-nJC (no painful JC)
vs 2011 FM Criteria			
% Agreement	84.3%	86.6%	81.5%
Kappa	0.63 (0.56–0.70)	0.68 (0.60–0.75)	0.58 (0.50–0.66)
vs 2016 FM Criteria			
% Agreement	81.7%	83.8%	79.1%
Kappa	0.56 (0.48–0.53)	0.60 (0.51–0.68)	0.52 (0.44–0.60)

Conclusion: FAST3nJC had slightly lesser agreement with 2011 and 2016 FM criteria than FAST3-P and FAST3-F but would appear