satisfactory as a candidate for clues to recognize FM in patients with non-rheumatic diseases, as a diagnosis of FM ultimately is made by a physician.

Disclosure of Interests: : None declared

DOI: 10.1136/annrheumdis-2019-eular.7576

THU0478 IS FIBROMYALGIA ASSOCIATED WITH STRUCTURAL OR FUNCTIONAL ABNORMALITIES IN SKELETAL MUSCLE?

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Background: Fibromyalgia (FM) is a chronic nonarticular pain syndrome of unknown etiology characterized by diffuse muscular pain, fatigue and mood disturbances. Previous studies have shown absence of skeletal muscle degeneration, regeneration or inflammation. Altered muscle fiber size distribution and decreased capillary density were the only abnormalities reported.

From the clinical point of view some FM symptoms (fatigue, pain, myalgias, trigger points, stiffness) suggest skeletal muscle involvement.

Objectives: The objective of this study is to determine if there are structural and functional abnormalities in the skeletal muscle in patients with primary FM assessed by means of a non-invasive, low-cost multimodality approach.

Methods: Female patients > 18 years, with FM diagnosis (ACR 2010 criteria) and healthy controls matched by age. Skeletal muscle morpho-structure and function were assessed by: body mass index (BMI), total fat mass and total muscle mass calculated by direct segmental multi-frequency bioelectrical impedance analysis. Cross-sectional measurements of rectus femoris muscle area and tissue echogenicity were evaluated by ultrasound and pixel analysis. Maximum handgrip strength by digital dynamometry, gait speed (6-meter time walk test), and FM Health Assessment Questionnaire (FHAQ).

Results: A total of 94 FM patients and 140 healthy controls were included, mean age was 51.8 years +/- 10.8 vs 50.2 +/- 11.3, respectively (p = 0.27). FM patients compared with controls had similar BMI (27.9 kg/m² +/- 4.9 vs 26.8 +/- 4.5, p = 0.14), higher total body fat mass (27.8 kg +/- 9.2 vs 25.1 +/- 7.6, p = 0.04); rectus femoris muscle area was also higher for FM patients (44.6 cm² +/- 11.4 vs 41.7 +/- 13.9, p = 0.05); regarding ultrasound tissue echogenicity, FM patients demonstrated higher mean brightness in rectus femoris (157.2 pixels +/- 19.4 vs 149.9 +/- 22.4, p = 0.01); lesser handgrip strength (22.0 kg +/- 6.6 vs 26.2 +/- 5.4 p = 0.0001); slower gait speed (1.14 m/s +/- 0.2 vs 1.3 +/- 0.2 p = 0.0001); and major impairment in daily activities by FHAQ (47% vs 2.90% p = 0.0001).

Conclusion: This non-invasive multimodal evaluation of the skeletal muscle showed the presence of structural and functional abnormalities in women with FM. These changes can be attributed to sedentary and hypoactive lifestyle with consequent higher total body fat mass, skeletal muscle fat infiltration, and functional impairment of activities of daily living. Alternatively, these abnormalities may also be an expression of a small-fiber polyneuropathy (myoneurovascular dysregulation). Further studies are required to elucidate its underlying pathological process.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.5860

THU0479 SAFETY AND EFFICACY OF MEDICAL CANNABIS IN FIBROMYALGIA

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Background: Although chronic pain is a well established indication for medical cannabis therapy, there is scarce evidence to support the role of medical cannabis in the treatment of fibromyalgia.

Objectives: The aim of the study was to investigate the characteristics, safety and effectiveness of medical cannabis therapy for fibromyalgia.

Methods: A prospective study with 6 months follow-up period based on fibromyalgia patients who were willing to answer questionnaire in a specialized medical cannabis clinic between 2015 and 2017.

Results: Among the 367 fibromyalgia patients the mean age was 52.9 ±15.1, of whom 301 (82.0%) were women. 28 patients (7.6%) stopped the treatment prior to the six months follow-up. The six months response rate was 70.8%. Pain intensity (scale 0-10) reduced from a median of 9.0 at baseline to 5.0 (p<0.001), and 194 patients (81.1%) achieved treatment response. In a multivariate analysis age above 60 years (Odds ratio [OR] 0.34, 95% C.I 0.16-0.72), concerns about cannabis treatment (OR 0.36, 95% C.I 0.16-0.80), spasticity (OR 2.26, 95% C.I 1.08-4.72) and previous use of cannabis (OR 2.46 95% C.I 1.06-5.74) were associated with treatment outcome. The most common adverse effects were mild and included dizziness (7.9%), dry mouth (6.7%) and gastrointestinal symptoms (5.4%).

Conclusion: Medical cannabis appears to be safe and effective alternative for the treatment of fibromyalgia symptoms. Standardization of treatment compounds and regimens are required.

Disclosure of Interests: : Itzhak Sagy: None declared, Lihi Bar-Lev Schleider Employee of: employee of Tikun-Olam Ltd. without shares or options, Mahmoud Abu-Shakra: None declared, Victor Novack Consultant for: paid member of the Tikun Olam Ltd. scientific advisory board

DOI: 10.1136/annrheumdis-2019-eular.111

THU0480 IS PROLONGED SEDENTARY TIME ASSOCIATED WITH THE IMPACT OF THE DISEASE IN WOMEN WITH FIBROMYALGIA? THE AL-ÁNDALUS PROJECT

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Background: Spending time seated has previously shown to be associated with worse symptomatology in fibromyalgia¹. In addition, to accumulate sedentary time (ST) in prolonged, unbroken periods (bouts) has shown to be particularly harmful in the general population².

Objectives: To examine the association of prolonged ST with the impact of the disease in women with fibromyalgia.

Methods: Four-hundred-and-seven (51.4±7.6 years old) fibromyalgia women participated in this cross-sectional study. Sedentary time accumulated in bouts of ≥10, ≥20, ≥30 and ≥60 minutes, and moderate-to-vigorous physical activity (MVPA) were measured with triaxial accelerometry (GT3X+). To control for total ST, the percentage of ST spent in different bout categories were calculated (e.g., (time spent in bouts ≥30 min/ total ST) ×100). We assessed different domains of fibromyalgia impact (function, overall, symptoms) and the global impact of fibromyalgia (total score) with the Revised Fibromyalgia Impact Questionnaire (FIQR). Separate linear regression models were built to assess the association of percentage of ST spent in different bout categories (independent variables) with the domains of fibromyalgia impact and the global impact of the disease (dependent variable) while controlling for age, fat percentage, medication for pain and depression, and total accelerometer wear time. Model 2 additionally included time spent in MVPA.

Results: Greater percentage of ST spent in bouts ≥10 min (β=0.171, p<0.001), ≥20 min (β=0.163, p=0.001), ≥30 min (β=0.169, p<0.001), and ≥60 min (β=0.161, p=0.001) was associated with greater global impact of the disease. In model 2, greater percentage of ST spent in bouts ≥10 min (β=0.145, p=0.003), ≥20 min (β=0.138, p<0.004), ≥30 min (β=0.146,

$p < 0.002$), and ≥ 60 min ($\beta = 0.144$, $p < 0.002$) was associated with greater global impact of the disease. Similar results were observed for the association of percentage of sedentary time spent in different bout categories with the domains of fibromyalgia impact (function, overall, and symptoms). **Conclusion:** The results seem to indicate that ST accumulated in bouts is negatively associated with the impact of the disease in women with fibromyalgia. Overall, these associations were independent of time spent in MVPA. It might be advisable to promote reducing prolonged ST in this population.

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Acknowledgement: We thank all the study participants for their collaboration. **Funding:** This study was supported by the Spanish Ministry of Economy and Competitiveness (I+D+i DEP2010-15639; I+D+i DEP2013-40908-R; BES-2014-067612) and the Spanish Ministry of Education (FPU 15/00002)

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.8058

THU0481 SLEEP DISTURBANCES IN FIBROMYALGIA – AN AUSTRALIAN TERTIARY HOSPITAL EXPERIENCE

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Background: Fibromyalgia (FM) is a central pain disorder with an estimated population prevalence of 2-7% and six times as common in women than men.¹ Obstructive sleep apnoea (OSA) is a structural sleep disorder, with an estimated incidence of 14% of males and 5% females. Incidence of OSA in FM has been variably reported but estimated at 25-81%.² Despite its frequency, the underlying nature of sleep disturbances haven't been consistently replicated. A 2017 meta-analysis found significant differences in sleep efficiency (SE), a measure of total time spent in REM (Rapid Eye movement) sleep, number of arousals and sleep quality.³ Prados et al in 2013 showed women with FM have less severe sleep disturbance than males, suggesting a gender difference.⁴

Objectives: To identify the incidence of FM in a cohort referred to the respiratory department for diagnostic polysomnography (dPSG) at the Gold Coast University Hospital (GCUH), a tertiary referral centre in Australia. We aim to identify epidemiological, gender differences and sleep abnormalities in patients with FM and OSA.

Methods: dPSG reports of 998 patients with 1053 studies at the GCUH from 2015 - 18 was audited. We included FM diagnosed by a rheumatologist from the general Rheumatology clinics of the same facility. Two control groups were formed, one with a random number generator. The second from manual matching of major OSA risk factors such as age, gender and Body mass index (BMI), with a two to one ratio for statistical power. All were subsequently subdivided into gender. Statistical analysis was performed with calculation of mean, standard deviation and T tests for significance as calculated by the computer software Stata.

Results: Abstract THU0481 – Table 1. Demographics Data

	Age (Yrs)	Gender	BMI (kg/m ²)
Control (Random)	51.38 (15.92)	15F/22M	34.51 (10.43)
Control (Matched)	56.25 (9.87)	64F/10M	33.66 (8.71)
FM group	55.83 (10.1)	32F/5M	32.93 (9.14)

Abstract THU0481 – Table 2. Sleep Study Data

A. One to One Random Group				B. Two to One Matched Group			
Mean (Standard Deviation)	FM -	FM +	P value	FM -	FM +	P value	
Epworth Sleep Scale (ESS)	8.57 (5.58)	9.86 (5.27)	0.8898	10.07 (6.43)	9.86 (5.27)	0.4867	
Total Sleep time (min)	325.43 (66.44)	330.59 (83.67)	0.6648	326.61 (85.93)	330.59 (83.67)	0.662	
Sleep Efficiency (%)	78.97 (10.21)	77.58 (11.89)	0.376	75.31 (17.24)	77.58 (11.89)	0.8015	
Sleep Onset Latency (min)	14.96 (15.79)	24.05 (20.86)	0.9723	26.88 (38.80)	24.05 (20.86)	0.315	
Stage NREM (%)	85.81 (6.12)	83.71 (9.47)	0.2629	80.39 (21.90)	83.74 (9.47)	0.3874	
Stage REM (%)	13.98 (6.09)	16.47 (9.60)	0.8893	13.83 (8.00)	16.47 (9.60)	0.9117	
Arousals per hour	29.69 (17.71)	28.03 (21.78)	0.3389	30.19 (28.94)	28.03 (21.78)	0.3407	
Oxygen Desaturation Index (ODI)	23.59 (25.25)	12.26 (18.99)	0.0176	17.45 (24.3)	12.26 (18.99)	0.1522	
Periodic Limb Movement Index (PLM)	5.79 (19.67)	6.73 (12.15)	0.5348	7.40 (16.64)	6.73 (12.15)	0.352	
Total Apnoea Hypopnoea Index (AHI)	29.22 (25.65)	19.79 (20.06)	0.0423	24.32 (25.53)	19.79 (20.06)	0.1984	

C. Matched Male Group				D. Random Male Group			
Mean (Standard Deviation)	FM -	FM +	P value	FM -	FM +	P value	
Epworth Sleep Scale (ESS)	9.2 (6.03)	12 (4.74)	0.8083	7.63 (1.07)	12 (2.12)	0.955	
Total Sleep time (min)	359.45 (32.46)	255.5 (54.72)	0.0002	606.63 (13.98)	255.5 (24.47)	0.0596	
Sleep Efficiency (%)	78.83 (8.20)	65.82 (14.02)	0.0194	77.14 (2.21)	65.82 (6.26)	0.0247	
Sleep Onset Latency (min)	11.55 (7.06)	20.5 (11.36)	0.9598	12.81 (2.94)	20.5 (5.07)	0.8702	
Stage NREM (%)	85.05 (3.83)	89.14 (8.14)	0.2006	86.63 (5.67)	89.14 (8.14)	0.4161	
Stage REM (%)	14.96 (3.84)	10.8 (8.144)	0.0965	13.25 (1.2)	10.8 (1.64)	0.2119	
Arousals per hour	24.15 (9.39)	31.2 (10.19)	0.8975	34.66 (4.42)	31.2 (4.55)	0.3611	
Oxygen Desaturation Index (ODI)	16.28 (22.18)	19.72 (22.77)	0.6084	30.44 (6.38)	19.72 (10.18)	0.2305	
Periodic Limb Movement Index (PLM)	4.98 (9.66)	5.72 (8.62)	0.5563	9.15 (5.35)	5.72 (8.85)	0.3843	
Total Apnoea Hypopnoea Index (AHI)	24.4 (25.27)	37.7 (23.86)	0.8262	37.6 (6.25)	37.7 (10.66)	0.5025	

N.B. Statistically significant data is highlighted in bold

Abstract THU0481 – Table 3. Female Study Data

E. Matched Female Group				F. Random Female Group			
Mean (Standard Deviation)	FM -	FM +	P value	FM -	FM +	P value	
Epworth Sleep Scale (ESS)	10.34 (6.54)	9.53 (5.35)	0.4061	9.93 (1.6)	9.87 (0.96)	0.48	
Total Sleep time (min)	319.9 (90.63)	342.33 (81.81)	0.9015	353 (15.33)	345.15 (14.78)	0.37	
Sleep Efficiency (%)	74.83 (18.22)	79.42 (10.63)	0.9283	81.64 (2.48)	80.05 (1.96)	0.3182	
Sleep Onset Latency (min)	130.39 (93.75)	29.26 (61.14)	0.244	18.1 (4.74)	23.79 (9.91)	0.8042	
Stage NREM (%)	17.12 (9.49)	13.72 (8.49)	0.0841	84.6 (6.73)	82.86 (6.49)	0.5288	
Stage REM (%)	13.72 (8.49)	17.35 (9.62)	0.958	15.06 (1.74)	17.12 (1.67)	0.7735	
Arousals per hour	31.00 (30.85)	27.54 (23.15)	0.2737	22.39 (2.05)	27.22 (4.11)	0.7798	
Oxygen Desaturation Index (ODI)	17.36 (24.73)	11.1 (18.48)	0.1151	13.54 (2.75)	11.32 (3.25)	0.3338	
Periodic Limb Movement Index (PLM)	7.69 (17.49)	6.89 (12.71)	0.3335	0.87 (0.6)	6.18 (2.16)	0.9479	
Total Apnoea Hypopnoea Index (AHI)	23.91 (25.74)	16.99 (18.28)	0.094	16.91 (2.9)	17.07 (3.22)	0.5127	

Conclusion: Female predominance and 3% population incidence of FM was congruent with literature. We note the mean age was nearing expected upper limits for FM. Increased age as a risk factor for OSA may have led this selection bias. Unexpectedly, overall severity of OSA as per AHI and number of desaturating events as per ODI3 was less in FM. We hypothesise that this is due to a higher proportion of females in the FM group compared to males, confirmation would require a larger study cohort, a limitation of this study. It was beyond the scope of this study to explore concomitant medication use and comorbidities and its effect on sleep. Another significant finding was in males, where sleep efficiency (SE) was lower in both matched and random groups. Furthermore, when matched for age, gender and BMI, males FM have reduced total sleep time. Suggesting that males with FM may have additional impediments to good sleep efficiency which may not be readily recognised during clinical evaluation. Similarly to Prados et al, we found females with FM (fig. 3) had a trend for better sleep quality and less sleep disturbance. However, no domain reached statistical significance, which again reflects low study power. This study emphasises the contribution of OSA as a comorbidity for patients with FM and its effect on sleep quality. Importantly, also the differences in gender.

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Acknowledgement: Dr Jennifer Ng (Rheumatology) at the Gold Coast University Hospital

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.2534