female in the Korean population. Further prospective and experimental studies are necessary to identify the impact and mechanisms of association between severe OA and PD in female.

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SAT0534 EFFECT OF SUSTAINED- RELEASE SYMPTOMATIC DRUGS ON PROGRESSION OF KNEE JOINT OSTEOARTHROSIS IN PATIENTS WITH LESS THAN 5 YEARS DISEASE DURATION IN A 5-YEAR PROSPECTIVE STUDY

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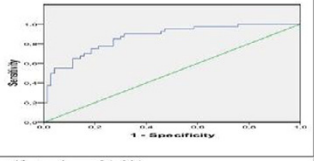
Objectives: To assess the effect of sustained release symptomatic drugs chondroitin sulfate (CS) + glucosamine hydrochloride (GH) on progression of knee OA in pts with <5 years disease duration during the 5year follow-up period (FUP).

Methods: This 5-year study included 52 female-patients with primary knee OA (ACR criteria), disease duration did not exceed 5 yrs (mean age–59,1±8,9). On each pts the individual file including 200 parameters was filled. Diagnostic modalities used in each patient included plain radiography of knee joints (gonarthrosis stage was classified using Kellgren J.- Lawrence J. scale), DEXA subchondral portions of the hip and tibia, ultrasound (US) and MRI examination of knee joints. First OA stage was documented in 22 (42,3%)pts, 2-nd - in 24 (46,2%), 3d- in 6 (11,5%). During 5 years of FUP 31 (60%) pts were administered the combined CS+GH regimen for more than 6 months a year. OA progression was documented based on radiographic criteria.

Results: During the 5 year FUP radiographic progression (upgrade in radiographic stage) of knee OA was documented in 14 pts (Group 1 - with OA progression), while in 38 pts radiographic stage remained unchanged (Group 2 - without progression). Patients from both groups were comparable in terms of age and disease duration (p>0,05). Although, pts from Group 1 with OA progression had more intense knee pain when walking: 60,4±18,3 vs 48,7±17,8mm, p=0,04; and higher BMI values: 34,5±4,6 vs 28,9±4,9 kg/m^2, p=0,001; US-findings based higher rate of synovitis:57,1% vs 18,4%, OR=5,9, 95% CI 1,6–22,5, p=0,009; bone marrow edema in medial tibia aspect 64,3% vs 13,2%, OR=11,9, 95% CI 2,8–50,3, p=0,0006 based on MRI findings. In pts with OA progression DEXA examination identified significantly higher absolute BMD values in the medial condyle of the tibia (0,9 (0,8–1,2) vs 0,8 (0,7–0,8) g/cm^2, p=0,001) as compared to pts from Group 2. Re-examination in 5yrs showed that statistically significant differences between the two groups still remained. Analysis of 5year therapy revealed, that the majority of pts without OA progression (68,4%) were taking combined CS+GH regimens for more than 6 months a year during 5-year FUP, while only 35,7% of pts who progressed (OR=4,3, 95% CI 1,1–16,3, p=0,03) managed to adhere to this regimen. Discriminant analysis showed that 5-year intake of combined CS+GH therapy for more than 6 months a year should be considered as a predictor of decreased risk of disease progression, while on the contrary, such symptoms as synovitis, bone marrow edema, and high BMD values in the medial condyle of the tibia should be viewed as predictors and risk factors for knee OA progression in pts with <5 years disease duration. Based on identified factors and their coefficients the authors designed a model (with area under the ROC curve equal to 0,93), allowing to predict the future course of the disease in an individual patient with high accuracy, i.e. 85,7% sensitivity and 84,2% specificity.

Factors	Discriminant function coefficients
US: synovitis	2,17
MRI: bone marrow edema	3,19
BMI in the medial condyle of the tibia	5,19
CS+GH	–1,03
Constant	11,83

ROC-curve (AUC=0,93)



The accuracy of prediction based on the variables (factors) was 84,6 %.

Conclusions: Use of combined CS+GH regimens for more than 6 months a year during 5 years is an important factor, decelerating the progression of knee OA in pts with <5 years disease duration by the factor of 4. While synovitis, bone marrow edema, and high BMD values in the medial condyle of the tibia are responsible for further OA progression on this group of pts.

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SAT0535 IMPACT OF THE METABOLIC SYNDROME ON THE PREVALENCE, SEVERITY INCIDENCE AND PROGRESSION OF KNEE OSTEOARTHRITIS

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Background: The contribution of metabolic factors on the development of OA has not been fully elucidated.

Objectives: The aim of this work is to analyze the influence of metabolic syndrome in the rate of radiographic incidence and progression of knee osteoarthritis, as well as its impact on the prevalence and severity of the disease.

Methods: For this work we used data from the Spanish cohort PROCOAC (PROgnostic Cohort of OsteoArthritis A Coruña). This cohort consists of subjects that visited the Rheumatology consultations at different time points and comprises 984 subjects at baseline including radiographic knee and hip KL grade, radiographic hand OA status, demographic and clinical data as well as the necessary information to assess the metabolic syndrome at baseline, that is, abdominal circumference (in cm) in addition to at least two of the following parameters: triglycerides above 200mg/dL, low HDL (<35 mg/dL), hypertension and increased glucose blood levels (>110 mg/dL). To assess the severity of the disease, the number of affected joints was coded as 0–1 and 2–3, according to the radiographic information of hands, knees and hips. Appropriate statistical analyses including Cox regression models with Kaplan-Meier survival curves and chi-square contingency tables were performed with SPSS v19.

Results: The mean age of subjects was 63,86 [32–88] years; 75,6,% were women. A total of 85% had radiographic hand OA and 11,8% suffered metabolic syndrome at baseline. In those OA patients that experienced radiographic knee OA progression over time (any KL increase from KL≥2 at baseline) the metabolic syndrome appeared as a significant risk factor (HR=3.696;95CI:1.085–14.520;p-value=0.037) (Figure 1). Similarly, in those subjects that developed incident radiographic knee OA over time (a new-onset KL grade 2), the metabolic syndrome at baseline also appeared as a significant risk factor with an increased magnitude (HR=12.931;95CI:3.037–55.051;p-value<0.001) (Figure 1). In addition, to have contralateral knee OA at baseline (HR=12.837;95CI:5.044 – 32.673;p-value <0.001) as well as radiographic hand OA (HR=5.671;95CI:0.854–37.649;p-value=0.07) associates with an increased rate of incident knee OA too. In terms of prevalence and severity of the disease, the metabolic syndrome associates with an increased risk of knee OA (OR=1.865;95% CI=1.080–3.220;p=0.024) as well as with increased number of affected joints, though in a non-significant manner (OR=1.582;95% CI=0.916–2.733;p=0.098)

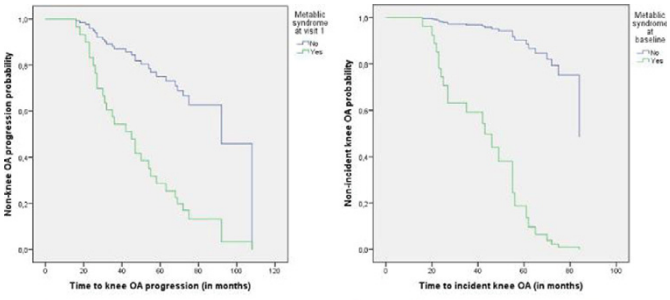

Figure 1. Kaplan-Meier survival curves showing the influence of the metabolic syndrome in the rate of radiographic knee OA progression and incidence over time

Conclusions: The alterations that underlie the metabolic syndrome condition the severity and prevalence of knee osteoarthritis, as well as the rate of incidence and progression of the disease

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SAT0536 AXIAL ALIGNMENT OF THE KNEE – IMPORTANCE IN CARTILAGE REPAIR? HIGH TIBIAL OSTEOTOMY VS. DISTRACTION

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Background: Opening-wedge high tibial osteotomy (HTO) is primarily indicated in treating varus gonarthrosis. The rationale behind HTO treatment of knee

osteoarthritis (OA) is to unload the affected compartment, this is accomplished by correcting the angular deformity towards the unaffected compartment, i.e. shifting the hip-knee-ankle angle (HKA; mechanical axis) towards varus for a medial lesion. Knee joint distraction (KJD) is an alternative joint-sparing treatment for knee OA and has been demonstrated to decrease pain, improve function, and increase joint space width (JSW)[1].

Objectives: To investigate the importance of axial alignment (and correction) in these two effective (joint-sparing) treatments of medial knee OA.

Methods: Patients with medial knee OA, a HKA less than 12° varus, normal knee stability, younger than 65 years, and a BMI less than 35 kg/m^2 were randomized to HTO (n=46) or KJD (n=23). WOMAC and VAS pain were collected at baseline and after twelve months. To assess structural outcome, JSW was measured on knee radiographs, before and after both treatments. HTO patients had full leg standing anteroposterior radiographs taken before and after surgery, KJD patients only had these taken before surgery. Therefore, the femur-tibia angle (FTA; anatomical axis), acquired using Knee Image Data Analysis (KIDA), was investigated as an alternative for assessing axial alignment. Agreement between axial alignment as defined by HKA and by FTA appeared to be fair (ICC=-0.414). WOMAC and VAS Pain were then related to (changes in) axial alignment, Kellgren & Lawrence (K&L) grade, BMI, gender, pre-operative range of motion (ROM), and age as independent variables in linear regression models.

Results: Patient baseline characteristics were not statistically significantly different between patients treated with KJD or HTO (see table 1). WOMAC increased statistically significantly one year after either treatment (KJD:Δ21.05±19.93; HTO:Δ27.80±15.32; both p<0.001). Likewise, VAS pain decreased (KJD:Δ-23.89±29.67,p=0.001; HTO:Δ-35.42±24.06,p<0.001). KJD led to a statistically significant increase in mean JSW (Δ0.50±0.88mm,p=0.014), and both treatments led to a statistically significant increase in medial (KJD:Δ0.81±1.16mm,p=0.004; HTO:Δ0.47±0.69mm,p<0.000) as well as minimal JSW (KJD:Δ0.85±0.96mm,p<0.000; HTO:Δ0.35±0.51mm,p<0.000) after one year. The FTA changed significantly in the HTO group after one year (Δ0.73°,p=0.005), while the KJD group showed a trend (Δ0.77°,p=0.105). In the KJD group, changes in clinical outcomes were not associated with pre-operative HKA, changes in FTA, K&L grade, BMI, gender, pre-operative ROM, or age. In contrast, in the HTO group a significant association was demonstrated for a change in WOMAC with a change in FTA (std.β=-0.341) and for a change in VAS Pain with baseline age (std.β=-0.323), as seen in table 2.

Table 1. Baseline characteristics

Characteristics	High tibial osteotomy	Knee joint distraction	
Mean (± SEM)	(n = 45)	(n = 22)	p-value
Male gender (n)	27/45 (60%)	16/22 (73%)	n.s.
Height (cm)	177 ± 2	178 ± 2	n.s.
Weight (kg)	85.2 ± 2.1	87.2 ± 2.8	n.s.
Body mass index (kg/m²)	27.2 ± 0.5	27.5 ± 0.7	n.s.
Affected knee (left)	20/45 (44%)	10/22 (45%)	n.s.
Age at surgery (yr)	49.4 ± 1.0	51.2 ± 1.1	n.s.
Kellgren & Lawrence			n.s.
Grade 0 (n)	1 (2%)	0 (0%)	
Grade 1 (n)	5 (11%)	6 (27%)	
Grade 2 (n)	12 (27%)	4 (18%)	
Grade 3 (n)	23 (51%)	11 (50%)	
Grade 4 (n)	4 (9%)	1 (5%)	
Tibiofemoral axis (°)	6.2 ± 0.3	5.8 ± 0.6	n.s.

Table 2: Linear regression with change in WOMAC and VAS Pain as dependent variables, and change in KIDA angle, pre-operative axial alignment, pre-operative range of motion (ROM), age, gender, BMI, baseline K&L grade, and either baseline WOMAC or VAS Pain as independent variables. [1]Standardized beta coefficients, *P<0.05

	High tibial osteotomy				Knee joint distraction			
	Δ WOMAC		Δ VAS Pain		Δ WOMAC		Δ VAS Pain	
	Std β[1]	Sig.*	Std β[1]	Sig.*	Std β[1]	Sig.*	Std β[1]	Sig.*
Δ Femur-tibia angle (FTA)	-0,341	0,029*	0,255	0,124	-0,049	0,840	-0,077	0,753
Pre-operative axial alignment (HKA)	0,128	0,368	-0,048	0,755	-0,076	0,768	-0,131	0,609
Pre-operative ROM	-0,172	0,234	0,083	0,595	0,124	0,684	0,033	0,902
Age	0,245	0,084	-0,323	0,045*	0,161	0,627	-0,077	0,786
Gender	-0,160	0,283	0,026	0,875	0,049	0,836	-0,159	0,481
BMI	-0,201	0,154	0,027	0,857	0,177	0,471	-0,150	0,537
Baseline K&L	-0,081	0,556	0,078	0,611	0,191	0,516	-0,037	0,885
Baseline WOMAC	-0,301	0,036*			-0,816	0,033*		
Baseline VAS Pain			-0,231	0,147			-0,682	0,016*

Conclusions: Both KJD and HTO lead to a statistically significant clinical and structural benefit after one year. Nevertheless, the change in FTA was associated with WOMAC change after one year in the HTO group, but not in the KJD group. This indicates that axial alignment correction may not per se be necessary for clinical benefit.

References:

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Disclosure of Interest: None declared

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SAT0537 INFLUENCE OF MELOXICAM IN ORODISPERSIBLE FORM ON PLATELET AGGREGATION AND VON WILLEBRAND FACTOR IN PATIENTS WITH OSTEOARTHRITIS

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Background: Meloxicam, which selectively inhibits COX-2, can cause inhibition of the biosynthesis of vascular endothelium vasodilator - prostacyclin, without impacting significantly on production of thromboxane, which promotes vasoconstriction [1]. Therefore, the effect of Meloxicam on the possibility of thrombotic complications need to be learn more accurately.

Objectives: To investigate the effect of orodispersible form of Meloxicam on platelet aggregation and von Willebrand factor in patients with knee osteoarthritis.

Methods: The study included 24 patients with knee osteoarthritis (OA) of the II stage according to the Kellgren-Lawrence. The control group consisted of 15 healthy individuals. Patients were prescribed the orodispersible form of Meloxicam in dose of 15 mg 1 time per day orally during 10 days. The survey was carried out before and after treatment. Patients had all-clinical studies, questionnaires (visual analogue scale (VAS), Western Ontario and McMaster Universities Arthritis Index (WOMAC), questionnaire Lequesne), optical aggregometry with adenosine diphosphate (ADP), collagen, thrombin and ristocetin for revealing the level of von Willebrand factor.

Results: As a result of treatment patients had a significant improvement of overall health and reduction of pain in knee joints according to the VAS (before treatment – 54.5 [50 – 71] mm, after treatment – 27 [18 – 41] mm; p≤0.05), WOMAC (before treatment – 143 [109 – 187] points, after treatment - 98 [13–168] points; p≤0.05), questionnaire Lequesne (before treatment – 16 [13 – 21] points, after treatment – 12 [3 – 22] points; p≤0.05). After treatment patients experienced a significant increase in the degree of platelet aggregation with ADP (before treatment – 52.6 [39.6 – 98.2]% after the treatment – 83.5 [41.3 – 127]%; p≤0.05), which may indicate a probable increase in the initiation of irreversible aggregation of circulating platelets. The degree of platelet aggregation with collagen also increased (before treatment – 46.5 [29.5 – 89]%, after treatment – 68.6 [37.9 – 115.4]%; p≤0.05), indicating the increased adhesion of platelets to collagen of the vascular endothelium. Before and after treatment, patients remained significantly elevated degree of aggregation with thrombin in comparison with the control group (before treatment – 65.6 [24.7 – 86.7], after treatment – 78 [62.3 – 92.7]%, control group – 37.8 [32.11 – 42.26]%; p≤0.05) which indicates the stimulation of the of the endothelin-1 synthesis with further infringements of procoagulants and anticoagulants. Von Willebrand factor, as an indirect indicator of endothelial damage, was significantly increased after treatment (before treatment – 151.4 [138.9 – 224]% after treatment – 206.8 [171.9 – 257.4]%), which may indicate increase of endothelial lesions because of meloxicam with further endothelial dysfunction (p≤0.05).

Conclusions: Intake of the orodyspersible form of Meloxicam in patients with osteoarthritis can cause an increase of platelet aggregation and level of von Willebrand factor that may contribute to the vascular endothelial dysfunction and increase in risk of thrombosis.

References:

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Disclosure of Interest: None declared

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SAT0538 PROGRESSION OF PAIN, NUMBER OF CLINICALLY SWOLLEN JOINTS AND ULTRASOUND DETECTED SYNOVITIS AND OSTEOPHYTE FORMATION IN PATIENTS WITH HAND OSTEOARTHRITIS OVER TWO YEARS

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Background: Hand osteoarthritis (HOA) is a common and frequent cause of pain. HOA is a heterogeneous group of disorders with two main subsets including non-erosive and erosive disease. Few studies demonstrated inflammatory ultrasound changes and more severe clinical symptoms in patients with erosive compared with non-erosive disease, however the results are inconsistent.

Objectives: he aim of this study was to evaluate progression of pain, stiffness, physical impairment and ultrasound features in patients with erosive and non-erosive HOA in a two years longitudinal study.

Methods: Consecutive patients with symptomatic HOA fulfilling the American College of Rheumatology (ACR) criteria were included in this study. Joint pain and swelling were assessed. Patients reported joint pain on 100 mm visual analogue scale (VAS). Pain, joint stiffness and disability were assessed by the Australian/Canadian OA hand index (AUSCAN). Radiographs of both hands were examined and erosive disease was defined by at least one erosive interphalangeal joint. Synovial hypertrophy and power Doppler signal (PDS) were scored with ultrasound. Synovitis was graded on a scale of 0–3 and osteophytes were defined as cortical protrusions seen in two planes. Patients were examined at baseline and at the two years follow-up.