through wk 52. Pharmacodynamic responses (neutrophil and high-sensitivity CRP levels) plateaued at the 100 mg dose and data were similar at 200 mg. The low immunogenicity to lutikizumab did not meaningfully affect outcomes.

Conclusions: Lutikizumab was generally well tolerated and met the primary endpoint of reduction in WOMAC pain at wk 16 compared with placebo at a dose of 100 mg, but not at 25 mg or 200 mg; cartilage thickness, synovitis, and other structural endpoints were similar between lutikizumab and PBO.

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SAT0576

BIOMARKERS PREDICTIVE OF PAIN IMPROVEMENT IN KNEE OSTEOARTHRITIS SUBJECTS TREATED WITH THE ANTI-IL-1 ALPHA/BETA DUAL VARIABLE DOMAIN IMMUNOGLOBULIN LUTIKIZUMAB (ABT-981)

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Background: Development of disease-modifying drugs for OA has been challenging, partly due to lack of predictive biomarkers.

Objectives: Our primary objective was to identify baseline (BL) biomarkers predicting greater treatment effects on WOMAC pain among knee OA subjects in the lutikizumab (formerly ABT-981) ILLUSTRATE-K trial (NCT02087904).

Methods: Subjects (n=347) with Kellgren-Lawrence (KL) grade 2-3 knee OA, synovitis on MRI or ultrasound, and knee pain score 4-8 (range, 0-10) were randomised to placebo (PBO) or lutikizumab 25, 100, or 200 mg subcutaneously every 2 wk for 50 wk. The primary endpoints were change from BL (CFB) in WOMAC pain at wk 16 and CFB in MRI synovitis at wk 26. Demographics, patient-reported outcomes (WOMAC, ICOAP, global assessment [PGA]), x-ray joint space width, and Whole Organ MRI Score (WORMS) were determined at BL. The Patient Rule Induction Method, Sequential Batching, and the Adaptive Index Model were used to identify BL predictive biomarkers and OA subsets with greater lutikizumab treatment effects. Continuous efficacy endpoints were assessed using ANCOVA with treatment, age group, and KL grade as main factors and BL measurements as covariates with LOCF imputation for WOMAC pain.

Results: WORMS Global Total Osteophyte Score (GTOS), which semi-quantitatively summates osteophyte severity from 14 regions of the knee, identified a subset of subjects with a greater lutikizumab treatment effect vs PBO; the optimal GTOS cutoff for discriminating treatment effects was 14 (figure 1). Among subjects with a GTOS ≥ 14 , the PBO WOMAC pain response was markedly reduced and only marginally improved for ABT-981. At wk 16, among subjects with GTOS ≥ 14 , the standardised mean difference (95% CI) of WOMAC pain for the lutikizumab 100 mg dose group vs PBO was -0.62 (-0.16 to -1.09) vs -0.30 (0 to -0.61) for all subjects. Compared with the total study population, the 41% of subjects with GTOS ≥ 14 not only had a greater ABT-981 treatment effect vs PBO on WOMAC pain, but also other measures of OA symptoms. BL systemic markers of synovitis (serum C1M and C3M) and potential markers of macrophage activation by IL-1 (serum alkaline phosphatase) were positively associated with greater lutikizumab treatment effects vs PBO but to a lesser extent than GTOS. Other data supported the robustness of the GTOS predictive marker because 1) a priori, KL grade was used to stratify subjects, 2) subject characteristics were balanced and 3) osteophyte formation is directly linked with synovial macrophage numbers in humans and OA synovial macrophages are the predominant source of IL-1, which is an important mediator of pain.

BL and LS Mean Change From BL (P Value) in WOMAC Pain at Weeks 16, 26, and 52 for ABT-981 vs PBO (LOCF)								
All Subjects					BL MRI GTOS ≥ 14			
ABT-981	BL	Wk 16	Wk 26	Wk 52	BL	Wk 16	Wk 26	Wk 52
25 mg	27.1	-0.3 (0.834)	-0.6 (0.664)	-1.1 (0.500)	29.7	-2.2 (0.345)	-1.6 (0.521)	-4.6 (0.084)
100 mg	28.3	-2.9 (0.050)	-2.7 (0.075)	-2.2 (0.186)	28.2	-6.0 (0.010)	-5.4 (0.027)	-6.4 (0.013)
200 mg	27.1	-1.2 (0.415)	-2.4 (0.107)	-2.3 (0.157)	26.2	-4.6 (0.039)	-5.5 (0.024)	-6.6 (0.010)

Abstract SAT0576 – Figure 1

Conclusions: The GTOS biomarker predicted improvement of knee OA pain and other symptoms with lutikizumab treatment. We hypothesise that subjects with more severe osteophytes may have had more inflammation-dependent pain that was less responsive to PBO, suggesting that IL-1 inhibitors should be studied further as a treatment for knee OA symptoms in this subset of patients.

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SAT0577

EVALUATION OF SARCOPENIA MULTIDimensionALLY IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Background: Osteoarthritis(OA) is a noninflammatory chronic degenerative disease. The rate of development of sarcopenia has been increased in patients with OA.

Objectives: In this study, we evaluated the presence of sarcopenia multidimensionally in patients with knee osteoarthritis (OA) using clinical, ultrasonographic and biochemical parameters, and in this respect, it was aimed to investigate the relation between OA and sarcopenia and to identify the most practical, easily accessible and inexpensive method for investigating sarcopenia.

Methods: 102 patients with clinical and radiological diagnosis of knee osteoarthritis and 33 healthy control subjects were included in the study. A total of 135 subjects were evaluated by the European Working Group on Sarcopenia in Older People (EWG-SOP) for the diagnosis of sarcopenia. The first group consists of (OA) patients with sarcopenia, the second group consists of OA patients without sarcopenia and the third group is controls subjects. Dual-X-ray absorptiometry (DEXA) is used to measure Body composition parameters and muscle mass measurements, isometric muscle strength evaluations, hand grip strength and walking speeds for diagnosis of sarcopenia. Short form -36 (SF-36) The Nutritional Assessment-short form (MNA), the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), the International Physical Assessment Questionnaire Short Form (IPAQ-SF) and the Centre for Epidemiologic Studies Depression Scale (CES-D scale) were administered to every patients.

Results: The mean age of the group with sarcopenia was statistically higher than the other two groups ($p < 0.001$). The weight, body mass index (BMI), waist circumference, upper mid-arm circumference, thigh and leg circumference of osteoarthritis (OA) patients with sarcopenia were statistically lower than those of non-sarcopenic and control group ($p < 0.01$ $p < 0.001$). Body composition parameters results showed that sarcopenic patients had statistically lower values as fat mass, lean body mass and Skeletal Muscle Index ($p < 0.001$, $p = 0.001$, $p < 0.001$, respectively) than those of non-sarcopenic and control group. It was determined that body composition values measured with DEXA, ultrasonographic measures,

isokinetic muscle strength assessment, hand grip strength and gait speed had predictive values for sarcopenia.

Abstract SAT0577 – Table 1. Baseline features of the patients of knee Osteoarthritis and healthy controls

	Group 1	Group 2	Group 3	p
Age	67.08±2.02 (64-69) ^{a,c}	60.31±4.71 (50-70)	59.76±5.16 (52-69)	<0.001
Body mass index	23.24±3.34 (18.4-29.3) ^{a,c}	32.82±5.44 (20.8-61.6)	29.22±3.20 (22.6-35.9)	<0.001
Mid-Upper Arm Circumference	22.17±4.00 (18-32) ^{a,c}	33.37±5.04 (21-57)	32.18±4.33 (26-43)	<0.001
Calf circumference	31.92±2.68 (25-35) ^{a,c}	40.52±6.30 (32-63)	40.85±6.46 (32-57)	<0.001
Gait speed	0.93±0.1 (0.82-1.12) ^{a,c}	0.61±0.18 (0.36-1.5)	0.6±0.14 (0.36-0.9)	<0.001
Hand grip strength (right)	13.58±2.94 (7-17) ^{a,c}	20.69±5.38 (8-38)	21.94±5.72 (12-38)	<0.001

mean±standard deviation

a A statistically significant difference was found between the post-hoc bilateral comparative "sarcopenic" group (p < 0.017)

b A statistically significant difference was found between the post-hoc bilateral comparative "non sarcopenic" group (p < 0.017)

c A statistically significant difference was found between the post-hoc bilateral comparative "healthy control" group (p < 0.017)

Conclusions: We found that patients with sarcopenic OA were older, weaker, less powerful, undernourished, and restricted in their level of physical activity in the study in which we identified sarcopenia as approximately 12% in patients with osteoarthritis. Among the methods of determining sarcopenia, ultrasound becomes prominent with its practical, cheap and easily accessible features. We think that our results will increase the awareness of the presence of sarcopenia in OA patients.

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SAT0578

PATELLAR TENDON ENTHESIS ABNORMALITIES AND THEIR ASSOCIATION WITH KNEE PAIN AND STRUCTURAL ABNORMALITIES IN OLDER ADULTS

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Background: The patellar tendon works together with the quadriceps tendon to enable knee flexion and straightening. Its attachment site (enthesis) is at risk of micro damage and degeneration. Recent studies suggest that enthesis abnormalities are associated with development of osteoarthritis.^{1, 2} However, no studies have assessed the presence of patellar enthesis abnormalities in older adults and its association with osteoarthritis outcomes.

Objectives: To describe the associations of patellar tendon enthesis (PTE) abnormalities visible on magnetic resonance (MR) images; and knee pain, physical function limitations, osteoarthritic structural abnormalities cross-sectionally and longitudinally over 10.7 years.

Methods: PTE abnormalities were defined as presence of abnormal bone signal and/or bone erosion. They were measured on T2-weighted fat suppressed fast spin echo MR images at baseline in 961 community-dwelling older adults and followed for 10.7 years. Knee pain and physical function limitation score were assessed using WOMAC. Bone marrow lesions (BMLs), cartilage volume and defects, tibial bone area, and infrapatellar fat pad (IPFP) area were assessed using validated methods. Associations were assessed using hurdle, log binomial, linear, and mixed models, after adjusting for confounders.

Results: 20% of participants had bone signal and/or erosion at PTE. Cross-sectionally, presence of PTE abnormalities were associated with greater intensity of pain while going up and down stairs ($\beta=0.22$ (95% CI; 0.03, 0.41)), greater risk of having a femoral BML (RR=1.46 (1.22, 1.90)), greater lateral tibial bone area ($\beta=25.95$ (1.00, 50.91)), smaller IPFP area ($\beta=-0.26$ (-0.46, -0.05)), and a worse tibial cartilage defects cross sectionally (RR=1.70 (1.16, 2.47), after adjustment of demographic and structural confounders. Longitudinally, PTE abnormalities at baseline predicted an increased risk of deleterious changes in tibial BML size (RR=1.52 (1.12, 2.05)) but not clinical symptoms, and other structural changes over 10.7 years.

Conclusions: Patellar tendon enthesis abnormalities are common in the elderly. The presence of cross-sectional but not longitudinal associations suggests they commonly co-exist with other knee structural abnormalities, but that they are not be a major player in symptom development or structural changes, excepting tibial BMLs.

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SAT0579

PRESENCE OF AUTOANTIBODIES IN EROSIIVE HAND OSTEOARTHRITIS AND ASSOCIATION WITH CLINICAL PRESENTATION

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Background: One of the most prevalent clinical phenotype of osteoarthritis (OA) is hand OA (HOA), which in some patients can evolve to erosive HOA. In erosive HOA central erosions and subchondral destruction are seen, and imaging studies have indicated that in erosive HOA hand joints display more inflammatory signs than in non-erosive HOA.

Autoantibodies directed against post-translationally modified proteins, such as citrullinated (ACPA) and carbamylated (anti-CarP antibodies) proteins, are a hallmark of rheumatoid arthritis (RA), and are associated with more severe joint damage and inflammation. Interestingly, these antibodies are present in a small subset of SLE patients as well, in which they associate with bone erosions. This suggests the possible involvement of autoantibodies in inflammation and joint damage in other conditions than RA. Therefore, we hypothesised that autoantibodies are present in HOA and associate with erosive disease.

Objectives: To investigate whether three RA-associated antibodies, Rheumatoid Factor (RF), ACPA and anti-CarP antibodies, are present in hand OA and associate with erosive OA.

Methods: Anti-CarP IgG, ACPA IgG and RF IgM were measured by ELISA in baseline sera of HOA patients from 3 cohorts: HOSTAS (n=510, mean age 61.0 years, 85.7% women, 27.2% EOA), ECHO (n=47, mean age 63.4 years, 89.4% women) and EHOA (n=23, mean age 57.1 years, 73.9% women), and in sera of healthy controls (HC; n=196, mean age 44.1 years, 51.0% women). The prevalence of autoantibodies was compared between HOA and HC and between erosive and non-erosive HOA. In HOSTAS, hand radiographs were scored (Kellgren-Lawrence, OARS osteophyte and joint space narrowing scores) and C-reactive protein (CRP) levels, representing inflammation, were assessed. Groups were compared using non-parametric tests.

Results: In both ECHO and EHOA cohorts, only one patient was positive for RF IgM and none were positive for ACPA IgG. In all three cohorts, a low prevalence of anti-CarP IgG was detected and this was not different between HOA patients and HC (6.6% vs 3.6%, p=0.12). Moreover, in HOSTAS, the prevalence of all tested autoantibodies was low and not significantly different from HC (anti-CarP 7.1% vs 3.6%, p=0.08; ACPA 0.8% vs 1.5%, p=0.37; RF 6.1% vs 4.1%, p=0.30). Likewise, no difference was found between erosive and non-erosive HOA (anti-CarP 7.2% vs 7.1%, p=0.94; ACPA 0.7% vs 0.8%, p=0.92; RF 4.3% vs 6.5%, p=0.36). Radiographic damage and CRP levels were similar in anti-CarP positive vs negative, and RF positive vs negative HOSTAS patients.