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Background: Patients with knee osteoarthritis (OA) who do not achieve adequate pain relief and functional improvement with a combination of non-pharmacologic and pharmacologic therapies are recommended an arthroplasty as an effective option to relieve severe pain and functional limitations. However, some patients are reluctant to undergo surgical interventions, and clinicians may choose to avoid or delay surgery due to safety risks and/or the financial cost. It is of interest to understand if the use and perception of surgery differs between countries, however, few published data exist.

Objectives: To demonstrate how surgery and the use of surgical procedures differs across Japan, United States of America (US) and 5 major European countries (EU5) and to evaluate patient perception towards surgery.

Methods: Data were drawn from the Adelphi OA Disease Specific Programme (2017-18), a point-in-time survey of primary care physicians (PCP), rheumatologists (rheums), orthopaedic surgeons (orthos) and their OA patients. Patients with physician-diagnosed knee OA were included and segmented into two categories: had previous surgery (PS) and never had surgery (NS). A Fisher's exact test was performed on the two groups. Physicians reported on patient demographics; whether patients had undergone surgery; type of surgery; success of surgery; how success was defined; and reasons for wanting to delay surgery. Patients reported their willingness to undergo surgery; reasons for not wanting surgery; how successful their surgery was; and how they defined this success.

Results: Physician/patient reported data were available for 302,230 (Japan), 527,283 (US) and 1487,726 (EU5) patients with diagnosed knee OA. Patients were categorised by their physicians as mild (40% Japan; 34% US; 24% EU5), moderate (49% Japan; 49% US; 56% EU5) or severe (9% Japan; 17% US; 19% EU5). Patients in Japan were more likely to be female (78% vs 54% US; 58% EU5), older (73 vs 65 US; 66 EU5) and have a lower BMI than patients in the US and EU5. Obesity and diabetes were much less prevalent among patients in Japan. One in ten patients in Japan had undergone a surgery (10%), far fewer than in the US (22%) or EU5 (17%). When surgery was performed, this was more likely to be a total joint replacement (TJR) in Japan, whereas in the EU and US, arthroscopic washout was more commonly performed.

For over half of Japanese patients (56%), successful surgery was more likely to be defined as having no more pain (vs. 35% US; 14% EU5). Improved mobility and a reduction in pain were also commonly reported reasons. Physicians (in each region) were more likely to suggest pain reduction, rather than no pain, and improved mobility as markers of success. Patients in Japan were much more likely to say they would not agree to surgery if recommended by their doctor, or were unsure (84% vs. 68% US; 62% EU5). The main reason for patient reluctance in Japan was fear of surgery, whereas in the US and EU5 the main reason given was that surgery was not needed. This finding was also evident among physicians in Japan, who frequently reported that patient reluctance was a key reason for delaying surgery. Physicians in Japan, do however, report that patient request was one of their main triggers for recommending surgery (45% vs 20% US; 16% EU5).

Conclusion: Although surgery can be an effective option for those with OA who have exhausted other treatment options, some patients are reluctant to undergo surgery out of fear, especially in Japan, possibly due to the higher patient age. Physicians aiming to delay surgery were driven by patient reluctance in Japan, whereas cost to patient was a bigger factor in the US and EU5. The higher level of TJR vs. other surgery options among patients in Japan may suggest physicians are looking for higher levels of efficacy.

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POS0129

ASSOCIATION BETWEEN OSTEOARTHRITIS-RELATED SERUM BIOCHEMICAL MARKERS OVER 11 YEARS AND KNEE MRI-BASED IMAGING BIOMARKERS IN MIDDLE-AGED ADULTS

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Background: Serum levels of osteoarthritis (OA)-related cartilage and joint-specific biochemical markers – cartilage oligomeric matrix protein (COMP), matrix metalloproteinase (MMP)-3, and hyaluronan (HA) – are shown to be associated with cartilage degradation, joint tissue degradation, and synovitis in patients with OA. Although these OA-related biochemical markers may initially precede the MRI biomarkers of joint structural changes, such changes detected in MRI can lead to biochemical marker changes later as the condition progresses. However, there is a lack of data on OA-related biochemical markers' association with MRI-based biomarkers in the middle-aged general population.

Objectives: We aimed to describe the associations between OA-related biochemical markers and MRI-based imaging biomarkers in middle-aged adults followed up over 10-13 years.

Methods: Blood samples were collected during the Childhood Determinants of Adult Health (CDAH)-1 study at baseline (year: 2004-06, age: 26–36 years) and 10-13 year follow-up (CDAH-3; year: 2014–2019, age: 36–49 years). Serum samples from baseline (n=156) and follow-up (n= 167) were analyzed for three OA-related biomarkers – namely COMP, MMP-3, and HA– using non isotopic ELISA assay methodology. Knee MRI scans were obtained during the CDAH-knee study (year: 2008-10, age: 30-40 years, n=313), and MRIs were assessed for cartilage volume, cartilage thickness, subchondral bone area, cartilage defects, and bone marrow lesions (BML). Univariable and multivariable (adjusted for age, sex, and body mass index (BMI)) linear regression and logistic regression were used to describe the association of biochemical marker at CDAH-1 and MRI-based imaging biomarkers at CDAH-knee, and Tobit regression was used to describe the association of MRI-based imaging biomarkers at CDAH-knee and biochemical markers at CDAH-3.

Results: In the multivariable model for the association of biochemical marker with MRI-based imaging biomarkers (assessed after 4 years), we found a significant negative association of COMP with medial femorotibial compartment cartilage thickness (-0.010 (-0.019, -0.000) p=0.045), and MMP-3 with patellar cartilage thickness (-9.075 (-16.344, -1.807) p=0.015) and total bone area (-0.047 (-0.086, -0.007) p=0.020). No significant association was observed between HA and MRI markers.

In the multivariable model for association of MRI-based imaging biomarkers with biochemical markers (assessed after 6-9 years), a significant negative association of total cartilage volume (-0.0005 (-0.0008, -0.0002) p=0.001) and total cartilage thickness (-0.628 (-1.143, -0.114) p=0.017) with MMP-3, and total bone area with COMP (0.270 (-0.474, -0.006) p=0.010) was observed. No significant association was observed between MRI-based imaging biomarkers and HA.

Conclusion: COMP and MMP-3 levels were negatively associated with knee cartilage thickness assessed 4-years later. Similarly, knee cartilage thickness and volume were negatively associated with COMP and MMP-3 levels assessed 6-9 years later in population-based middle-aged adults, indicating an interdependent negative association of OA-related biochemical markers and MRI-based imaging biomarkers. These results suggest that OA-related biochemical markers may predict future MRI-based imaging biomarkers in middle-aged adults and thus represent possible at-risk populations to target for structure modification interventions.

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POS0130

ASSOCIATION BETWEEN HYPERTENSION AND OSTEOARTHRITIS

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Background:

Objectives: To evaluate the relationship between arterial hypertension (AH) and the course of knee osteoarthritis (OA).