Rehabilitation

SAT0258 DISEASE RELATED CHARACTERISTICS DO NOT INFLUENCE WILLINGNESS TO PARTICIPATE IN A LARGE CLINICAL TRIAL IN RHEUMATOID ARTHRITIS (RA)

¹Z De Jong, ²M Munneke, ³A Jansen, ¹TP Vliet Vlieland, ⁴JM Hazes. ¹Rheumatology; ²Physical and Occupational Therapy, Leiden University Medical Center, Leiden; ³Rheumatology, Dr. J. Van Breemen Instituut, Amsterdam; ⁴Rheumatology, Leiden University Medical Center, Leiden/Rotterdam, Netherlands

10.1136/annrheumdis-2001.894

Background A major problem in the incorporation of results from clinical trials in daily practice is that demographic and clinical characteristics of patients who participate in clinical trials differ significantly from those of non-participants. It is not known if this limited generalizability of trial results is also present in trials with RA patients.

Objectives To investigate whether demographic or clinical characteristics of RA patients are a barrier to participation in a trial. In order to detect such an effect we investigated the recruitment of RA patients for a trial on the effectiveness of a long-term high intensity weight-bearing exercise programme.

Methods Medical records of all known RA patients from four cooperating centres were screened for eligibility (ARA 1987 revised criteria, 20–70 years, ACR functional class I–III, stable DMARD in the past 3 months, no prosthesis of a weight bearing joint, no serious comorbidity). Eligible patients received extensive written information and were invited for an information meeting. The investigators subsequently screened all patients who wished to participate to ensure the eligibility and a personalised approach. Participants as well as non-participants were mailed a questionnaire containing questions on socio-demographic and disease-related characteristics, comorbidity and experience with participation in clinical trials in the past. Questionnaires concerning functional status (HAQ), utility (EuroQol) and quality of life (RAQol) were added. Differences between participants and non-participants were tested with Mann-Whitney test or Chi-square test where appropriate.

Results 299 of the 300 participants (99.7%) and 892 of the 1191 non-participants (74.9%) returned the questionnaires completed. Participants were younger (median 54 vs. 57 yrs, $p < 0.005$), more often female (79 vs. 73%, $p < 0.05$) and the disease duration was slightly shorter (median 6 vs. 8 yrs, $p < 0.005$). Participants and non-participants did not differ with respect to the presence of rheumatoid factor and erosions, previous and current use of medication, perception of burden of illness, comorbidity, experience with participation in clinical trials in the past, functional status, utility, and quality of life measures.

Conclusion Disease related characteristics do not influence the willingness to participate in a clinical trial on the effect of long-term high intensity exercise therapy. The slight differences in sociodemographic characteristics between participants and non-participants do not seem clinically relevant. The recruitment strategy in which all eligible patients were approached in a non-selective, unbiased way may have contributed to this favourable result.

SAT0259 THREE-DIMENSIONAL (3-D) MEASUREMENT OF SHOULDER MOVEMENT PATTERNS IN PATIENTS WITH A FROZEN SHOULDER

¹HM Vermeulen, ²M Stokdijk, ³PH Eilers, ²CG Meskers, ²PM Rozing, ¹TP Vliet Vlieland. ¹Physical and Occupational Therapy; ²Orthopaedics; ³Medical Statistics, Leiden University Medical Center, Leiden, The Netherlands

10.1136/annrheumdis-2001.895

Background 3-D movement analysis with electromagnetic tracking systems proved to be a reliable tool in measuring range of motion (ROM) in healthy shoulders. 3-D analysis of movement patterns in subjects with pain and movement limitations of the shoulder has not yet been performed.

Objectives To investigate 3-D movement patterns of the affected and non-affected shoulder in patients with a frozen shoulder before and after physical therapy.

Methods Patients with a unilateral frozen shoulder were assessed before and after 3 months of intensive passive end-range of motion mobilisation techniques. 3-D movement analysis was performed with the 'Flock of Birds' electromagnetic tracking device while the patient elevated the arms in 3 directions. Using segmented linear regression, the characteristic slope of the upward part of the curves of glenohumeral elevation angle (x-axis) versus scapular laterorotation angle (y-axis) was approximated. Within this analysis determining the turning point of the curve was essential. Additional measures included ROM with a goniometer and a VAS(0–100 mm) for shoulder pain. Mean differences between affected and non-affected side and mean changes of the slope of the regression line before and after 3 months were studied by paired t-tests.

Results Eight women and 2 men with a unilateral frozen shoulder were included. Mean age was 49.1(sd 5.6) yrs, mean duration of complaints 11.4(sd 8.2) months. Mean active ROM in forward flexion, abduction and external rotation of the frozen shoulder before treatment was 97°(sd 17), 75°(sd 21) and 22°(sd 13). Mean scores for pain during movement was 63(sd 25). Mean slopes of the curves of the scapular laterorotation angle in forward flexion, scapular abduction and abduction were 0.725, 0.719 and 0.958 for the affected side and 0.458, 0.504 and 0.494 for the unaffected side, respectively ($p < 0.005$). After 3 months mean active ROM in the affected shoulder increased to 127°(sd 21) in forward flexion, 127°(sd 33) in abduction and 37°(sd 14) in external rotation (all $p < 0.005$). Mean pain score decreased to 37 mm (sd 12)($p = 0.013$). Mean changes of the slopes were 0.063($p = 0.202$), 0.048($p = 0.169$) and 0.264($p = 0.008$) for forward flexion, scapular abduction and abduction, respectively.

Conclusion This study shows that with a 3-D electromagnetic tracking system the abnormal movement pattern of a frozen shoulder, characterised by the earlier laterorotation of the scapula during shoulder elevation, can be described and quantified. Moreover, the system was sensitive to clinical improvements. Therefore, the system may be a useful tool for the evaluation of treatment of the frozen shoulder. Its value in other shoulder disorders remains to be established.

SAT0260 EFFECT OF ELECTRICAL STIMULATION ON CLOSED KINETIC CHAIN EXERCISES

J Meray, F Gödüb, G Kaymak Karataş, N Güler. *Physical Medicine and Rehabilitation, Gazi University Faculty of Medicine, Ankara, Turkey*

10.1136/annrheumdis-2001.896

Background

Objectives To investigate the effectiveness of electrical stimulation on quadriceps and hamstring muscle performance in patients with patellofemoral pain.

Methods Twenty-one patients participated in the 4-week exercise program and were randomly assigned to either closed kinetic chain exercises or closed kinetic chain exercises combined with electrical stimulation of bilateral quadriceps and hamstring muscles. Quadriceps and hamstring muscle peak torques were measured at baseline and at 4 weeks with an isokinetic dynamometer at 60°/sec and 180°/sec angular velocities.

Results After the 4-week exercise program the mean torque values for quadriceps and hamstring at both angular velocities were higher in both groups. There was a significant difference in the left hamstring peak torque values at 60°/sec and 180°/sec angular velocities and in the left quadriceps peak torque at 180°/sec angular velocity in the electrical stimulation group ($p < 0.01$). In the other group the peak torque differences in the left hamstring and quadriceps muscles at 60°/sec angular velocity and in the left hamstring muscle at 180°/sec angular velocity were statistically significant ($p < 0.05$).

Conclusion Although it seems that electrical stimulation does not provide an additional effect on muscle performance, it can be used with closed kinetic chain exercises to accelerate the rehabilitation program.

Humoral aspects of autoimmune disease

AB0016 WEAK CORRELATION OF CIRCULATING IMMUNE COMPLEXES IN SERA OF PATIENTS WITH CONNECTIVE TISSUES DISEASE MEASURED WITH POLYETHYLENE GLICOL AND C1Q BINDING ASSAY

JM Nedovic, SK Stojanovic, BN Stamenkovic, AM Stankovic, AN Dimic. *Rheumatology, Institute for Prevention, Treatment and Rehabilitation of Rheumatic and Cardiovascular Diseases ? Niska Banja, Medical Faculty, University of Nis, Nis, Yougoslavia*

10.1136/annrheumdis-2001.897

Background Circulating immune complex (CIC) are forming in a normal immune response, as a consequence of attachment of specifically reactive antibodies to antigens. As a result, most antigens are neutralised and/or eliminated. However, in some circumstances, CIC deposits in tissues with subsequent phlogogenic responses.

Systemic lupus erythematosus (SLE), systemic sclerosis (SSc) and rheumatoid arthritis (RA) are organ nonspecific autoimmune diseases with a high prevalence of positive test for CIC. It seems that systemic character of these diseases is due to vascular entrapment of CIC in various tissues.

Application of various methods on the same serum sample regularly gives a different level of CIC.

Objectives Our objective was to correlate the levels of CIC measured with two different assays in sera of patients with SLE, SSc, and RA.

Methods We used precipitation test with polyethylene glycol (PEG), molecular weight 6000 and C1q binding assay (C1q) with laser nephelometer in sera of 74 patients with SLE, 40 patients with SSc and 42 patients with RA.

Results PEG revealed abnormally high levels of CIC in 62,16% SLE sera, 45% SSc sera and 47,61% RA sera. C1q was more sensitive in SLE (78,37%) and RA (76,1%) with exactly the same result in SSc (45%).

The correlation of these two methods was weak, $r = 0,089$ for SLE, $r = 0,22$ for SSc, and $r = 0,29$ for RA.

Conclusion These results are not only the consequence of the imperfection of these methods but also the consequence of the enormous heterogeneity of CIC.

C1q binding assay is more sensitive, is WHO standardised, but partially gives false positive results in presence of DNA, CRP and RF, which are frequently present in sera of patients with connective tissues diseases. Besides, C1q does not detect CIC with isotypes of immunoglobulins that does not activate complement.

Precipitation test with PEG detects immunoglobulins of all isotypes, does not depend from complement and RF, and is simple and inexpensive to perform. Besides, PEG is not standardised, is less sensitive and partially gives false positive results in state of hypergammaglobulinemia, also frequently present in patients with connective tissues diseases.

This holds the allegations of WHO Working Group for the necessity of using more methods for detecting CIC from the single sample sera.

AB0017 ANTINEUTROPHIL CYTOPLASMIC ANTIBODIES IN RHEUMATOID ARTHRITIS PATIENTS

¹B Sonel, ¹N Suldur, ¹P Ataman, ²H Tutkak, ²N Duzgun, ¹MB Atay. *¹Physical Medicine and Rehabilitation; ²Clinical Immunology and Rheumatology, Ankara University, School of Medicine, Ankara, Turkey*

10.1136/annrheumdis-2001.898

Background Antineutrophil cytoplasmic antibodies (ANCA) have been suggested to occur in rheumatoid arthritis (RA), especially in patients with severe and longstanding disease. However in some studies no association was found between disease activity and ANCA.

Objectives To determine the occurrence of ANCA in patients with RA and compare the clinical and laboratory activity parameters between ANCA positivity and negativity.

Methods Sera from 85 patients (mean age 50.5 years, 67 women and 18 men) with RA were included in study. Morning stiffness duration, pain intensity (Visual Analogue Scale), fatigue, tender and swollen joint counts (28 joints), systemic symptoms, patients and physicians general health assessment (Visual Analogue Scale), disease activity (DAS28), functional status (ACR) and disability (Health Assessment Questionnaire) were assessed of all patients.

Besides the routine laboratory activity parameters, ANCA testing was performed by standard indirect immunofluorescence. Antibody against the cytoplasmic antigens proteinase-3 (PR3) and myeloperoxidase (MPO) were measured by enzyme-linked immunosorbent assay.

Results ANCA were found in 15 (17.6%) of patients with RA; 9 with atypical ANCA, 5 with perinuclear ANCA and 1 with cytoplasmic ANCA. Five of these 15 patients had vasculitis. None of the patients had Feltys syndrome, neutropenia or renal involvement. 4/5 patients with perinuclear ANCA and 1/9 patients with atypical ANCA had positive test result for MPO. None of the patients had PR3.

There were no significant differences in ANCA positivity with respect to the duration of disease (mean 8.7 years), age, gender, clinical and laboratory inflammatory parameters except for the duration of morning stiffness ($p = 0.04$) and antinuclear antibody positivity ($p = 0.001$).

Conclusion We observed that perinuclear ANCA pattern is specific for MPO but perinuclear and atypical ANCA may not be associated with vasculitis in the presence of RA. Clinical