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.

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FRI0417 IDENTIFICATION OF THE MOST IMPORTANT FEATURES OF KNEE OSTEOARTHRITIS PROGRESSORS USING MACHINE LEARNING METHODS
A. Jamshidi1,2, M. Leclercq2, A. Labbe3, J. P. Pelletier1, F. Abram4, A. Droit2, J. Martel-Pelletier1. 1University of Montreal Hospital Research Centre (CRCHUM), Osteoarthritis Research Unit, Montreal, Canada; 2Laval University Hospital Research Centre, Quebec, Canada; 3HEC Montreal, Department of Decision Sciences, Montreal, Canada; 4Ar throLab Inc., Medical Imaging Research and Development, Montreal, Canada

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 derived 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_48M, 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_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_48M, 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.

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 as the most important predicting knee OA progressors. These results could be used for the development of a tool enabling prediction of knee OA progressors.

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FRI0418 SELECTIVE PATELLAR RESURFACING IN TOTAL KNEE ARTHROPLASTY FOR THE OSTEOARTHRITIC KNEE: A PROSPECTIVE STUDY
I. Moriyama1. 1Ogikubo Hospital, Tokyo, Japan

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(23)

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 intrapatiently 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), and 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 the last observation, pain was not seen in any 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 particular 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.

References:
[1] The Effect of Surgeon Preference for Selective Patellar Resurfacing on Revisi

FRI0419 LOW DOSE OF GLUCOCORTICOIDS FOR PAIN CONTROL IN THE OSTEOARTHRITIC PRIMARILY POLYARTICULAR OSTEOARTHRITIS
G. Puerta1, M. Bautista1, M. Urbano1, F. Bonilla1, C. Cañas1. 1Valle del Lili Foundation, Reumatology, Cali, Colombia

Background: Low doses of glucocorticoids (GCs) can be useful in the management of osteoarthritis when it is related to hypoestrogenic states (estrogen-de

References:
[1] The Effect of Surgeon Preference for Selective Patellar Resurfacing on Revisi

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