Methods: 94 patients diagnosed with JIA (mean age 8.78±5.21), 95 children with articular syndrome (mean age 7.90±4.81) and 164 hospital controls without any signs of autoimmune or inflammatory diseases (mean age 13.99±2.68) were included in the study. The JIA patients were divided into subgroups according to IAR classification criteria; among them 63 patients were diagnosed with oligoarthritis and 16 with RF- polyarthritis. Genomic DNA was extracted from blood samples by means of phenol-chloroform method. SNPs were genotyped using PCR-RFLP or fragmental analysis.

Results: The allele frequencies for all SNPs in the hospital control group were similar to those characteristic of other Europeans. No differences were found between the frequencies of the TNF α risk alleles across all three groups. Hence, both SNPs in the TNF α locus were not associated with JIA and other articular pathologies in our study. The same is true for -318C>T *CTLA4* polymorphism. Unlike these genes, *PTPN22* C1858T polymorphism influenced developing arthritis in children since heterozygous CT genotype was associated with articular pathology (rather than JIA) in the total group (OR=1.87, 95% CI [1.06–3.30], p=0.04), especially in males (OR=3.50, 95% CI [1.61–7.63], p=0.0016). In the latter case, it was effective even being combined with any genotypes in the -308G>A TNF α locus (OR=2.73, 95% CI [1.19–6.24], p=0.018). When analyzing *MIF* polymorphisms (rs755622 and rs5844572), the evident trend to increased carrying genotypes containing the risk allele *MIF*-173C was observed in females with JIA as compared to controls and significantly elevated frequency of this risk allele in females with RF- polyarthritis as compared to males (p=0.037). In females with JIA, increased frequency of heterozygous *MIF*-794 CATT_{7,8} genotype as compared to the controls (OR =7.78, 95% CI [0.95 – 63.8], p=0.056) was also revealed. *STAT4* polymorphism (rs7574865) demonstrated subtype-related association with JIA due to increased frequency of the minor allele in patients with polyarthritic form of JIA as compared to both hospital controls (p=0.01; OR =2.45; 95% CI [1.19–5.04]) and other articular pathology (p=0.001; OR =3.37; 95% CI [1.56–7.28]). The same SNP was also associated with developing arthritis in females. As to role of DNA repair genes, carriers of *XPD* heterozygous Asp/Asn genotype had an enhanced risk of JIA in females (OR=2.14; 95% CI [1.05–4.35]; p=0.05).

Conclusions: Thus, the gender- and subtype-specific associations of some SNPs studied with developing joint pathologies including JIA are found in the Belarusian child population.

Disclosure of Interest: None declared

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Paediatric rheumatology

THU0486 ANGIOPOETIN-2 AS A NEW VALUABLE MARKER OF DISEASE ACTIVITY IN CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS

J. Świdrowska-Jaros, E. Smolewska. Department of Pediatric Rheumatology, Medical University of Lodz, Lodz, Poland

Background: Angiopoietin-2 (ANG-2) is one of the main angiogenesis modulators. As synovial angiogenesis is considered to be an important early step in the course and pathogenesis of juvenile idiopathic arthritis (JIA), it may be a valuable marker of activity of the disease.

Objectives: To evaluate ANG-2 serum and synovial fluid levels in JIA patients and its possible correlation with disease activity and the degree of ultrasound-detected synovial angiogenesis.

Methods: Serum levels of vascular markers were measured in 63 patients with JIA (aged 1,5–17) and 31 age-matched healthy controls. Synovial fluid was collected from 17 JIA patients. Disease activity (low, medium and high) was assessed by JADAS-27 scale. Ultrasound examination of inflamed joints was performed in each JIA patient and synovial angiogenesis was evaluated by means of Power Doppler ultrasonography (PDUS) and the 4th grade vascularity scale (0–3).

Results: ANG-2 serum levels were higher in children with JIA comparing to the healthy controls (5,5±1,2 ng/ml vs. 1,9±1,4 ng/ml). Serum concentration of ANG-2 in JIA children increased with disease activity (1,4±0,9 ng/ml vs. 1,4±1,0 ng/ml vs. 1,8±2,2 ng/ml), whereas Ang-2 levels in the synovial fluid were the highest in the high disease activity (3,4±2,5 ng vs. 12,5±9,5 ng/ml vs. 26,4±9,0 ng/ml, p<0,05). Concentration of ANG-2 in serum correlate with the synovial vascularization obtained by PDUS (0–3, accordingly 1,5±0,8 ng/ml vs. 1,3±0,9 ng/ml vs. 1,5±1,0 ng/ml vs. 13,2±8,7 ng/ml, p<0,01). The same pattern was observed for ANG-2 levels in synovial fluid and PDUS grade (0–3, accordingly 3,8±1,0 ng/ml vs. 5,1±4,1 ng/ml vs. 13,5±2,0 ng/ml, p<0,01).

Conclusions: ANG-2 might be a valuable marker in JIA children with high disease activity. Together with ultrasound examination, it may add more information about disease severity, what may be helpful in introducing the correct therapy.

Disclosure of Interest: None declared

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THU0487 REAL-LIFE TREATMENT WITH CANAKINUMAB IN SYSTEMIC JUVENILE IDIOPATHIC ARTHRITIS – FIRST EXPERIENCE FROM THE BIKER REGISTRY

G. Horneff¹, F. Dressler², A. Thon³, K. Minden⁴ on behalf of BIKER collaborative group. ¹Paediatrics, Asklepios, Sankt Augustin; ²MMH Hannover, Hannover; ³Paediatrics, MMH Hannover; ⁴Charité, Berlin, Germany

Background: Canakinumab (CAN) had demonstrated its efficacy and safety in SJIA pts (1).

Objectives: To report on the experience with CAN treatment in SJIA in the clinical practice in Germany.

Methods: Data on patients' and disease characteristics, disease activity and safety reports from the German BIKER registry were analysed.

Results: Until Dec. 2016, 37 pts exposed to CAN were identified. In 12 pts used CAN as first biologic, 25 pts were pretreated: Tocilizumab 15, Anakinra 11, Etanercept 9, Adalimumab 9. 3 patients in the pre-exposed cohort had experienced a macrophage activation syndrome. Pts' and disease characteristics are outlined in table 1. Pts pretreated were older, had a longer disease duration and more comorbidities than naïve patients. The proportion of pts with active arthritis, active systemic features and both were comparable. Disease activity at baseline was higher in the naïve cohort suggesting some clinical benefit from pretreatment. Dosing of CAN was comparable (3.9±0.4 vs. 3.5±0.7mg/kg) as well as the median treatment duration (0.8vs.1year). Treatment efficacy at last follow up was better in the naïve cohort with more pts reaching a PedACR 30/50/70/90 response while JADAS- or ACR-remission rates were comparable. Treatment was discontinued by 42% in the naïve and 48% in the exposed cohort. Reasons were inefficacy (n=7;19%), intolerance (n=2;5%) and remission (n=7;19%) of the disease and other (n=2;5%).

Table 1. Baseline characteristics

	Biologics naïve	Biologics pre-exposed
N (female gender)	12 (17%)	25 (52%)
Age at JIA onset (years); mean ± SD; Median (IQR)	4.4±4.0; 3.0 (2.0–4.9)	6.0±4.8; 3.7 (2.6–7.1)
Age start of Canakinumab (years); mean ± SD; Median (IQR)	7.1±4.9; 5.6 (3.1–10.2)	9.8±4.8; 10.6 (5.5–14)
Disease duration (years); mean ± SD; Median (IQR)	2.8±4.1; 0.7 (0.3–3.9)	3.8 ± 4.2; 1.9 (0.6–8.7)
Concomitant treatment at baseline: NSAIDs/Steroids/MTX	6 (50%)/6 (50%)/3 (25%)	10 (40%)/11 (44%)/4 (16%)
Patients with active joints	7 (58.3%)	10 (47.6%)
Patients with active systemic features	7 (58.3%)	10 (47.6%)
Patients with active arthritis and systemic features	4 (36.4%)	4 (19.1%)
Active joint count	1.8±1.7; 2.5 (0–3)	2.1±3.3; 0 (0–3)
Physician global VAS (0–10)	5.2±2.8; 6.2 (3.2–7.2)	3.8±3.4; 3.7 (0.7–6.3)
Patient Global VAS (0–10)	4.8±2.9; 4.6 (2.7–7)	3.3±2.9; 2.6 (0.6–5.1)
CHAQ-DI (0–3)	0.71±0.65	0.65±0.84
ESR (mm/h)	28.2±22.8	15.4±20.1
CRP (mg/l)	70.5±58	12±23
JADAS10	15.7±8.3	10.5±7.9

Conclusions: First experience with CAN for treatment of sJIA in clinical practice is presented. A high proportion of pts gained significant improvement. JADAS remission was reached by about 50% and ACR remission by 25–57% in both biologics pre-exposed and naïve pts while few pts discontinued treatment in remission so far. Intolerance was rare. The further long term surveillance of sJIA pts exposed CAN is intended by the registry.

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THU0488 THE IMPACT OF OLIGOARTICULAR AND POLYARTICULAR JUVENILE IDIOPATHIC ARTHRITIS OVER THE FIRST FIVE YEARS FOLLOWING DIAGNOSIS

S.J.W. Shoop-Worrall^{1,2}, S.M. Verstappen¹, J.E. McDonagh^{2,3,4}, W. Thomson^{2,5}, K.L. Hyrich^{1,2} on behalf of CAPS. ¹Arthritis Research UK Centre for Epidemiology, the University of Manchester; ²NIHR Manchester Musculoskeletal BRU, Central Manchester University Hospitals NHS Foundation Trust and University of Manchester Partnership; ³Centre for MSK Research, the University of Manchester; ⁴Manchester Academic Health Science Centre; ⁵Arthritis Research UK Centre for Genetics and Genomics, the University of Manchester, Manchester, United Kingdom

Background: Information regarding longer-term outcomes in JIA largely pre-date the introduction of biologic therapies and have been cross-sectional.

Objectives: The aim of this study was to assess outcomes over the first 5 years of disease in children diagnosed with oligoarticular and polyarticular JIA since 2001.

Methods: Children with oligoarthritis, rheumatoid-factor (RF) negative or positive polyarthritis were selected if recruited to the Childhood Arthritis Prospective Study (CAPS), a UK multicentre inception cohort, between October 2001 and January 2011. The following outcomes were assessed annually to five years and included in this analysis: functional ability (Childhood Health Assessment Questionnaire (CHAQ)), the absence of limited joints, overall psychosocial health (psychosocial scale on the Child Health Questionnaire (CHQ)) and the proportion of children with CHQ psychosocial scores two standard deviations below the population mean (CHQ psychosocial <30).

Outcomes were assessed descriptively over time and differences between subtypes were assessed by applying multilevel (patient-level) zero-inflated negative binomial (CHAQ), logistic (absence of limited joints, percent CHQ psychosocial <30) and linear (CHQ psychosocial) regression analyses, adjusting for gender, age at presentation and hospital.

Results: Of 832 children, 70% were female, 68% had oligoarticular, 28% RF-negative and 5% RF-positive polyarticular JIA. Eighty four percent had ever been treated with NSAIDs, 74% corticosteroids, 55% with DMARDs and 21% with biologics within follow-up.

Baseline CHAQ was good to moderate (median 0.8, IQR 0.1 to 1.4) and only 21% of children had no limited joints reported at this time. CHQ psychosocial scores (median 50, IQR 39 to 55) were moderate, with 11% children scoring at least two standard deviations under the population mean. Overall improvements were evident in all outcomes over the first year then remained stable with no further improvements at the cohort level evident to five years.

Patients with RF-negative polyarthritis experienced significantly poorer outcomes across all variables than those with oligoarthritis. Those with RF-positive polyarthritis recorded similar CHAQ scores to patients with RF-negative polyarthritis but had the lowest odds of no limited joints (OR: 0.4, 95% CI 0.3 to 0.7) and the poorest CHQ psychosocial scores (4.8 points worse and 4.7 times the odds of scores <2 standard deviations of population mean), compared with those with oligoarthritis.

Conclusions: On average, the largest improvement in functional ability, limited joints and psychosocial health occur in the first year following diagnosis, perhaps confirming the importance of early treat-to-target strategies. Patients with polyarticular JIA subtype have poorer parent and physician-reported outcomes than those with oligoarthritis.

Disclosure of Interest: None declared

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THU0489 ADIPOSITY AND INFLAMMATORY ACTIVITY IN JUVENILE IDIOPATHIC ARTHRITIS COULD THEY BE RELATED?

G. Diaz-Cordoves Rego¹, R. Galindo-Zavala², E. Nuñez-Cuadros², S. Manrique-Ariza¹, N. Mena Vazquez¹, C. Domic-Bueno¹, M. Rojas-Gimenez¹, C. Fuego-Varela¹, R. Caparros-Ruiz¹, L. Cano-Garcia¹, A. Fernandez-Nebró¹. ¹Rheumatology, University Regional Hospital of Malaga (HRUM). Institute Biomedical Research In Malaga (IBIMA). Malaga University. Málaga, Spain; ²Paediatric Department, University Children Hospital of Malaga, Málaga, Spain

Background: Adults with rheumatoid arthritis have been shown to have a reduction in lean mass and increased adiposity, despite presenting normal Body Mass Index (BMI). Several studies have shown increased adiposity induces a proinflammatory state which lead to a worse response to treatment. There are few publications about this subject in juvenile idiopathic arthritis (JIA)

Objectives: Describing body composition and anthropometric parameters in JIA patients, and evaluating relationship between adiposity and inflammatory in these children.

Methods: Observational cross-sectional study, in JIA patients from 4 to 15 years, monitored by a Pediatric Rheumatology Unit. Monoarticular forms were excluded. Anthropometric, clinical and treatment data were recorded. DXA (measuring bone and fat mass) were obtained. Fat Mass Index (FMI) was defined as fat mass (kg)/height (m²) and fat-free mass index (FFMI) as lean mass (kg)/height (m²). JADAS27 index was used to evaluate inflammatory activity.

Results: We analyzed 80 patients, whose characteristics are shown in table 1. The most frequent JIA subtype was oligoarticular (16.3% extended, 47.5% persistent) followed by polyarticular (25.1%). Twenty five percent of patients had uveitis. Fifty percent them had inactive disease with treatment, 26% had activity and 23% were inactive without treatment. Regarding the treatment, 52.5% were on methotrexate and 30% on a biological drug (22.5% antiTNF α , 5% antiIL-1, 2.5% antiIL-6). Disease duration average was 6.6 years ($\pm$ 3.7SD). JADAS27 index mean score was 2 ($\pm$ 4SD), CRP 4.7mg/l ($\pm$ 9.5SD), ESR 8.7mm ($\pm$ 7.2SD) and CHAQ 0.17 ($\pm$ 0.38SD). Anthropometric parameters are shown in table 1. Mean JADAS27 index score in patients with normal BMI was lower (1.7 $\pm$ 3.6 SD) than mean JADAS27 index score in overweight and obese patients (3.3 $\pm$ 6.0SD), although this difference was not significantly (p=0.255). In multiple linear regression, an increase of 0.3 JADAS27 was observed for each unit of FMI increase (p=0.03). This relationship was maintained in the multivariate analysis (B0.015; p0.01) independently of JIA subtype and received treatment.

Variable	n=80
Age in years, median ($\pm$ SD)	10,7 (3,3)
Sex, female; n (%)	56 (70)
Race caucasian, n (%)	76 (95)
BMI Median kg/m ² ($\pm$ SD)	18,2 (4,2)
BMI Percentile, median ($\pm$ SD)	42,0 (29,9)
Waist perimeter, median, cm ($\pm$ SD)	64,8 (11,3)
Hip perimeter cm ($\pm$ SD)	77 (13,6)
Index waist/hip ($\pm$ SD)	0,84 (0,06)
Obesity*, n (%)	6 (7,5)
Overweight*, n (%)	12 (15)
Abdominal obesity, n (%)	12 (15)
Total fat (kg), median ($\pm$ SE)	11,36 (8,9)
Total Lean (kg), median ($\pm$ SD)	26,1 (8,9)
Total mass (kg), median ($\pm$ SD)	38,8 (16,7)
Trunk fat/total fat, median ($\pm$ SD)	0,42 (0,5)
Legs fat/ total fat, median ($\pm$ SD)	0,42 (0,44)
FMI (%) median ($\pm$ SD)	7,5 (5,3)
FFMI (%) median ($\pm$ SD)	17,8 (3,8)

Conclusions: In JIA patients, there is a linear relationship between FMI and disease activity measured by JADAS27, but most patients had a normal BMI. The establishment of this relationship (fat-inflammatory activity) would be transcendental due to the need to optimize the recommendations in the JIA approach.

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THU0490 MULTICENTRE STUDY OF LUPUS NEPHRITIS URINARY BIOMARKERS IN ADULT AND PAEDIATRIC PATIENTS

P. Costa Reis^{1,2}, K. Maurer², L. Schanberg³, J.M. Burnham², E. von Scheven⁴, K. O'Neil⁵, M. Klein Gitelman⁶, M. Petri⁷, K.E. Sullivan². ¹Hospital de Santa Maria, Lisbon, Portugal; ²The Children's Hospital of Philadelphia, Philadelphia; ³Duke University, Durham; ⁴University of California San Francisco, San Francisco; ⁵Indiana University, Indianapolis; ⁶Children's Hospital of Chicago, Chicago; ⁷Johns Hopkins University, Baltimore, United States

Background: Glomerulonephritis is an important cause of morbidity and mortality in patients with systemic lupus erythematosus, particularly in children. Presently, renal histology is used for the diagnosis of lupus nephritis (LN), but it only offers a description of a confined area of the kidney and is seldom repeated for monitoring due to its invasiveness. Urinary biomarkers that reflect LN activity and have prognostic value are much needed to guide the judicious use of immunosuppressive drugs in these patients.

We focused on three potential LN biomarkers: HER2, TWEAK and VCAM1.

HER2 (Human Epidermal Growth Factor Receptor 2) controls cell proliferation by regulating the intracellular levels of miR-26a and miR-30b, which inhibit the expression of cell-cycle related genes. HER2 was recently shown to be dramatically overexpressed in the kidneys of LN patients and in NZM2410 mice. TWEAK (TNF-related weak inducer of apoptosis) is involved in pro-inflammatory responses, angiogenesis and fibrosis. TWEAK is increased in the kidneys of LN patients.

VCAM1 (vascular cell adhesion molecule 1) participates in the acute phase of inflammation, controlling leukocyte infiltration. Urinary VCAM1 has emerged as a reliable indicator of the LN activity index.

Objectives: To determine the clinical value of urinary HER2, TWEAK and VCAM1 as biomarkers of LN activity.

Methods: A multicentre study is being performed in an adult and paediatric cohort. All patients have biopsy-proven LN. Clinical data and urine samples are being collected in each visit. Controls are age and sex matched individuals without renal disease. Flares are identified with the SELENA-SLEDAI flare index. Urine supernatants are analysed by commercial enzyme-immunoassays for HER2, TWEAK and VCAM1.

Results: Currently, we have studied 83 LN paediatric patients and 38 controls.