

Conclusion: We assessed whether the association between BMI and OA was mediated by hypertension and atherosclerosis. Our results imply that either such mediation is absent or trivial, or that the atherosclerosis measures were too weak.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.3080

FRI0414 FACTORS ASSOCIATED WITH THE IMPACT OF GONARTHROSIS ON MUSLIM PRAYER

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Background: Gonarthrosis is a frequent and chronic pathology, which can cause painful functional impotence and limit the performance of activities of daily living [1].

Objectives: This study aimed to assess the patient's perception of the physical and psychological repercussions of his illness on the practice of prayer and to determine the factors associated with this repercussion.

Methods: It was a cross-sectional prospective study conducted in the rheumatology department in 56 patients with gonarthrosis who regularly practiced prayer before the onset of the disease. The socio-demographic data, the clinical characteristics of gonarthrosis were studied and a pre-established questionnaire was offered to patients to assess the physical and psychological impact of gonarthrosis on their prayer practice.

Results: Fifty-six patients were included, 83.3% of whom were female. The average age was 56.1 years [38-78 years]. The disease has progressed for an average of 6.14 years [1-13 years]. Gonarthrosis was bilateral in 80.4% of cases. The average body mass index (BMI) was 30.29 kg / m² ± 3.061 with extremes ranging from 24 to 36 kg / m². Quadriceps (Q) retraction was noted in 64.28% of cases. Gonarthrosis was classified as stages I, II and III according to the classification of Kellegren and Lawrence in 14.3%, 57.1% and 28.6% of patients respectively.

In 71.4% of cases (40 patients), the practice of prayer after the onset of gonarthrosis was considered more difficult with a degree of difficulty of 4.23/10 ± 2. Initial standing was considered possible by all patients. Inclination was possible in 89.2% of patients, whereas it was replaced by sitting on a chair by the rest. Prostration and final sitting station were considered impossible by 64.3% of patients and were therefore performed on chairs (36 patients). The limiting factor cited by patients was pain in 100% of cases. A psychological impact was reported in 53.6% of cases. It was explained by the feeling of guilt in 22 cases, the relatives' comments in 8 cases and the suffering related to disability in 7 cases.

Prayer position was associated with Q retraction ($p = 0.001$) and knee pain seniority (6.81 ± 3.608 vs 4.95 ± 3.017 , $p = 0.05$). The degree of difficulty was associated with the BMI ($p = 0.013$), knee pain seniority ($p < 0.001$) and Q retraction (5.74 ± 1.851 vs 3.46 ± 1.789 , $p < 0.001$).

Conclusion: Prayer is an activity that is part of the daily lives of many Muslim patients, its evaluation should be considered as one of the elements of the quality of life and functional impact of gonarthrosis.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.6100

FRI0415 BODY MASS INDEX AND STATIC FOOT DISORDERS IN GONARTHROSIC PATIENTS

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Background: Several studies have shown that there is a link between body mass index (BMI) and painful foot imputed to a biomechanical change in foot structure [1].

Objectives: Our objective was to study the association between BMI and static foot disorders in gonarthrosic subjects.

Methods: It was a prospective descriptive study conducted in the rheumatology department of the Mohamed Kassab Institute of Orthopedics with 60 patients with Gonarthrosis. The socio-demographic data of the patients were studied. BMI was calculated for all patients. Static foot disorders have been studied.

Results: Sixty patients were included, 83.3% of whom were female. The average age was 55.2 years [38-78 years]. The disease has been evolving for an average of 6 years [1-13 years]. The lesion was bilateral in 80% of cases, the average

body mass index was 30.4 kg / m² [24-36]. Knee arthritis was classified as stage I, II and III according to the Kellegren and Lawrence classification in 18.5%, 55.6% and 25.9% of patients respectively. The foot examination involved 108 gonarthrosic limbs. Examination of the integuments showed hyperkeratosis in 94.4% of the cases (79.6% calluses and 83.3% callosities). Forefoot deformities were Hallux valgus (HV) in 52.8% of cases and overlapping toes in 18.5% of cases. Pronation deformity using the Foot Posture Index (FPI) was found in 51.9% of cases. Abnormal lowering of navicular bone was noted in 51.9%. The podoscopic impression revealed flat feet in 73.2% of the cases.

A statistically significant association was found between BMI and the presence of calluses (31.21 ± 2.897 vs 26.83 ± 1.425 , $p < 0.001$), with HV (31.37 ± 3.086 vs 29.49 ± 2.969 , $p = 0.002$), at the overlap of the toes (33.2 ± 1.361 vs 29.86 ± 1.130 , $p < 0.001$), with the lowering of the navicular bone (31.17 ± 2.885 vs 29.68 ± 3.304 , $p = 0.015$), FPI ($p = 0.003$) and flat podoscopic impression ($p < 0.001$).

Conclusion: BMI is strongly associated with static feet disorders in gonarthrosic patients by aggravating the postural changes in the foot caused by knee osteoarthritis [2]. Obesity is associated mainly with the existence of flat feet, pronation of the foot, toes deformities and hyperkeratosis.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.6337

FRI0416 COMBINATION OF SERUM ADIPOKINES/RELATED INFLAMMATORY FACTORS AND RATIOS AS PREDICTORS OF INFRAPATELLAR FAT PAD VOLUME IN KNEE OSTEOARTHRITIS PATIENTS: USAGE OF A COMPREHENSIVE MACHINE LEARNING APPROACH

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Background: One of the hurdles in osteoarthritis (OA) drug discovery and the improvement of therapeutic approaches is the early identification of patients who will progress. It is therefore crucial to find efficient and reliable means of screening OA progressors. Although the main risk factors, age, gender and body mass index (BMI), are important, they alone are poor predictors. However, serum factors could be potential biomarkers for early prediction of knee OA progression.

Objectives: In a first step toward finding early reliable predictors of OA progressors, this study aimed to determine, in OA individuals, the optimum combination of serum levels of adipokines/related inflammatory factors, their ratios, and the three main OA risk factors for predicting knee OA infrapatellar fat pad (IPFP) volume, as this tissue has been associated with knee OA onset and progression.

Methods: Serum and magnetic resonance images (MRI) were from the Osteoarthritis Initiative at baseline. Variables (48) comprised the 3 main OA risk factors (age, gender, BMI), 6 adipokines, 3 inflammatory factors, and their 36 ratios. IPFP volume was assessed on MRI with a neural network methodology. The best variables and models were identified in Total cohort (n=678), High-BMI (n=341) and Low-BMI (n=337), using an artificial intelligence selection approach: the adaptive neuro-fuzzy inference system embedded with fuzzy c-means clustering (ANFIS-FCM). Performance was validated using uncertainty analyses and statistical indices. Reproducibility was done using 80 OA patients from a clinical trial (female, n=57; male, n=23).

Results: For the three groups, 8.44E+14 sub-variables were investigated and 48 models were selected. The best model for each group included five variables: the three risk factors and adipin/C-reactive protein combined for Total cohort, adipin/chemerin; High-BMI, chemerin/adiponectin high molecular weight; and Low-BMI, interleukin-8. Data also revealed that the main form of the ratio used for the model was justified, as the use of the inverse form slightly decreased the performance of the model in both training and testing stages. Further investigation indicated that gender improved (13-16%) the prediction results compared to the BMI-based models. For each gender, we then generated a pseudocode (an evolutionary computation equation) with the 5 variables for predicting IPFP volume. Reproducibility experiments were excellent (correlation coefficient: female 0.83, male 0.95).

Conclusion: This study demonstrates, for the first time, that the combination of the serum levels of adipokines/inflammatory factors and the three main risk factors of OA could predict IPFP volume with high reproducibility, and superior performance with gender separation. By using the models for each gender and the pseudocodes for OA patients provided in this study, the next step will be to develop a predictive model for OA progressors.

Acknowledgments: This work was funded by the Chair in Osteoarthritis of the University of Montreal, the Osteoarthritis Research Unit of the University of Montreal Hospital Research Centre, the Groupe de recherches des maladies rhumatismales du Québec and by ArthroLab Inc., all from Montreal, Quebec, Canada.

Disclosure of Interests: Hossein Bonakdari: None declared, Ginette Tardif: None declared, François Abram Employee of: ArthroLab Inc., Jean-Pierre Pelletier Shareholder of: ArthroLab Inc., Grant/research support from: TRB Chemedica, Speakers bureau: TRB Chemedica and Mylan, Johanne Martel-Pelletier Shareholder of: ArthroLab Inc., Grant/research support from: TRB Chemedica
DOI: 10.1136/annrheumdis-2020-eular.1447

FRI0417 **IDENTIFICATION OF THE MOST IMPORTANT FEATURES OF KNEE OSTEOARTHRITIS PROGRESSORS USING MACHINE LEARNING METHODS**

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Background: Knee osteoarthritis (OA), a leading cause of disability worldwide, can be difficult to define as its development is often insidious and involves different subgroups. We still lack robust prediction models that are able to guide clinical decisions and stratify OA patients according to risk of disease progression.

Objectives: This study aimed at identifying the most important features of knee OA progressors. To this end, we used machine learning (ML) algorithms on a large set of subjects and features to develop advanced prediction models that provide high classification and prediction performance.

Methods: Participants, features and outcomes were from the Osteoarthritis Initiative. Features were from baseline (1107), including articular knee tissues (135) assessed by quantitative MRI. OA progressors were ascertained by four outcomes: cartilage volume loss in medial plateau at 48 and 96 months (Prop_CV_48M, 96M); Kellgren-Lawrence (KL) grade ≥ 2 ; and medial joint space narrowing (JSN) ≥ 1 at 48 months. Subjects' numbers were as follows: 1598 for the outcome Prop_CV_96M, 1044 for the Prop_CV_48M, and 1468 for each KL grade ≥ 2 at 48 months and JSN ≥ 1 at 48 months. Six feature selection models were used to identify the common features in each outcome. Six classification methods were applied to measure the accuracy of the selected features in classifying the subjects into progressors and non-progressors. Classification of the best features was done using auto-ML interface and the area under the curve (AUC). To prioritize the top features, Sparse Partial Least Square (sPLS) method was used.

Results: For the classification of the best common features in each outcome, Multi-Layer Perceptron (MLP) achieved the highest AUC in Prop_CV_96M, KL, and JSN (0.80, 0.88, 0.95), and Gradient Boosting Machine (GBM) for Prop_CV_48M (0.70). sPLS revealed that the baseline top five features to predict knee OA progressors are the joint space width (JSW), mean cartilage thickness of peripheral, medial, and central tibial plateau, and JSN.

Conclusion: This is the first time that such a comprehensive study was performed for identifying the best features and classification methods for knee OA progressors. Data revealed that early prediction of knee OA progression can be done with high accuracy and based on only a few features. This study identifies the baseline X-ray and MRI-based features as the most important for predicting knee OA progressors. These results could be used for the development of a tool enabling prediction of knee OA progressors.

Acknowledgments: This work was supported in part by the Osteoarthritis Research Unit of the University of Montreal Hospital Research Centre; the Chair in Osteoarthritis, University of Montreal, (both from Montreal, Quebec, Canada); and the Computational Biology Laboratory, Laval University Hospital Research Center, (Québec, Quebec, Canada). A Jamshidi received a bursary from the Canada First Research Excellence Fund through TransMedTech Institute, (Montreal, Quebec, Canada).

Disclosure of Interests: Afshin Jamshidi: None declared, Mickaël Leclercq: None declared, Aurélie Labbe: None declared, Jean-Pierre Pelletier Shareholder of: ArthroLab Inc., Grant/research support from: TRB Chemedica, Speakers bureau: TRB Chemedica and Mylan, François Abram Employee of: ArthroLab Inc., Arnaud Droit: None declared, Johanne Martel-Pelletier Shareholder of: ArthroLab Inc., Grant/research support from: TRB Chemedica
DOI: 10.1136/annrheumdis-2020-eular.1033

FRI0418 **SELECTIVE PATELLAR RESURFACING IN TOTAL KNEE ARTHROPLASTY FOR THE OSTEOARTHRITIC KNEE: A PROSPECTIVE STUDY**

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Background: No widely accepted view or criteria currently exist concerning whether or not patellar replacement (resurfacing) should accompany total knee arthroplasty for osteoarthritis of the knee.1)2)3)

Objectives: We recently devised our own criteria for application of patellar replacement and performed selective patellar replacement in accordance with this set of criteria. The clinical outcome was analyzed.

Methods: The study involved 1150 knees on which total knee arthroplasty was performed between 2005 and 2019 because of osteoarthritis of the knee. The mean age at operation was 73, and the mean postoperative follow-up period was 91 months. Our criteria for application of patellar replacement are given below. Criterion A pertains to evaluation of preoperative clinical symptoms related to the patellofemoral joint: (a) interview regarding presence/absence of pain around the patella, (b) cracking or pain heard or felt when standing up from a low chair, (c) pain when going upstairs/downstairs. Because it is difficult for individual patients to identify the origin of pain (patellofemoral joint or femorotibial joint), the examiner advised each patient about the location of the patellofemoral joint when checking for these symptoms. Criterion B pertains to intense narrowing or disappearance of the patellofemoral joint space on preoperative X-ray of the knee. Criterion C pertains to the intraoperatively assessed extent of patellar cartilage degeneration corresponding to class 4 of the Outerbridge classification. Patellar replacement was applied to cases satisfying at least one of these sets of criteria (A-a, b, c, B and C). Postoperatively, pain of the patellofemoral joint was evaluated again at the time of the last observation, using Criterion A-a, b, c.

Results: Patellar replacement was applied to 110 knees in accordance with the criteria mentioned above. There were 82 knees satisfying at least one of the Criterion sets A-a, b, c, 39 knees satisfying Criterion B and 70 knees satisfying Criterion C. (Some knees satisfied 2 or 3 of Criteria A, B and C). When the pain originating from patellofemoral joint (Criterion A) was clinically assessed at the time of last observation, pain was not seen in any knee of the replacement group and the non-replacement group.

Conclusion: Whether or not patellar replacement is needed should be determined on the basis of the symptoms or findings related to the patellofemoral joint, and we see no necessity of patellar replacement in cases free of such symptoms/findings. When surgery was performed in accordance with the criteria on patellar replacement as devised by us, the clinical outcome of the operated patellofemoral joint was favorable, although the follow-up period was not long. Although further follow-up is needed, the results obtained indicate that selective patellar replacement yields favorable outcome if applied to cases judged indicated with appropriate criteria.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.4074

FRI0419 **LOW DOSE OF GLUCOCORTICOIDS FOR PAIN CONTROL IN THE ESTROGEN-DEPENDENT PRIMARY POLYARTICULAR OSTEOARTHRITIS**

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Background: Low doses of glucocorticoids (GCs) can be useful in the management of osteoarthritis when it is related to hypoestrogenic states (estrogen-dependent primary polyarticular osteoarthritis [EDPOA]), that usually can appear after the menopause. Deflazacort is a GC that has similar anti-inflammatory effects than other steroids, but with fewer side effects.

Objectives: To describe the average dose of GCs that best controlled articular pain, based on tender joint count in patients with EDPOA.

Methods: The diagnosis of EDPOA was made in postmenopausal patients with polyarticular compromised (six or more joints affected), morning stiffness less