Table 1 Summary of the main clinical and genetic features of the 8 Chinese adult patients

with TRAPS								
Patient	1	2	3	4	5	6	7	8
Sexuality	M	F	M	F	M	M	M	M
Nationality	Han	Han	Han	Han	Han	Han	Manchu	Han
Age at onset (years)	0.5	17	5	5	2.5	2	38.5	3
Age at diagnosis (years)	17	24	24	25	16	52	40	27
Diagnosis delay (years)	16.5	7	19	20	13.5	50	1.5	24
Family History	-	-	-	+	-	-	-	-
TNFRSF1A	m.1735A	G65	S29	C58	F89L	V202	c.769-23[IVS8]T>C	C99
Variant	>G	E	OI	R	-	G	-	G
Variant in other genes	-	-	-	-	R202Q in MEFV	-	D424E in MEFV, G39V in NLRP12	-
Fever	+	+	+	+	+	+	+	+
Duration	>3w	1w	2-3 d	1-2 w	1-2w	2-3d	2-3w	1w
Interval	<1w	3m	1-2 m	≥1 m	≥1m	<1m	>1w	1m
Rash	+	-	-	+	+	+	+	+
Periorbital edema	-	-	-	-	-	-	-	+
Conjunctivitis	-	-	+	-	-	+	+	-
Arthralgia/Arthritis	+	-	+	-	-	+	-	+
Myalgia	+	-	-	+	+	+	+	-
Abdominal pain	-	+	-	+	-	+	-	+
Angina	-	+	-	+	-	+	+	+
Headache	+	-	-	-	-	+	+	+

Table 2 Comparison of phenotypic and genotypic features among reported cohorts

Cohorts	PUMCH (n=8)	Japan (n=51)	Europe (n=158)
M : F	6:2	22:29	78:80
Young onset (<18 years old, %)	87.5	68.1*	78
Age at onset (years)	4 (0.5-38.5)	ND*	4.3 (0 - 63)
Age at diagnosis (years)	24.5 (14 - 52)	ND	25.9 (0-77)
Diagnosis delay (years)	17.8 (1.5 - 50.5)	ND	10.3 (0-77)
Family history (%)	12.5	45.1	ND
Fever (>38°C, %)	100	100	84
Rash (%)	75	55	63
Periorbital edema (%)	12.5	9.1	20
Conjunctivitis (%)	37.5	18.2	22
Arthralgia/Arthritis (%)	50	59	64
Myalgia (%)	54	43	70
Abdominal Pain (%)	50	36	70
Pharyngitis (%)	62.5	ND	21
Headache (%)	50	23	23
Diarrhea (%)	12.5	ND	18
Chest pain (%)	0	13.6	25
Amyloidosis (%)	0	0	10

*Age onset < 20 years old; *ND: No Data

REFERENCES:

- [1] Lachmann HJ, et al. The phenotype of TNF receptor-associated autoinflammatory syndrome (TRAPS) at presentation: a series of 158 cases from the Eurofever/EUROTRAPS international registry. *Ann Rheum Dis* 2014, 73: 2160-2167.
- [2] Ueda N, et al. Clinical and Genetic Features of Patients With TNFRSF1A Variants in Japan: Findings of a Nationwide Survey. *Arthritis Rheumatol* 2016, 68: 2760-2771.

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Diagnostics and imaging procedures

THU0594

CLINICAL VERSUS IMAGING REMISSION IN JUVENILE IDIOPATHIC ARTHRITIS (JIA): PRELIMINARY RESULTS OF THE REMECO STUDY

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Background: remission is becoming a realistic target in JIA, but clinical remission (CR) may not accurately reflect real absence of synovitis. It would be desirable to have instruments to predict the risk of relapse in patients in CR in order to establish the most appropriate therapeutic strategy. Despite in RA the role of imaging to predict disease flare is established, this field has remained almost unexplored in JIA.

Objectives: 1) to investigate the prevalence of musculoskeletal ultrasound (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; 5) MSUS data will be integrated with serum levels of inflammatory biomarkers to develop a multidimensional measure of remission.

Methods: it is a longitudinal prospective 4 years study started on November 2017. So far we have enrolled 99 consecutive JIA patients who met the Wallace criteria for CR. For each patient 46 joints were scanned for synovial hyperplasia/joint effusion and PD signal, all graded semiquantitatively on a 0-3 scale independently by 2 expert ultrasonographers. Subclinical synovitis was defined when total synovitis score for each joint was ≥2. MSUS was performed at baseline and at 6 month follow up visit. At inclusion serum assays have been stored to determine levels of inflammatory biomarkers (S100A8/9-A12, bFGF, IL-6, IL-10, CXCL9-10, VEGF, YKL40). A flare of synovitis was defined as a recurrence of clinically active arthritis.

Results: 99 patients (79.8% F; median age 11.3 y; median disease duration 5.3 y; median CR duration 1.6 y) were included. Thirty-eight/99 (38.4%) patients had persistent oligoarthritis; 34/99 (34.3%) extended oligoarthritis; 22/99 (22.2%) polyarthritis; 5/99 (5.1%) systemic arthritis. Fifty-nine/99 (59.6%) patients were in CR on medication. Subclinical synovitis was detected in 54/99 (54.5%; 95% CI: 45.2 - 65.5%) patients, PD in 18/99 (18.2%; 95% CI: 11.1 - 27.2%) patients; subclinical tenosynovitis in 7/99 (7.1%; 95% CI: 2.9 - 14%) patients. Subclinical synovitis was found more frequently in the ankle [31/54 (57.4%) patients] and wrist joints [17/54 (31.5%) patients]. No patients had subclinical synovitis in the hip. A 14-joint reduced count including bilateral knee, ankle (tibiotalar, subtalar and talonavicular joints), wrist (radiocarpal and intercarpal joints) and elbow joints, detected 92.6% of children with subclinical synovitis. Twenty-five/99 (25.2%) patients in persistent CR were reassessed with MSUS at a follow up visit (median follow up duration 7 months): 82.3% of patients showed persistent subclinical synovitis. Sixty-four/99 (64.6%) patients had a clinically follow up of at least 6 months and 9/64 (14%) patients experienced a disease flare (median time to flare 6.6 months). Six/9 (66.7%) patients who experienced a relapse had subclinical synovitis at baseline.

Conclusion: our preliminary results confirm the discrepancy between clinical and imaging remission and that clinical evaluation may not sensitive to detect an inflammation-free state. Bilateral US assessment of the elbow, wrist, knee and ankle joints is reliable to detect subclinical synovitis. So far, patients who have relapsed are a small percentage, but to extend follow up is crucial to test predictive value of MSUS. Imaging findings will be combined with serum biomarkers leading to the construction of a predictive model.

REFERENCES:

- [1] De Lucia O, et al. Baseline ultrasound examination as possible predictor of relapse in patients affected by juvenile idiopathic arthritis (JIA). *Ann Rheum Dis*. 2018 Oct;77(10):1426-1431.

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THU0595 DEVELOPMENT OF AN AUTOMATED SEGMENTATION ALGORITHM TO IDENTIFY BONES OF THE HAND

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Background: The evaluation of structural damage with plain radiography is important to clinicians and patients. Standard scoring methods include the Sharp-van der Heijde (SVdH) and Raitingen methods [1] however these systems are time-consuming. Therefore, it is difficult to perform large cohort studies. We set out to develop an automated algorithm to identify bones on plain radiographs as a step towards developing automated quantification of structural damage for use on large datasets.

Objectives: To develop a novel algorithm to segment outlines of finger bones in hand radiographs.

Methods: 101 hand radiographs were gathered from the Bath longitudinal cohort (UK). All patients fulfilled the CASPAR criteria for Psoriatic Arthritis (PSA). None of the patients had damage on SVdH and Raitingen scoring (blinded). The metacarpal (MC), proximal phalanx (PP), middle phalanx (MP), and distal phalanx (DP) in the right index finger were delineated by a rheumatologist. These outlines were used to build a statistical model of the shape using a Gaussian Process Latent Variable Model (GPLVM) [2]. Bones are segmented by matching the shape on a radiograph to the statistical model.

Results: The performance of the matching algorithm was compared with a traditional algorithm (snakes) using the Adjusted Rand Score (ARND). The ARND score measures the similarity of the segmentation with the ground truth. A perfect segmentation has a score close to 1. We tested the algorithm on 9 PP, 9 MP and 8 DP and 6 MC bones in the right index finger. The results are reported in table 1. We report a mean improvement in ARAND of 0.19, 0.87, 0.43 and 0.30 for the PP, MP, DP and MC respectively.

Conclusion: We report a reliable algorithm for the identification of metacarpal, proximal, middle and distal phalanx bones of the hand. Future work will focus on using the output of the segmentation algorithm to track damage progression over time.

REFERENCES:

[1] Van der Heijde, D., PAULUS, H., and SHEKELLE, P. (2000). How to read radiographs according to the Sharp/vander Heijde method. Discussion: Heterogeneity in rheumatoid arthritis radiographic trials. Issues to consider in a metaanalysis. *Journal of rheumatology*, 27(1):261–263.

[2] Titsias, M. K. and Lawrence, N. D. (2010). Bayesian Gaussian process latent variable model. In *International Conference on Artificial Intelligence and Statistics*, pages 844–851.

Table 1. Adjusted RAND scores for comparing our algorithm to a traditional one (snakes)

	Bone	Snakes ARAND	Shape matching ARAND
Case 1	PP	0.70	0.95
Case 2	PP	0.89	0.96
Case 3	PP	0.82	0.96
Case 4	PP	0.72	0.94
Case 5	PP	0.53	0.96
Case 6	PP	0.87	0.97
Case 7	PP	0.79	0.96
Case 8	PP	0.74	0.96
Case 9	PP	0.88	0.97
Case 1	MP	0.79	0.95
Case 2	MP	0.75	0.95
Case 3	MP	0.75	0.94

Case 4	MP	0.72	0.95
Case 5	MP	0.77	0.96
Case 6	MP	0.51	0.96
Case 7	MP	0.76	0.96
Case 8	MP	0.77	0.96
Case 9	MP	0.83	0.97
Case 10	MP	0.77	0.93

Key: Adjusted Rand Score (ARND) score measures the similarity of the segmentation with the ground truth. A perfect segmentation has a score close to 1. Metacarpal (MC), proximal phalanx (PP), middle phalanx (MP), and distal phalanx (DP)

Figure 1. Shape matching algorithm output demonstrating segmented outlines of the DP, MP, PP and MC in red, green, orange, and blue respectively.

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THU0596 DIAGNOSTIC VALUE OF ULTRASOUND AND DUAL ENERGY COMPUTED TOMOGRAPHY TO ACHIEVE ACR-EULAR GOUT CLASSIFICATION CRITERIA IN REAL LIFE CLINICAL PRACTICE

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Background: 2015 ACR/EULAR gout classification criteria (1) include ultrasound with double contour (DC) sign as key ultrasound features and dual energy computed tomography (DECT) with evidence of urate deposition. The positivity of either DECT or ultrasound allows 4 points in addition to others clinical and biological criteria to classify as gout is $\geq 8/23$. However, in routine care, the imaging modality that should be promoted remains unclear between ultrasound or DECT.

Objectives: To validate a possible diagnostic algorithm for the clinical use of DECT and ultrasound in suspected gouty arthritis.

Methods: We conducted a single-center prospective study in the Rheumatology Department of Dijon University Hospital from July 2016 to December 2018, including all patients hospitalized for suspected gouty arthritis. Each patient received joint aspiration if possible, an ultrasound assessment (DC sign and/or tophus) and DECT scanning of symptomatic joints. All these examinations were performed blind of the clinical data and results of joint aspiration. The gold standard used for this study was the 2015 ACR/EULAR gout classification criteria. We have established two