the imaging gold standard to assess intestinal disease activity and to detect complications in patients with IBD. Only few studies have been conducted on adult patients with IBD in order to define the role of this technique in assessing sacroiliitis, while no data are available on pediatric patients.

Objectives: To study the prevalence of inflammatory sacroiliitis on MRI performed for intestinal investigation in an IBD pediatric population.

Methods: This is a retrospective study conducted on patients suffering from IBD followed in our gastroenterology department between 2010 and 2018 whose entero-RM (1.5 or 3 Tesla, Philips depending from year of scanning) were blindly and independently scored by two readers experienced in pediatric musculoskeletal imaging. Each sacroiliac joint was divided into 4 quadrants. Signs of sacroiliitis were identified according to the ASAS criteria, with a particular attention to the presence of bone marrow edema (using T2 weighted sequences with fat suppression), diffusion restriction in DWI sequences (Diffusion Weighted Imaging) or DWBS (Diffusion Weighted Imaging with Background Suppression) and post-contrast-tographic uptake in dynamic acquisitions. Demographics, IBD characteristics, clinical, radiological, and laboratory data were recorded and a dedicated Excel database was constructed. Results were elaborated using descriptive statistics.

Results: 34 patients (10 F, 24 M, age at scanning range 5-20 yrs, median 15) were included in the study, for a total of 59 entero-MRI evaluated (some patients were subjected to more than one scan). Two out of 34 patients were affected by Ulcerative Colitis, 32 by Crohn disease. Joint examination resulted negative in all patients, and none complained of articular symptoms including back pain.

In 5 IBD patients (4 CD, 1 UC) a monolateral slight degree of sacroiliitis (grade 1) was radiologically identified. They were all males, without clinical-laboratory-radiologic inflammatory signs of intestinal activity, with the exception of a patient who presented signs of intestinal and sacroiliac inflammation at his first entero-MRI, while 18 months later, at his MRI control under pharmacological treatment, signs of sacroiliitis were still present in the absence of intestinal signs of inflammation.

Conclusion: Asymptomatic sacroiliitis was observed in about 15% of our IBD patients. Sacroiliac involvement therefore can be underdiagnosed in these patients. Entero-MRI with specific sequences could be a good tool to detect early signs of sacroiliac inflammation.

REFERENCES:

- [1] S.Leclerc-Jacob, G.Lux, A.C.Rat, V.Laurent, A.Blum, I. Chary-Valckenaere, L.Peyrin-Biroulet & D. Loeuille. The prevalence of inflammatory sacroiliitis assessed on magnetic resonance imaging of inflammatory bowel disease: a retrospective study performed on 186 patients. *Aliment Pharmacol Ther* 2014; 39: 957-962.
- [2] Timothy J.P. Bray, Nicola Ambrose, David Atkinson, Debajit Sen, Yiannis Ioannou and Margaret A. Hall-Craggs Diffusion-weighted imaging is a sensitive biomarker of response to biologic therapy in enthesitis-related arthritis. *Rheumatology* 2017; 56: 399-407.

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VALIDATION OF NORDIC JUVENILE IDIOPATHIC ARTHRITIS CLINICAL PREDICTION MODELS IN A CANADIAN COHORT

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Background: Validation of clinical prediction tools for juvenile idiopathic arthritis (JIA) in populations different than those in which they were first developed is essential to understand their applicability across healthcare settings.

Objectives: To determine if clinical prediction tools to predict 1) non-achievement of remission off medication and 2) functional disability, developed in the Nordic cohort¹ can be directly applied to JIA patients in the Canadian Research in Arthritis in Canadian Children emphasizing Outcomes (ReACCh-Out) cohort; and to assess performance of the prediction tools if model parameters are fine-tuned to the Canadian cohort.

Methods: Since the Nordic models were developed to predict outcomes 8 years after disease onset but the follow-up of the ReACCh-Out cohort was shorter, we chose to cross-validate the tools in a subpopulation of 513 subjects at the 3 years follow-up (3.75 years after onset). Attainment of remission off medications was determined by a panel of 3 pediatric rheumatologists as previously described² and functional disability was defined as a Childhood Health Assessment Questionnaire Disability Index (CHAQ)>0. Missing data was handled with multiple imputation by chained equations and prediction ability was assessed with c-index and Receiver Operator Characteristic (ROC) curves. The Nordic models were first evaluated exactly as published on the entire Canadian cohort. Then we fine-tuned the model coefficients using repeated runs of cross-validation in the Canadian cohort. This way, fine-tuned models were tested in patients not included in the fine-tuning process while also minimizing the standard error of prediction.

Results: In total, 408 of 506 evaluable patients (81%) were not on remission and 137 of 361 evaluable patients (38%) had functional disability at the 3-year visit. The Nordic model for predicting non-achievement of remission had a c-index of 0.68 (95%CI 0.62-0.74) when directly applied, and a c-index of 0.74 (0.70-0.78) when it was fine-tuned for the Canadian population. The latter values are comparable to those reported in the Nordic cohort (median AUC 0.78, IQR 0.72-0.82). Table 1 shows fine-tuned coefficient values along-side the original values. The Nordic model for predicting functional disability had a c-index of 0.57 (0.50-0.63) when directly applied, and fine-tuning failed to improve its performance, a c-index of 0.53 (0.43-0.63). Figure 1 shows ROC curves for fine-tuned models in the multiple splits.

Conclusion: After fine-tuning of coefficients, the Nordic model for prediction of non-achievement of remission had similar prediction ability in Canadian patients with JIA. We could not confirm the validity of the Nordic model for prediction of functional disability in Canadian patients.

REFERENCES:

- [1] Rypdal V, Arnstad ED, Aalto K, et al. Predicting unfavorable long-term outcome in juvenile idiopathic arthritis: results from the Nordic cohort study. *Arthritis Research & Therapy* 2018;20:91
- [2] Guzman J, Oen K, Tucker LB, et al. The outcomes of juvenile idiopathic arthritis in children managed with contemporary treatments: results from the ReACCh-Out cohort. *Ann Rheum Dis*.2015;74:1854-60

Table 1. Prediction models for non-remission off medications 3.75 years after JIA onset

Variable	Original Nordic	Fine-tuned Canada
Constant	1.58 (SE 0.44)	0.26
Cumulative active joint count	0.04 (SE 0.05)	0.13
ESR in mm/h	0.03 (SE 0.02)	-0.01
CRP> 10 mg/L	-0.07 (SE 0.69)	0.12
Morning stiffness > 15 min	1.16 (SE 0.45)	0.36
Physician global assessment	0.16 (SE 0.46)	0.15
ANA positive	1.25 (SE 0.50)	-0.02
HLA-B27 positive	1.37 (SE 0.54)	0.84
Ankle joint arthritis	1.10 (SE 0.49)	0.67

SE= Standard Error

Figure 1. ROC curves for the multiple fine-tuning splits

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