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OP0161 PREDICTIVE VALUE OF MUSCULOSKELETAL ULTRASOUND IN PATIENTS WITH JUVENILE IDIOPATHIC ARTHRITIS IN CLINICAL REMISSION

M. Mazzoni¹, S. Merlo^{1,2}, C. Morreale^{1,2}, A. Pistorio³, S. Viola², S. Ancona^{1,2}, F. Magnaguagno⁴, A. Consolaro^{1,2}, A. Ravelli^{1,2}, C. Malattia^{1,2}, ¹Università degli Studi di Genova, Dipartimento di Neuroscienze, Riabilitazione, Oftalmologia, Genetica e Scienze Materno-Infantili, Genoa, Italy; ²IRCCS Istituto Giannina Gaslini, Clinica Pediatrica e Reumatologia, Genoa, Italy; ³IRCCS Istituto Giannina Gaslini, Epidemiologia e Biostatistica, Genoa, Italy; ⁴IRCCS Istituto Giannina Gaslini, UOC Radiologia, Genoa, Italy

Background: The accurate assessment of remission status in JIA patients is of utmost relevance to taper medications and prevent side effects from their long-term administration. In RA patients in clinical remission (CR), musculoskeletal ultrasound (MSUS) allows to detect persistent joint inflammation (subclinical synovitis), which predicts disease flare and structural damage progression. Although subclinical synovitis has been reported in a substantial proportion of JIA patients with inactive disease, its prognostic value is still being defined.

Objectives: 1) to investigate the prevalence of MSUS-detected subclinical synovitis in JIA patients in CR; 2) to establish which and how many joints should be scanned to reliably assess remission; 3) to evaluate the persistence of subclinical synovitis over the time; 4) to investigate whether subclinical synovitis entails a risk of disease flare and whether it should affect the therapeutic strategy.

Methods: 135 consecutive JIA patients who met the Wallace criteria for CR were included in this 3-years prospective study. All patients underwent MSUS assessment of 56 joints at study entry and at 6 months follow-up visit. Joints were scanned for synovial hyperplasia, joint effusion and Power Doppler (PD) signal by two independent ultrasonographers. Patients were followed clinically for 3 years. A flare of synovitis was defined as a recurrence of clinically active arthritis. The association between clinical and MSUS variables with flare, was evaluated by adjusted logistic regression models.

Results: 135 patients (78.5% F; median age 11.3 y; median disease duration 5.7 y; median CR duration 1.4 y) were included. Fifty-seven/135 (42.2%) patients had persistent oligoarthritis; 41/135 (30.4%) extended oligoarthritis; 32/135 (23.7%) polyarthritis; 5/135 (3.7%) systemic arthritis. Seventy-eight/135 (57.7%) patients were in CR on medication. Subclinical synovitis was detected in 32/135 (23.7%) patients and in 53/7560 (0.7%) joints. Subclinical tenosynovitis was present in 20/135 (14.8%) patients. Subclinical synovitis was found more frequently in the ankle and wrist joints. 58.6% of patients showed persistent subclinical synovitis at 6 month follow up MSUS examination. During the 3-year follow up 45/135 (33.3%) patients experienced a disease flare (median survival time 2.2 y). PD positivity in tendons was the stronger independent risk factor of flare on multivariable regression analysis (HR: 4.8; P=0.04). Other predictors of flare were the JIA subtype (oligo-extended form: HR: 2.3; P=0.031) and the status of CR on medication (HR: 3.7; P=0.002).

Conclusion: our results confirm that MSUS is more sensitive than clinical evaluation in the assessment of persistent synovial inflammation in JIA patients. Subclinical tenosynovitis was the best predictor of disease flare. To date, the role of tenosynovitis in the diagnosis and prognosis of JIA has been poorly investigated. Our results further support the role of MSUS, especially of the wrist and the ankle, in monitoring JIA patients in clinical remission and to predict disease flare.

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OP0162 ETANERCEPT RESPONSE CLUSTERS IN JUVENILE IDIOPATHIC ARTHRITIS

S. Shoop-Worrall^{1,2}, K. Hyrich^{1,3}, L. Wedderburn^{4,5,6}, W. Thomson^{3,7}, N. Geifman² on behalf of BSPAR-ETN Study, BCRD Study, CAPS, CHARMS, CLUSTER. ¹The University of Manchester, Centre for Epidemiology Versus Arthritis, Manchester, United Kingdom; ²The University of Manchester, Centre for Health Informatics, Manchester, United Kingdom; ³Manchester University NHS FT, Manchester Academic Health Science Centre, NIHR Manchester BRC, Manchester, United Kingdom; ⁴UCL Great Ormond Street Institute of Child Health, Centre for Adolescent Rheumatology Versus Arthritis, London, United Kingdom; ⁵Great Ormond Street Hospital NHS Foundation Trust, Paediatric Rheumatology, London, United Kingdom; ⁶Great Ormond Street Biomedical Research Centre, NIHR, London, United Kingdom; ⁷The University of Manchester, Centre for Genetics and Genomics Versus Arthritis, Manchester, United Kingdom

Background: In children and young people (CYP) with JIA, we have previously identified clusters with different patterns of disease impact following methotrexate (MTX) initiation. It is unclear whether clusters of treatment response following etanercept (ETN) therapy exist and whether, in a group of CYP who have responded inadequately to or had adverse events on methotrexate, similar treatment response patterns exist. Novel response patterns would aid stratified treatment approaches through better understanding and potential forecasting of more specific response patterns across multiple domains of disease.

Objectives: To identify and characterise trajectories of juvenile arthritis disease activity score (JADAS) components following ETN initiation for JIA.

Methods: ETN-naïve CYP with non-systemic JIA were selected if enrolled prior to January 2019 in at least one of four CLUSTER consortium studies: BSPAR-ETN, BCRD, CAPS and CHARMS, at point of starting ETN as their first biological therapy. JADAS components (active joint count, physician's global assessment (0-10cm), parental global evaluation (0-10cm) and standardised ESR (0-10) were collected at ETN initiation and during the following year.

Multivariate group-based trajectory models, that identify clusters of CYP with similar patterns of change over time, were used to explore ETN response clusters across the different JADAS components. Censored-normal (global scores, ESR) and zero-inflated Poisson (active joint count) models were used, adjusting for year of ETN initiation. Optimal models were selected based on a combination of model fit (BIC), parsimony, and clinical plausibility.

Results: Of the 1003 CYP included, the majority were female (70%) and of white ethnicity (90%), with rheumatoid factor-negative JIA the most common disease category (39%).

The optimal model identified five trajectory clusters of disease activity following initiation of ETN (Figure 1). Clusters following ETN were similar and covered similar proportions of CYP to those previously identified following MTX: Fast (Group 1: 13%) and Slow (Group 2: 10%) response, active joint count improves but either physician (Group 3: 6%) or parent global scores (Group 4: 34%) remain persistently raised and a group with persistent raised scores across all JADAS components (Group 5: 36%). Compared to the persistent disease cluster, those with greater improvement had lower age and higher functional ability at ETN initiation and those with persistent raised parent global scores had lower ESR levels and were less likely to be RF-positive at ETN initiation.

Figure 1. Clusters identified following ETN initiation in children and young people recruited to the UK BSPAR-ETN, BCRD, CAPS and CHARMS studies.