Objectives: We aim to evaluate whether different ways of classifying CS have an impact on a patient's QoL among patients with knee osteoarthritis (KOA).

Methods: We use the baseline pre-operative data from a cohort of consecutive KOA patients enlisted for knee replacement surgery (1). We collected demographics, number and position of painful sites of body. Quality of life was assessed by the Medical Outcome Survey Short-Form 36 (SF-36). Pain pressure threshold was measured at volar side of right forearm. We classify CS using three sets of criteria: 1). widespread pain (pain involving both upper/ lower trunk, and both side of body), 2). lowest 10th percentile of pressure pain threshold (PPT) measured at the forearm and 3) the painDETECT questionnaire $\geq 13/38$.

Results: Of 233 patients (79.8% women) with complete data set for analysis, mean (standard deviation, SD) age was 66.0 (8.3) years. 15.5%, 25.8%, and 4.7% of patients were classified as having CS by widespread pain, low PPT and painDETECT criteria. KOA patients with CS have poorer QoL compared with those without. Low PPT identified patients with poorer general health, while widespread pain and PainDETECT criteria identified patients with poorer QoL in more domains including vitality mental health (Table 1).

Conclusion: KOA patients who have CS have poorer QoL compared to those without. Different criteria defined patients with different pattern of QoL impacts. In general, KOA patients who have CS have poorer QoL compared to those without. This highlight the importance of additional impact of CS to QoL.

Table 1. Quality of life comparing patients with or without CS

	Widespread pain		lowest 10 th percentile PainDETECT $\geq 13/38$ of forearm PPT			
	No (n= 197)	Yes (n= 36)	No (n= 206)	Yes (n= 27)	No (n= 222)	Yes (n= 11)
SF-Physical functioning	39.0 (21.8)	32.6 (19.0)	38.7 (21.8)	32.8 (17.8)	38.8 (21.3)	22.3 (19.2)*
SF-Role physical	21.6 (33.3)	8.3 (22.4)*	20.3 (32.2)	13.9 (32.0)	19.7 (32.6)	15.9 (23.1)
SF-Bodily pain	36.3 (19.5)	28.1 (14.0)*	35.1 (19.5)	34.0 (14.7)	35.5 (19.1)	24.2 (13.3)
SF-General health	68.9 (21.1)	64.6 (20.3)	69.4 (20.6)	59.3 (22.4)*	68.7 (20.7)	58.4 (25.7)
SF-Vitality score	69.7 (22.4)	59.3 (20.4)**	68.8 (22.5)	63.1 (21.1)	69.0 (21.8)	51.8 (29.2)*
SF-Social functioning	57.7 (37.2)	48.3 (39.2)	57.3 (38.0)	48.1 (33.7)	56.7 (37.7)	47.7 (42.1)
SF-Role emotion	86.1 (34.4)	86.1 (33.2)	86.7 (33.5)	79.0 (38.3)	86.9 (32.9)	63.6 (50.5)
SF-Mental health	82.4 (16.2)	77.4 (19.2)	82.2 (16.8)	77.8 (15.8)	82.2 (16.3)	70.2 (22.2)*
Physical component score	32.5 (10.1)	30.3 (8.0)	32.4 (9.8)	30.6 (9.7)	32.4 (9.9)	28.8 (8.7)
Mental component score	53.0 (10.5)	48.3 (10.0)*	52.7 (10.6)	48.5 (9.2)	52.6 (10.2)	44.2 (13.7)**

*p<0.05; **p<0.01

REFERENCES:

- Leung YY, Lim Z, Fan Q, et al. Pre-operative pressure pain thresholds do not meaningfully explain satisfaction or improvement in pain after knee replacement: a cohort study. *Osteoarthritis and cartilage* 2019;27(1):49-58.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.1698

POS0125

CALCULATING RISK OF HAND OSTEOARTHRITIS PROGRESSION AT TEN YEARS THROUGH A PREDICTION MODEL

K. Shah¹, G. Bullock^{1,2}, A. Silman¹, D. Furniss¹, N. Arden^{1,2}, G. Collins^{3,4}.

¹University of Oxford, Nuffield Department of Orthopaedics, Rheumatology, and Musculoskeletal Sciences, Oxford, United Kingdom; ²University of Oxford, Centre for Sport, Exercise and Osteoarthritis Research, Versus Arthritis, Oxford, United Kingdom; ³University of Oxford, Centre for Statistics in Medicine, Nuffield Department of Orthopaedics, Rheumatology, and Musculoskeletal Sciences, Oxford, United Kingdom; ⁴Oxford University Hospitals NHS Foundation Trust, NIHR Oxford Biomedical Research Centre, Oxford, United Kingdom

Background: Hand osteoarthritis (OA) is a chronic, progressive disease, commonly affecting middle aged women. OA at the interphalangeal joints (IPJs) or the thumb base are considered different disease subsets (1). Few studies have investigated individual risk factors for IPJ OA progression (2). Prediction models can be used to calculate overall disease risk from multiple risk factors. This can guide prevention and treatment options.

Objectives: Develop and internally validate a prediction model for IPJ OA progression.

Methods: Data from the Chingford 1000 Women Study (Chingford Study), the largest population-based cohort worldwide assessing hand OA, was used. It is representative of the middle-aged female population in the United Kingdom (3). At baseline, 1,003 women aged 45 to 64 years' old were recruited, and 693 measurements taken. Hand radiographs were taken at baseline and after ten years, read using the Kellgren-Lawrence (KL) atlas (inter-observer correlation: ≥ 0.7 (4)).

For the current study, participants must have had OA (KL ≥ 2 in ≥ 1 IPJ) on baseline hand radiographs. Participants with KL 4 in all 16 IPJs at baseline were excluded. Risk factors from the Chingford Study at baseline were selected by biological plausibility, literature evidence (2), and hand surgeons' consensus (5): age (years), occupation (manual versus non manual), OA in ≥ 1 thumb base (KL ≥ 2 versus KL<2), body mass index (BMI) (kg/m²), family history of hand OA (yes versus no). The outcome was defined on an ordinal scale for the number of IPJs (up to >5 IPJs) with OA progression (increase by KL ≥ 1), at ten years'.

The prediction model was developed using a penalized proportional odds logistic regression. Odds ratios (95% confidence intervals) were reported for each risk factor. The model was internally validated using 2,000 bootstrap iterations. Model performance was assessed for discrimination (C-statistic), and calibration (C-slope). 3.5% of data was missing, and complete case analysis was used.

Results: 699 women had baseline hand radiographs: 38 were unreadable, 459 had no IPJ OA. Seven participants had missing data (occupation: 5, BMI: 1, family history: 1) and were excluded. 195 participants were included this study. Median age at baseline was 59 (interquartile range: 8) years.

181 (92.8%) participants had OA progression at 10 years (Figure 1). Thumb base OA (odds ratio: 1.32 (0.93 to 1.88)) was most strongly associated with IPJ OA progression (Table 1). C-statistic was 0.57, and calibration slope was 1.38 for the optimism-corrected model.

Conclusion: More stringent cut-offs for OA progression would be clinically useful. It was only weakly possible to predict which participants with IPJ OA would progress. This suggests that other risk factors, such as gender, ethnicity and genetics, may be predominant.

Figure 1. Hand interphalangeal joints with osteoarthritis progression (Kellgren-Lawrence grade ≥ 1) at 10 years follow up

Table 1. Odds ratios for risk factors

Risk factor	Odds ratio (95% confidence interval)
Age (years)	1.02 (0.99 to 1.06)
Occupation (manual versus non manual)	0.88 (0.60 to 1.29)
Thumb base OA (Kellgren-Lawrence grade ≥ 2 versus <2)	1.32 (0.93 to 1.88)
Family history of hand OA (yes versus no)	1.03 (0.72 to 1.45)
Body mass index (kg/m ²)	1.04 (0.99 to 1.09)

OA: Osteoarthritis

REFERENCES:

- Kloppenburg M, et al. Research in hand osteoarthritis: time for reappraisal and demand for new strategies. *Ann Rheum Dis.* 2007;66(9):1157-61.
- Shah K, et al. Risk factors for the progression of finger interphalangeal joint osteoarthritis: a systematic review. *Rheumatol Int.* 2020;40(11):1781-1792.
- Hart DJ, Spector TD. The relationship of obesity, fat distribution and osteoarthritis in women in the general population: the Chingford Study. *J Rheumatol.* 1993;20:331-335.
- Hart DJ, et al. Reliability and reproducibility of grading radiographs for osteoarthritis of the hand. *Br J Rheum.* 1993;32:S1.
- Shah K, et al. Delphi consensus of risk factors for development and progression of finger interphalangeal joint osteoarthritis. *J Hand Surg Eur Vol.* 2019;44(10):1089-1090.

Acknowledgements: We would like to thank all of the participants of The Chingford 1000 Women Study, Professor Tim Spector, Dr Deborah Hart, Dr Alan Hakim, Maxine Daniels, Alison Turner, James van Santen and Julie Damjanovic for their time and dedication.

Disclosure of Interests: Karishma Shah: None declared, Garrett Bullock: None declared, Alan Silman: None declared, Dominic Furniss: None declared, Nigel Arden Consultant of: Receives personal fees from Pfizer/Lilly for consultancy outside the scope of this work, Grant/research support from: Receives grant from Merck outside the scope of this work, Gary Collins: None declared
DOI: 10.1136/annrheumdis-2021-eular.1126

POS0126 **EARLY STAGE HAND OSTEOARTHRITIS IN PATIENTS WITH THE EHLERS-DANLOS SYNDROME: AN EXPLORATIVE STUDY**

L. Rombaut¹, K. De Baere², E. Debacker², L. Decavele², F. Malfait^{1,3}, R. Wittoek^{4,5}. ¹Ghent University Hospital, Center for Medical Genetics, Gent, Belgium; ²Ghent University, Rehabilitation Sciences, Ghent, Belgium; ³Ghent University, Department of Biomolecular Medicine, Ghent, Belgium; ⁴Ghent University, Internal Medicine and Pediatrics, Ghent, Belgium; ⁵Ghent University Hospital, Department of Rheumatology, Ghent, Belgium

Background: The Ehlers-Danlos Syndromes (EDS) are a group of rare heritable connective tissue disorders caused by various defects in the biosynthesis or secretion of fibrillar collagens. The three main clinical features of EDS are joint hypermobility, skin fragility and general soft tissue fragility. 13 clinical subtypes of EDS are recognized, of which the hypermobile type (hEDS) and classical type (cEDS) are the most prevalent. It has been hypothesized that the (micro-)trauma in the joint due to typical subluxations and dislocations, make EDS patients prone to developing osteoarthritis (OA) in early stage. Conversely, it has been mentioned that joint hypermobility provides a larger joint surface area and prevents OA. Abnormal biomechanical loading has been identified as a risk factor for the development of OA in the wrist and hand. However, no studies have yet been performed in EDS patients.

Objectives: The primary aim was to investigate the presence of any degenerative features for hand OA, and if this differs between cEDS and hEDS patients. The second aim was to evaluate hand function and pain related to OA signs in EDS patients.

Methods: cEDS and hEDS patients between 35 and 50 years old were invited to participate. cEDS diagnosis was genetically confirmed and hEDS diagnosis was performed according to the clinical 2017 hEDS criteria. Exclusion criteria were a body mass index ≥ 35 , not being able to stand straight up for five minutes, suffering from an auto-immune disease or rheumatological condition, or pregnancy. Conventional X-rays of both hands were performed and scored independently by three assessors according to Kallman¹. Presence of osteophytes (0-3), joint space narrowing (0-3), malalignment ($>15^\circ$)(0/1), erosions (0/1), subchondral sclerosis (0/1), and subchondral cysts (0/1) were scored in all interphalangeal (distal and proximal), metacarpophalangeal and thumb base joints of both hands¹. We defined early hand OA as minimally three features (≥ 1) were present. Several clinical assessments were made, e.g. tenderness, bony swelling and soft tissue swelling. The Michigan Hand Outcomes Questionnaire (MHOQ) and Australian/Canadian Osteoarthritis Hand Index (AUSCAN) questionnaires were completed.

Results: In total, 31 patients (mean age 41 ± 5.6 years, 13 men and 18 women) diagnosed with EDS participated, of whom 19 with cEDS and with 12 hEDS. In total, 927 joints were assessed. Level of agreement of radiographic assessments was very high ($>98\%$). Early hand OA was found in more than 40% of the EDS patients, with a significant higher frequency in cEDS patients compared to hEDS patients (58% vs. 17%) ($p=0.032$). Joint space narrowing was most frequently present and significantly more in the cEDS patients compared to hEDS patients (79% vs. 21%) ($p=0.003$). However, radiographic changes were found in only 10% of all finger joints. Of all fingers, thumb joints were most affected. Regarding the clinical features of hand OA, all patients showed deformity in one or more finger joints, most frequently at the thumb, especially the IP joint (both hyperflexion and hyperextension). Tenderness and bony swelling was present in 36% and 45% of all patients, respectively, whereas soft tissue swelling was less frequently observed (10% of all patients). Here, no significant differences were found between cEDS and hEDS patients. Moderate disability was present (mean (SD) AUSCAN= 45.47 (27.10) and MHQ = 65.97 (14.21). cEDS showed significant less hand pain ($p=0.03$), a better hand function ($p=0.03$) and less disability ($p=0.026$) than hEDS.

Conclusion: This explorative study demonstrates that a high number of EDS patients present with minimal degenerative features of hand OA, but in a minority of joints. Patients with cEDS were significantly more affected, but showed a better function compared to hEDS. Possibly, cEDS patients are more susceptible to develop hand OA.

REFERENCES:

[1] Altman R, Gold G. Atlas of individual radiographic features in osteoarthritis, revised. OARS. 2007;15:A1-A56.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.1351

POS0127 **ASSOCIATION BETWEEN HYPERURICEMIA AND OSTEOARTHRITIS**

E. Taskina¹, E. Strebkova¹, L. Alekseeva^{1,2}, N. Kashevarova¹, K. Telyshev¹, E. Sharapova¹, S. Anikin¹, F. Bibulatova¹, A. Lila^{2,3}. ¹V.A. Nasonova Research Institute of Rheumatology, Osteoarthritis, Moscow, Russian Federation; ²Russian Medical Academy of Continuous Professional Education, Rheumatology, Moscow, Russian Federation; ³V.A. Nasonova Research Institute of Rheumatology, Director, Moscow, Russian Federation

Background:

Objectives: To evaluate the relationship of hyperuricemia (GU) with the course of knee osteoarthritis (OA) and the components of metabolic syndrome (MS).

Methods: The prospective study included 107 women aged 40-75 y.o. with a reliable diagnosis of I-III Kellgren J. - Lawrence J. stage of knee OA (ACR), who signed an informed consent. The average age of patients was 59.1 ± 8.9 y.o. (from 38 to 74), the duration of the disease was 9 (4-12) years. The average values of the body mass index (BMI) corresponded to obesity (30.6 ± 5.7 kg / m²), waist circumference (WC) - 93.9 ± 12.1 cm. An individual card was filled out for each patient, including anthropometric parameters, anamnesis and clinical examination data, an assessment of knee joint pain according to VAS, and concomitant diseases. All patients underwent standard X-ray of the knee joints, DEXA scan of the lumbar spine and total hip, and laboratory examination.

Results: Hyperuricemia was diagnosed in 26.2% of patients. Patients with GU had a higher BMI and WC ($p<0.05$). X-ray examination revealed significantly larger sizes of osteophytes ($p = 0.02$) and smaller sizes of the medial space of the knee joint ($p = 0.02$), while the patients of both groups were comparable in age and duration of OA (Table 1). Patients with GU had a statistically significantly higher bone mineral density (BMD) values were observed in L1-L4 and total hip ($p<0.05$). MS was almost 2 times more often diagnosed in patients with GU (83.3% vs. 49.2%, $RR=1.71$, 95%CI 1.21-2.36, $p=0.01$). Higher levels of CRP, COMP, leptin, triglycerides (TG), creatinine, ALT and AST were determined in patients with GU (Table 1). Spearman rank ordered correlation coefficients between GU and BMI ($r=0.22$, $p=0.03$), WC ($r=0.26$, $p=0.02$), MS ($r=0.29$, $p=0.01$), and CHD ($r=0.21$, $p=0.04$). There were a correlation between GU and the stage of knee OA (X-ray) ($r=0.34$, $p=0.02$), the size of medial osteophytes in the femur (mm) ($r=0.37$, $p=0.01$) and the medial space of the knee joint (mm) ($r=-0.27$, $p=0.01$), BMD L1-L4 ($r=0.37$, $p=0.03$) and the total hip ($r=0.37$, $p=0.04$). There were also significant positive associations with the following laboratory parameters: CRP ($r=0.27$, $p=0.007$), COMP ($r=0.25$, $p=0.05$), leptin ($r=0.29$, $p=0.03$), creatinine ($r=0.45$, $p<0.0001$), TG ($r=0.44$, $p=0.0001$), ALT ($r=0.32$, $p=0.002$), AST ($r=0.25$, $p=0.02$).

Table 1. Comparative characteristics of OA patients with and without GU

Parameter	OA Patients with GU (n = 28)	OA Patients without GU (n = 79)	p
Age, y.o.	61 (53-68)	60 (54-66)	0.33
Duration OA, years	10 (6-14)	7.5 (3-12)	0.06
WC, cm	99.3 ± 12.8	92.2 ± 11.4	0.02
BMI, kg/m ²	33.5 ± 5.6	30 ± 5.6	0.04
The size of the medial space of joint according to X-ray, mm	2.3 (1.2-3.3)	3.2 (2.0-4.3)	0.02
The size of the osteophytes of the femur, mm	5.8 (3.7-6.3)	2.9 (1.7-4.5)	0.02
BMI L1-L4, g/cm ²	1.18 (1.12-1.24)	1.0 (0.86-1.15)	0.04
BMI total hip, g/cm ²	1.05 (1.0-1.13)	0.9 (0.82-0.98)	0.04
CRP, mg/l	2.8 (1.9-6.2)	1.9 (1.2-3.6)	0.007
COMP, ng/ml	31.9 (27.6-45)	24.2 (18.9-38.7)	0.05
Leptin, ng/ml	46.2 (36.5-72)	30.5 (19.5-45.6)	0.03
TG, mmol/l	1.97 (1.61-2.41)	1.26 (0.87-1.63)	0.002
Creatinine, mmol/l	79 (74.9-86)	68 (62-74)	0.0001
ALT, mmol/l	26.5 (17.2-32.9)	17.9 (13.2-21.7)	0.003
AST, mmol/l	22.5 (18.5-27.8)	18.9 (16.8-21.9)	0.02

Conclusion: GU may be an aggravating predictor of not only MS-associated diseases such as obesity, dyslipidemia, but also OA. Thus, at high levels of uric acid, more advanced radiological stages of OA, high values of the BMD of the axial skeleton and increased values of CRP, COMP are noted. In this connection, therapeutic interventions of OA in patients with GU should also be aimed at reducing the concentration of uric acid, which may provide a slowdown in the progression of the disease. Further study of this issue is needed.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.3364

POS0128 **PHYSICIAN AND PATIENT PERCEPTIONS OF SURGICAL PROCEDURES FOR KNEE OA ACROSS JAPAN, THE US AND 5 EU COUNTRIES: RESULTS OF A REAL-WORLD STUDY**

N. Fukui¹, P. G. Conaghan², K. Togo³, N. Ebata³, L. Abraham⁴, J. Jackson⁵, J. Jackson⁵, M. Berry⁵, H. Pandit². ¹The University of Tokyo Komaba Campus,