and without a history of depression, anxiety or insomnia ranged between 0 - 0.34 for WOMAC Pain and Physical Function and 0 - 0.19 for PGA-OA.

Conclusion: Patients with a history of depression, anxiety, or insomnia did not appear to experience dampened improvements in pain or function with tanezumab or NSAID, as compared to those without.

REFERENCES:

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POS1098 ASSOCIATION BETWEEN PAIN SEVERITY AND HEALTHCARE UTILIZATION IN AN OSTEARTHRITIS POPULATION: AN 18-YEAR RETROSPECTIVE COHORT STUDY

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Background: Osteoarthritis (OA) is a common disease that varies in severity among patients. A standardized definition to classify patients into different severity levels is lacking, however, due to the disease's complex pathogenesis and presentation. Prior studies have shown associations between pain severity and higher healthcare resource utilization (HRU) and costs. We investigated an association between pain severity and higher healthcare resource utilization by examining the use of specific OA-related treatments across pain intensity levels in a large, integrated health system's OA population over an 18-year period.

Objectives: Our aim was to compare use of medications and other treatments among OA patients experiencing mild, moderate, or severe pain.

Methods: This was a retrospective study of electronic health records from 2001 to 2018 at Geisinger, an integrated health system in Pennsylvania. Patients were included with a diagnosis code for OA (ICD-9: 715.; ICD-10 M15-19) on at least one visit during the same time period for an OA-specific episode (hip or knee diagnosis, arthroscopy or injection). We examined pain scores (0-10 scale, with 10 being worst pain) taken after the first OA diagnosis date and defined pain episodes as 0-0.19 for PGA-OA, 0.19-0.59 for WOMAC Pain and Physical Function and 0 - 0.19 for PGA-OA.

Results: We identified 290,897 patients with OA, representing 34% of the health system population and 58% women with female mean age of 49 years and mean BMI of 30.5kg/m2. A total of 801,144 pain episodes were defined, with 75% of patients having at least one pain score. The two most frequently occurring pain scores were 0 (17%) and 5 (13%), and pain episodes were classified as 43% mild, 32% moderate and 25% severe. Significantly higher percentages of patients used certain medication types (NSAIDs, injectable corticosteroids, non-tradamadol opioids) in both moderate and severe pain episodes as compared to mild episodes, but other medication types were less likely to be used as pain severity increased (acetaminophen, salicylates, homeopathic medications, other OTC medications). Knee or hip surgeries, imaging, and consults to OA-related specialists were all consistently significantly more likely to occur in patients during moderate or severe pain episodes versus mild episodes (relative risk ratios of 1.76, 1.25 and 1.36 for moderate vs mild and 2.00, 1.44 and 1.46 for severe vs mild, all p-values <0.05).

Conclusion: While pain is generally recognized to be a subjective measure that could be influenced by other unmeasured factors and can be conflated with treatment effectiveness, it is nevertheless the primary symptom of OA. It is important to understand the relationship between pain intensity and treatment utilization, and our results support an overall association between pain and utilization but provide new details on the extent to which it depends on specific utilization type.

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POS1099 ASSOCIATION BETWEEN ANTIBIOTIC USE AND KNEE PAIN AND FUNCTION IN OA: DATA FROM THE OSTEARTHRITIS INITIATIVE

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Background: Recently, gut dysbiosis has been linked with joint pain in osteoarthritis (OA) (1). Thus, it can be hypothesized that antibiotic use impacts symptoms of OA. To date, there have been no studies assessing association between the intake of antibiotics and clinical manifestations of knee OA.

Objectives: To evaluate association between the use of antibiotics and OA-related knee pain and function.

Methods: For the current study we used 4-year longitudinal data obtained from the Osteoarthritis Initiative (OAI) progression (n = 1390) and incidence (n = 3264) subcohorts, which are publically available at https://oai.nih.gov. The outcome variables studied were Western Ontario McMaster Osteoarthritis Index (WOMAC) pain and function subscales. To acquire information about the use of antibiotics, a medication inventory method was used. We excluded participants who used antibiotics at or 30 days prior to baseline (a "new-user" design). Antibiotic users were defined as those with at least one recorded use during first four years of the study. The participants were matched into antibiotic users/non-users pairs using genetic matching based on various demographic and clinical characteristics. The outcomes were assessed at baseline and annually until year 4. Generalized

estimating equations (GEE) were used to model the relationship between outcomes and antibiotic use by time interaction.

Results: A total of 515 new antibiotic users were matched with 515 non-users. After matching, all standardized differences of means were less than 0.05 indicating that covariates were well balanced between groups. No association between the use of antibiotic and changes in WOMAC pain and function scores was found (Table 1). No associations were also observed in multiple stratified analyses based on different duration of antibiotic use, particular classes of antibiotics, or different baseline WOMAC pain or disability levels.

Table 1. Longitudinal analysis (with treatment*t ime interaction) of WOMAC subcategories and antibiotics use

<table>
<thead>
<tr>
<th>β coefficient</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WOMAC Pain</td>
<td>-0.008</td>
<td>(-0.08 to 0.07)</td>
</tr>
<tr>
<td>WOMAC Function</td>
<td>-0.014</td>
<td>(-0.24 to 0.21)</td>
</tr>
</tbody>
</table>

Conclusion: These findings do not support the effects of antibiotics on knee OA pain or disability. More research is needed on the role of microbiota and its modulation in OA.

REFERENCES:

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Table 1.

KNEE JOINT DISTRACTION RESULTS IN MRI CARTILAGE THICKNESS INCREASE UP TO TEN YEARS AFTER TREATMENT

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Background: Knee joint distraction (KJD) is a joint-preserving treatment option for younger (age <65 years) knee osteoarthritis (OA) patients. It has shown clinical improvement for up to nine years after treatment. Radiographs and MRI scans have previously shown cartilage regeneration activity, especially in the first two years after treatment. However, MRIs have not been evaluated more than five years after this treatment.

Objectives: To evaluate MRI cartilage thickness up to ten years after KJD treatment.

Methods: Patients (n=20) with end-stage knee OA, indicated for KJD. 3T MRIs with 3D spoiled gradient recalled imaging sequence with fat suppression (SPGR-fs) were acquired before and one, two, five, seven and ten years after surgical treatment. Stradview v6.0 was used for semi-automatic cartilage segmentation; wxRegSurf v18 was used for surface registration. MATLAB R2020a and the SurfStatMATLAB package were used for data analysis and visualization. For changes over time, linear mixed models were used. Two separate linear regression models were used to test if changes in knee OA cartilage thickness was influenced by baseline Kellgren-Lawrence grade and sex on the changes over time. Statistical significance was calculated with statistical parameter mapping; p-value < 0.005 was considered statistically significant. Since KJD has previously shown significant results mostly in the patients’ most affected compartment (MAC), patients were separated in two groups based on whether their MAC was the medial or lateral compartment.

Results: The MAC was predominantly the medial side (median MAC n=18; lateral n=2). The 18 patients with a median MAC all had MRI scans at baseline, one and two years after treatment. After two years, some patients were lost to follow-up, decreasing availability at five (n=15), seven (n=11) and ten years (n=7). Figure 1 (top) shows the average cartilage thickness at the different time points for all median MAC patients together. One and two years after treatment the cartilage in the medial weight-bearing region was on average thicker than before treatment. While from five years after treatment the cartilage thickness gradually decreased, even at ten years the medial cartilage thickness seemed slightly higher than pre-treatment. Figure 1 (bottom) shows cartilage thickness changes compared to baseline for patients with a medial MAC. Patients with a lateral MAC showed a similar pattern, with the biggest changes showing on the lateral side. As indicated by the dark blue areas, the medial femoral cartilage thickness increase, which was up to 0.5 mm after one year and 0.6 mm after two years, was largely statistically significant at both these time points. While the medial tibia showed an increase of up to 0.5 mm at these time points as well, this was not statistically significant at two years. Surprisingly, long-term cartilage thickness changes showed the lateral (less affected) compartment were significantly thicker, up to 0.7 mm, compared to pre-treatment in both the femur and tibia compared to baseline. Kellgren-Lawrence grade and sex were shown to influence the changes, albeit not statistically significantly. Patients with a higher Kellgren-Lawrence grade and male sex showed a higher short-term (one and two year) but a lower long-term (seven and ten year) cartilage thickness increase.

Conclusion: KJD treatment results in significant short-term cartilage regeneration in the most affected compartment. While after two years this initial gain in cartilage thickness is gradually lost, likely as a result of natural progression, even ten years after treatment the cartilage is thicker than before treatment. In the less affected compartment, a delayed cartilage response seems to take place, with significantly increased cartilage thickness in these patients in the long term. In conclusion, long-term young OA patients indicated for TKA, KJD results in femoral and tibial cartilaginous tissue regeneration both short- and long-term and in both sides of the joint.

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Figure 1. Top: average cartilage thickness of all patients whose medial compartment was the most affected, at baseline (n=18) and one (n=18), two (n=18), five (n=18), seven (n=18) and ten (n=18) years after treatment with knee joint distraction. The color range is based on the minimum and maximum average values of the femur (0.78-5.52 mm) and tibia (0.48-3.95 mm) separately. Bottom: changes in cartilage thickness compared to baseline, for all patients whose medial compartment was most affected after one (n=18), two (n=18), five (n=18), seven (n=18) and ten (n=18) years after treatment with knee joint distraction. Statistically significant changes are indicated by the darker color. Other areas are shown in light blue, indicating no change or a decrease in cartilage thickness compared to baseline. All results are averaged on average right femur and tibial cartilaginous cartilage surfaces.

Table 1.

SUBCHONDRAL BONE NORMALIZATION AFTER KNEE JOINT DISTRACTION TREATMENT AS MEASURED WITH CT

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Background: In addition to cartilage degeneration, knee osteoarthritis (OA) causes bone changes, including cortical bone thickening, subchondral bone density decrease, and bone shape changes as a result of widening, flattening, and condyle osteophyte formation. Knee joint distraction (KJD) is a joint-preserving treatment for younger (<65 years) knee OA patients that has been shown to reverse OA cartilage degradation. On radiographs, KJD showed a decrease in subchondral bone density and an increase in osteophyte formation. However, these bone changes have never been evaluated with a 3D imaging technique.

Objectives: To evaluate cortical bone thickness, subchondral trabecular bone density and bone shape changes in OA patients before and one year after KJD treatment.

Methods: 19 KJD patients were included in an extended imaging protocol undergoing a CT scan before and one year after treatment. Stradview v6.0 was used for semi-automatic tibia and femur segmentation from axial thin-slice