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THU0615-HPR FORCE-TIME CURVE ANALYSIS OF HANDGRIP STRENGTH IN PATIENTS WITH FIBROMYALGIA: COMPARISON WITH HEALTHY SUBJECTS

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Background: Factors associated with handgrip strength (HGs), in female with fibromyalgia (FM), use of force-time (FeT) curve to assess peak force, area under the curve (AUC), and variability of the time to reach maximum plateau of the curves (Fig.1) (1) to identify the impact of FM patients versus healthy controls have not been extensively studied.

Figure 1. Force-time (FeT) curve showing the method of calculation of the various force attributes.

Objectives: The aim of the study was to compare the HGs of FM with healthy subjects and to evaluate the relationship between curve characteristics and FM disease severity (2,3).

Methods: One hundred and ten women (mean age 53.8±12.4 years; range 18 to 80) were included and compared with 111, age and BMI matched, female healthy controls. HGs was measured with an electronic device, while demographic and clinical characteristics of the subjects were obtained by the Revised version of the Fibromyalgia impact questionnaire (FIQR) and Fibromyalgia Activity Score (FAS). The patient opinion of their symptoms state (PASS) was evaluated as external criterion. The HGs threshold that best discriminates between the presence and absence of FM, as well as between moderate and severe FM, was determined using the receiver operating characteristic (ROC) curves analyses. Multivariate regression procedure was used in order to assess the relative contribution of the covariates on the HGs.

Results: HGs-AUC and peak force levels were lower in patients with FM than healthy women (median 342.7 vs 496.5; and in Kg median was 13.9 vs 19.9, respectively; both at significant level of $p<0.001$) and in women with severe FM compared with those with mild-moderate FM ($p<0.0001$). The time to reach maximum plateau of the curves was significantly higher in patients with FM than healthy women (15.5 vs 11.8 sec; $p>0.001$). ROC analyses revealed that the HGs peak force threshold that best discriminated between the presence and absence of FM was 14.2 kg (AUC 0.801; $p<0.001$), whereas the HGs peak force threshold that best discriminate between PASS was 16.3 kg (AUC 0.834; $p<0.001$). A negative correlation was found between FIQR and FAS scores and peak force, AUC in patients with FM (all at $p<0.001$). Furthermore, a correlation was observed between widespread pain index (WPI) and peak force, AUC (both at $p<0.0001$), and of the time to reach maximum plateau of the curves ($P=0.04$) in patients with

FM. Factors significantly associated with HGs-AUC in multivariate analysis were WPI and FIQR (both at $p<0.001$).

Conclusion: HGs is reduced in woman FM patients and is inversely related to FM severity and symptomatology. The FeT curve gave more information about grip in the FM and could be used as a complementary tool in the assessment and monitoring of FM. Further research on male FM patients is needed to confirm or contrast these findings.

Table 6. Correlations between HGs curve characteristics and questionnaires studied through the Spearman's rho correlation coefficients (rho).

	FIQR	FAS	HGs peak force levels	Time to reach maximum plateau of the curves	HGs-AUC
WPI	0.732 <0.0001	0.823 <0.0001	-0.612 <0.0001	-0.195 0.0415	-0.615 <0.0001
FIQR		0.761 <0.0001	-0.576 <0.0001	-0.054 0.5768	-0.592 <0.0001
FAS			-0.577 <0.0001	-0.167 0.0813	-0.588 <0.0001
HGs peak force levels				-0.151 0.0249	0.991 <0.0001
Time to reach maximum plateau of the curves					-0.135 0.0456

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THU0616-HPR EXPIRATORY FLOW ACCELERATOR (EFA) IN SYSTEMIC SCLEROSIS PATIENTS WITH MUCUS HYPERSECRETION, PRODUCTIVE COUGH AND DYSPNOEA: PRELIMINARY RESULTS FROM A HOME-BASED AIRWAY CLEARANCE TECHNIQUE DAILY PROGRAM

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Background: Systemic sclerosis (SSc) is a chronic disease with frequent lung involvement. As mucociliary clearance is impaired, mucus retention and frequent pulmonary infections, increase morbidity and mortality (1).

Airway clearance techniques (ACT) enhance removal of mucus from the airways. Expiratory flow accelerator (EFA) is a new technology that promotes deep and gentle drainage of the bronchial secretions, through the Venturi effect. No respiratory effort is required and no negative pressure is generated, avoiding risk of bronchial collapse (2).

Objectives: The aim of this study was to describe the effectiveness of EFA in improving pulmonary symptoms in SSc patients.

Methods: SSc patients with daily productive cough, frequent pulmonary exacerbations, exertional dyspnea and/or reduced physical activity were selected. All of them underwent a home-based ACT program with EFA. A Respiratory Physiotherapist (RT) trained each patient to use the device 3 times a day, 15 minutes each session. Every subject compiled the Saint George's Respiratory Questionnaire (SGRQ) and scleroderma Health Assessment Questionnaire (SHAQ) at baseline, 30, 90 and 180 days from the beginning. Statistical analysis has been carried out with General linear model for repeated measures. A value of $p<0.05$ was considered statistically significant.

Results: 8 patients were enrolled (M:F=1:7), median age 54 (IC95% 46-69) years. Interstitial lung disease affected the majority of them (7/8). SGRQ total score and SHAQ domain for respiratory symptoms decreased over time