

related to the severity of joint damage in knee OA. Sclerostin might play a role in the pathogenesis of the degenerative process of OA.

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Disclosure of Interest: None Declared

SAT0331 IDENTIFYING KNEE OSTEOARTHRITIS PHENOTYPES AND COMPARING CLINICAL OUTCOMES - DATA FROM THE MUST OSTEOARTHRITIS COHORT

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Background: It has been suggested that the heterogeneous population of persons with knee osteoarthritis (OA) consists of different phenotypes or subgroups, which may have important implications for clinical care and research. In a recent paper by Knoop et al. 2011 five distinct knee OA phenotypes were identified.

Objectives: To identify and compare different knee OA phenotypes in a Norwegian OA cohort according to the method suggested by Knoop et al. 2011.

Methods: Data from 106 persons in the "Musculoskeletal pain in Ullensaker Study" (MUST), an ongoing population-based study of individuals with self-reported knee OA, was included. Phenotypes were identified by K-means cluster analysis based on four clustering variables: severity of radiographic knee OA, lower extremity muscle strength (the 30-second Chair Stand Test), body mass index (BMI), and "emotional problems" (a single COOP/WONCA item). The phenotypes were compared on clinical outcome variables: self-reported pain and function, and the Six-Minute Walk Test.

Results: The mean age (sd) was 65 (8.9) years, and there were 65% females (n=69). Mean BMI was 28.4 (4.5), and for 60% (n=64) the ACR criteria for knee OA were fulfilled. Five different phenotypes were identified in the cluster analysis (Table 1). Comparing the phenotypes on clinical outcome variables there was a gradient from the first, strong and little affected phenotype, to the fifth showing higher levels of pain and disability, and shorter walked distance. Contrary to the findings by Knoop et al, it was not the fifth phenotype that was characterised with "emotional problems".

Conclusions: The phenotype characteristics identified in the present study were similar to those described by Knoop et al. Thus, the present study gives empirical support to the hypothesis that tailoring the treatment of knee OA to phenotype, might optimize the clinical effect.

References:

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Disclosure of Interest: None Declared

SAT0332 THE PERSONAL IMPACT OF OSTEOARTHRITIS ON INDIVIDUALS AND HOW THEY USE THERAPIES: THE ARTHRITIS CARE OA NATION 2012 SURVEY

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Background: The impact of osteoarthritis (OA) on individuals and how they use therapies is still relatively under-studied and offers opportunities to improve current therapeutic strategies.

Objectives: To understand the impact of OA on important activities such as employment and to explore how individuals are treated and how they use their therapies.

Methods: An on-line survey of randomly selected people with self-reported OA from a large UK research panel.

Results: 4,043 people were invited with 2001 respondents (49% response rate, 56% women, mean age 65 years). **Impact:** 52% reported that OA had a large impact on their lives, and 58% reported making adjustments to their life because of OA. Walking and exercise had been reduced or stopped by half the respondents. 15% had taken early retirement, on average 7.8 years earlier than planned. The average increased cost per annum per person due to OA was about £500. **Treatment:** Almost 40% of respondents reported their OA treatment as not very/not at all effective. Nearly half (48%) would not seek medical help until their pain was frequently unbearable, with women more likely to wait for such symptoms than men (53% women vs 40% men). After OA diagnosis, 18% do not consult their primary care doctor again, with a further 41% not visiting regularly. In consultations, only half reported a discussion on pain, and a third discussed OA impact; fewer reported discussing their fears (21%) or goals of management (15%) – over half (59%) felt they had not agreed a care-plan with their doctor. Doctors were seen as the major source of information (53%), with search engines (38%) and friends/family (19%) other sources. Awareness of self-management was generally much higher than take-up eg 64% were aware that increasing exercise was important while only 36% did this; most (87%) who increased exercise found it beneficial. 62% were prescribed oral OA medication, with topical therapies (47%), physiotherapy (38%) and steroid injections (28%) the commonest therapies used. Over-the-counter medications had been used by 25%, a third without their doctor's knowledge. Half used their medications every day, while 20% of those whose treatment was not effective reported irregular use of painkillers though without advice to do so. The majority (71%) reported varying degrees of persistent pain despite taking all prescribed medication. Over half had future concerns related to mobility (60%), maintaining independence (52%) and coping with everyday practical activities (51%).

Conclusions: OA has significant economic impact on individuals, especially related to employment. Many people did not seek help until symptoms were severe, and primary care doctors were still seen as the leading source of information on OA, although most did not develop a care plan with their patients. Self-management strategies were under-utilised, though effective when employed. Current treatment strategies still leave most people in pain with significant fears for the future.

Disclosure of Interest: None Declared

SAT0333 EFFICACY OF SODIUM HYALURONATE VERSUS HYLAN G-F 20 IN THE TREATMENT OF TIBIOFEMORAL OSTEOARTHRITIS

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Background: Crosslinked hylan is perceived to have longer efficacy than native hyaluronic acid in the treatment of osteoarthritis (OA).

Objectives: To compare the efficacy of intra-articular injections of native

Abstract SAT0331 – Table 1. Phenotype characteristics on clustering and clinical outcome variables

	"Strong muscle" (n=10)	"Minimal joint disease" (n=15)	"Nonobese and weak muscle" (n=34)	"Obese and weak muscle" (n=23)	"Severe joint disease" (n=24)	Total study sample (n=106)
Radiographic OA, K/L score, %						
0	10	67	35	39	4	31
1	20	33	32	30	4	25
2	30	0	15	17	21	16
3	40	0	18	13	58	25
4	0	0	0	0	13	3
Muscle strength ^a , mean (sd)	28.2 (4.7)	13.4 (4.4)	13.4 (3.9)	12.8 (3.1)	12.0 (3.8)	14.2 (5.7)
BMI, mean (sd)	26.5 (3.1)	23.7 (2.6)	26.9 (2.8)	32.2 (3.0)	30.6 (5.0)	28.4 (4.5)
Obesity ^b , %	20.0	0.0	14.7	73.9	54.2	34.9
Emotional problems ^c , median	1	3	1	3	2	2
Knee pain ^d , mean (sd)	0.67	0.54	0.83	1.08	1.22	0.90
WOMAC pain ^e	4.4	6.1	6.3	6.6	6.9	6.3
WOMAC function ^f	12.7	15.6	20.9	23.0	26.6	21.1
6MWT ^g , m mean (sd)	693	533	546	496	510	540

K/L = Kellgren/Lawrence; BMI = body mass index; ^aMeasured by the 30-second Chair Stand Test (number of stand repetitions completed); ^bObesity = BMI \geq 30.0 kg/m²; ^cMeasured by the COOP/WONCA item: "Feelings" (1 = Not at all, 5 = Extremely); ^dKnee pain last week (1 = no pain, 4 = much pain); ^eWOMAC pain subscale (0 (no pain) – 20); ^fWOMAC function subscale (0 (best function) – 68); ^gSix-minute Walk Test.

sodium hyaluronate 1% (SH) and crosslinked hylan G-F 20 (hylan) in patients with tibiofemoral OA.

Methods: This was a randomised, double-blind, controlled, non-inferiority study conducted from September 2007 through January 2010 in 64 sites in France. Selected patients were aged 40 to 80 years, with painful tibiofemoral OA (Kellgren-Lawrence radiological grade IIb to III) according to the American College of Rheumatology criteria and with WOMAC A pain on VAS of at least 40 mm. After an NSAID washout period, eligible patients were randomised to receive 1 intra-articular injection per week, for a total of 3 consecutive injections, of either SH 20 mg/2.0 ml (Ostenil[®], TRB Chemedica AG, Germany) or hylan G-F 20 20 mg/2.0 ml (Synvisc[®], Genzyme Biosurgery, USA). Efficacy parameters also included Lequesne index and SF-12 score, and were measured using the masked-observer technique at Days 45, 90 and 180. The main efficacy parameter was WOMAC A pain at Day 180. The PP population was used for the main analysis. The lower margin of non-inferiority for the 95% confidence interval was pre-specified at -8 mm. Data from this study were used to calculate responder rates according to the OMERACT-OARSI Set of Responder Criteria. [1]

Results: 256 patients (mean age 64.4 years, 171 women) were evaluated as ITT (SH=132, hylan=124). Both groups' baseline characteristics were homogeneous, except for a higher physical SF-12 in the test group (SH 34.0, hylan 32.2; $p=0.028$). All efficacy parameters decreased from baseline in both groups. In the PP population (226 patients, SH=119, hylan=107), the mean WOMAC A decrease at Day 80 was -28.9 mm (SD 20.8) and -27.8 mm (SD 22.9) for SH and hylan, respectively. The mean observed difference between groups was 1.04 mm (SEM 3.1), with a 95% confidence interval of [-5.0;7.1]. Therefore, the lower margin of the 95% confidence interval of the difference in mean WOMAC A was higher than the pre-specified bound for non-inferiority. Results were found to be similar in the ITT group. At baseline, 32.6% of SH patients and 22.1% of hylan patients had severe OA symptoms, as expressed with a Lequesne index of at least 14 points; at Day 180, only 5.1% of the patients in the SH group and 12.3% in the hylan group had a Lequesne index of 14 points or more. The responder rate at Day 180 was 75.7% in the SH group and 70.2% in the hylan group ($p=0.38$, chi-square test). Adverse reactions included burning sensation (1 occurrence), effusion (1), inflammatory reaction (3) in the SH group, and headache (3) and effusion (2) in the hylan group.

Conclusions: Results of this multicentre clinical study in France demonstrated the non-inferiority of SH compared with hylan for the primary efficacy outcome. Both preparations reduced pain and improved functional activity in patients with painful tibiofemoral OA over 6 months.

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SAT0334 RADIOGRAPHIC JOINT DAMAGE AS A PREDICTOR OF SHORT-TERM CLINICAL OUTCOME OF TOTAL KNEE REPLACEMENT SURGERY

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Background: Osteoarthritis (OA) is a slowly progressive degenerative joint disorder most frequently seen in the middle aged and older people. OA has a high prevalence causing pain and loss of function. There is still no cure for the disease. The current treatment of OA is initially conservative, predominantly focused on the relief of pain, minimizing functional disability, and limiting progression of joint damage. When conservative treatment fails and joint preserving surgery is not or no longer indicated, knee replacement of the affected joint becomes necessary. A proper selection of patients for total knee replacement surgery is crucial in the light of the exponentially growing numbers with its socioeconomic impact.

Objectives: The present study evaluated potential radiographic and clinical predictors for clinical outcome of knee replacement surgery in a cohort of patients with end-stage knee OA treated in regular practice in an orthopedic department of a general hospital in the Netherlands.

Methods: Patients (172) with severe OA who were eligible for total knee replacement surgery in a general hospital were included. Demographics, clinical, and radiographic data were collected. WOMAC data were collected prospective pre-treatment, and after surgery (post-treatment). OARSI-OMERACT response criteria based on WOMAC questionnaires were used to evaluate clinical success. Severity of radiographic joint damage was evaluated according to Kellgren & Lawrence and Altman atlas. Pre-treatment characteristics associated with responder status were investigated using multivariate logistic regression analyses.

Results: Patients showed on average a clear improvement in WOMAC scores at a mean of 18 months post-treatment (33.0±20.0 improvement in WOMAC pain). Based on WOMAC response criteria 55% of the patients were classified

as responders. In multivariate logistic regression, younger age (OR=0.930; 95%CI: 0.864-1.002), more severe pain (OR=0.966; 95%CI: 0.937-0.997) and more radiographic damage (OR=3.456; 95%CI: 1.568-7.618) was associated with good response. Results were similar when patients with missing outcomes were classified as non-responders or responders in a sensitivity analysis.

Conclusions: This study shows that still a significant number of patients do not have a good response to joint replacement surgery. A good response was clearly associated with more severe radiographic joint damage and possibly with age and WOMAC pain at time of operation. These results need further validation in larger cohorts and might become of use to a more accurate patient selection for knee replacement surgery.

Disclosure of Interest: None Declared

SAT0335 SEMI-QUANTITATIVE ASSESSMENT OF BONE MARROW EDEMA AND SYNOVITIS-EFFUSION IN OSTEOARTHRITIS WITH THE KNEE INFLAMMATION MRI SCORING SYSTEM (KIMRISS): A TARGET LESION BASED METHODOLOGY

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Background: Current MRI scoring methods for assessment of acute lesions such as bone marrow edema (BME) in the knee of patients with osteoarthritis rely on a complex subdivision of the knee into 15 subregions and then a further estimation of the proportion of subregion with BME¹. This limits feasibility for widespread adoption. Scoring of synovitis-effusion (S-E) is based on a restricted grading scheme assessing the whole joint (0= none, 3 = large) which limits responsiveness, especially for interventions that might target inflammation.

Objectives: To develop and conduct preliminary validation of an MRI method (KIMRISS) for direct semi-quantitative assessment of acute lesions, BME and S-E, that focuses on detection of change.

Methods: Assessment of BME is based on assessment of coronal and sagittal images for medial/lateral knee compartments and axial/sagittal images for patella-femoral compartment using a fluid-sensitive MRI sequence (STIR, T2 FatSat). Size of a BME lesion is defined according to the largest continuous increase in signal assessed in all dimensions and number of slices in which the increased signal can be detected (small = <1cm in all dimensions on ≤2 slices; moderate = >1cm but NOT >2 cm in ≥2 dimensions; large = >2cm in ≥2 dimensions). A weighting is applied to change in BME size (1.5x and 2x for moderate and large lesions, respectively). Size of S-E is assessed in each of 4 compartments (medial and lateral patellar recess, suprapatellar, semimembranosus bursa) according to a 0-4 grading scheme and a weighting is applied for change in S-E size (1.5x and 2x for grade 3 and 4 lesions, respectively). MRI scans were performed on the knee joints of 15 patients enrolled into an open label trial of an anti-TNF agent in subjects with persistent pain due to knee osteoarthritis and clinical evidence of effusion who had failed conventional therapy. Scans were performed at baseline and 12 weeks and independently reviewed by 3 readers blinded to timepoint. Reliability of change scores was assessed by intraclass correlation coefficient (ICC) and responsiveness by standardized response mean (SRM). We assessed correlations with WOMAC pain, patient global, and target joint clinical effusion score.

Results: Reliability of detection of change in KIMRISS BME (ICC for 3 reader pairs =0.71, 0.73, 0.75), KIMRISS S-E (ICC for 3 reader pairs =0.78, 0.82, 0.86), and Total KIMRISS (ICC for 3 reader pairs =0.77, 0.81, 0.89) was very good with substantial responsiveness after 12 weeks of treatment (Table). Improvement in Total KIMRISS score was observed in 12 patients although change in either the Total KIMRISS score or KIMRISS BME did not significantly correlate with change in WOMAC pain or patient global. KIMRISS S-E did not correlate with target joint effusion score.

	ICC (3 readers)	SRM
KIMRISS BME	0.73	0.82
KIMRISS Synovitis-Effusion	0.82	0.70
KIMRISS Total	0.81	0.88

Conclusions: The KIMRISS methodology for MRI-based semi-quantitative assessment of acute lesions in knee joints is responsive and is capable of reliably detecting change. It merits further validation in inflammatory knee joint disorders.

References:

[1] Hunter et al. *Osteoarthritis Cartilage* 2011; 19: 990

Disclosure of Interest: None Declared