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Knee extensor muscle steadiness in relation to maximal torque and physical functioning in patients with knee osteoarthritis

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THU0634-HPR KNEE EXTENSOR MUSCLE STEADINESS IN RELATION TO MAXIMAL TORQUE AND PHYSICAL FUNCTIONING IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Background: Osteoarthritis (OA) of the knee is characterized by knee pain and limitations in daily activities. Muscle weakness is associated with these characteristics, quantified as maximal voluntary muscle torque (MVT). The quality of muscle contraction is presented by fluctuations observed on a torque-time curve and the extent of these fluctuations is referred to as muscle steadiness. Whether muscle steadiness is associated with maximal muscle torque and consequently with pain and activity limitations is unknown.

Objectives: To determine the association of knee extensor muscle steadiness with MVT and to explore the association of muscle steadiness with physical functioning in subjects with knee OA.

Methods: Baseline data of 172 patients out of 177 patients with knee OA, who participated in the VIDEX trial (trial registration number, NL47786.048.14), were used for this study. Maximal voluntary knee extension torque (MVT) was assessed using an isokinetic dynamometer. Torque-time curve data were processed into (i) coefficient of magnitude of torque variance (CV) in percentage (%), (ii) frequency of torque variance as peak power frequency (PPF) in Hertz (Hz) and (iii) MVT in Newton meters (Nm). Physical functioning was assessed using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) questionnaire, the Get-Up & Go (GUG) test, the 6-minute walk test (6MWT) and the Stair climb up & down test. Correlation and Regression analyses were performed to determine associations. Sex, age, BMI, KL-grade, knee alignment and pain were considered as potential confounders.

Results: Lower CV and PPF, reflecting better muscle steadiness, were significantly associated ($p < 0.01$ and $p < 0.05$, respectively) with higher MVT, but associations were weak. Regression analyses showed a significant association of lower CV with better physical functioning on the WOMAC ($p < 0.05$), also after correction for relevant confounders. The association with WOMAC was confounded by pain, but not by sex, age and BMI. No associations of CV with the GUG test, the 6MWT and the Stair climb up & down test were found. PPF was not significantly associated with physical functioning.

Conclusion: This is the first explorative study of muscle steadiness in relation to physical functioning in knee OA patients. Muscle steadiness is, to some extent, related to better physical functioning, but this is not consistent across all measures of physical functioning in this study. There seems to be some relationship, but it is weak and needs further exploration. No previous studies comparing clinical scores to muscle steadiness in knee OA were found to compare our results. Studies on muscle steadiness are needed to improve our understanding on this aspect of muscle torque.

References: N/A

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THU0635-HPR PREVALENCE AND CLINICAL CHARACTERISTICS OF NEOPLASIA AMONG A COHORT OF PATIENTS WITH SYSTEMIC SCLEROSIS

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Background: Patients with Systemic Sclerosis (SSc) have increased risk of malignancy compared to general population. The specific risk factors and

underlying physiopathological mechanisms are still unknown, although some studies suggest that a relationship between malignancies and certain antibodies can exist. Lung, breast and hematological cancers are the most frequently seen among these patients.

Objectives: To describe the prevalence of malignancies in a cohort of SSc patients and analyze the epidemiological, clinical and immunological characteristics

Methods: A retrospective observational study was conducted at a tertiary-level university hospital, including a cohort of patients with SSc (ACR/EULAR 2013 criteria). The main variable was neoplasia prevalence and also, malignancy type, age, evolution of the SSc at the time of diagnosis and mortality were collected. Regarding SSc, demographic data, clinical and immunological characteristics, organ involvement, capillaroscopy findings and presence of other autoimmune diseases were collected.

Results: A 15% of the 98 patients with SSc presented malignancies (80% women). The mean age at the time of diagnosis was 57 ± 15 years old (table 1). The frequency of cancer was: 40% breast, 13% colon, 7% ovary and lung. 2 patients died (1 breast, 1 lung). The limited subtype (ISSc) was the most frequent (80%) and 33% showed overlap syndrome (26% Sjögren syndrome). Regarding clinical manifestations: 67% had telangiectasia, 33% pitting scars, joint and digestive involvement. Most frequently seen antibodies were: 67% anti centromere (ACA) and 20% anti topoisomerase (ATA). None of the patients presented anti-ARN polymerase III (ARN-pol), and 13% had none of them (triple negative). Active and early capillaroscopy patterns were seen in a 46% and 27%. SSc and cancer were diagnosed in less than 5 years difference among a 33% of the cohort. A relationship between age and cancer was detected ($p = 0.042$). Patients with neoplasia were a mean of 10 years older than those without malignancies (IC95%: 1-19 years)

Table 1.

	SSc with neoplasia n= 15(%)	SSc without neoplasia n= 83(%)
Female	12 (80)	76 (92)
Mean age*(n; DE)	57(15)	52(17)
Pre-scleroderma	1 (7)	11 (13)
Limited	12 (80)	54 (65)
Diffuse	2 (13)	12 (15)
SINE	0	6 (7)
Overlap syndrome	5 (33)	14 (17)
Sjögren	4 (27)	10 (12)
MCTD	1 (7)	2 (2)
Rheumatoid Arthritis	1 (7)	3 (4)
Myositis	1 (7)	0
Clinical manifestations		
Telangiectasia	10 (67)	41 (49)
Pitting Scars	5 (33)	11 (13)
Joint	5 (33)	27 (33)
Digestive	5 (33)	33 (40)
Digital ulcers	4 (27)	11 (13)
Calcinosis	4 (27)	12 (14)
ILD	3 (20)	16 (19)
PAH	3 (20)	8 (10)
Cardiac	3 (20)	4 (5)
Muscular	2 (13)	3 (4)
Puffy Fingers	2 (13)	24 (29)
Renal	0	2(2)
Antibodies		
ACA	10 (67)	46 (55)
ATA	3 (20)	12 (14)
Anti-ARN	0	4 (5)
Triple negative	2 (13)	23 (28)
Capillaroscopy		
Early	4 (27)	19 (23)
Active	7 (46)	39 (47)
Late	0	3 (4)
Treatment		
Calcium antagonists	11 (73)	52 (63)
PPIs	7 (46)	33 (40)
Corticosteroids	8 (53)	24 (29)
DMARD	5 (33)	26 (31)

* $P < 0.05$ test t-student

MCTD (Mixed Connective Tissue Disease), ILD (Interstitial Lung Disease), PAH (Pulmonary Artery Hypertension), Triple negative (anti ARN, ACA and ATA negative antibodies), PPI (Proton Pump Inhibitor), ACE inhibitors (Angiotensin Converting Enzyme inhibitors), ARBs (Angiotensin II Receptor Blockers), DMARD (Disease-Modifying Anti-Rheumatic Drugs).

Conclusion: Our study showed a similar prevalence of the most frequent neoplasia among patients with SSc compared to general population (around 15%). This prevalence is similar to other series. The only epidemiological factor related to neoplasia was the age; a major proportion of ISSc was detected but without statistical significance. In a third of the patients there were less than 5 years