had to be supplemented by the individual patient reported treatment goals.

REFERENCES

- [1] Smolen JS, Landewe R, Bijlsma J, et al. EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs: 2016 update. *Ann Rheum Dis* 2017; 76(6): 960-977.
- [2] Ferreira RJO, Ndosi M, de Wit M, et al. Dual target strategy: a proposal to mitigate the risk of overtreatment and enhance patient satisfaction in rheumatoid arthritis. *Ann Rheum Dis* 2018; [Epub ahead of print 22 Aug 2018].

Table 1. Comparison of achieved T2T and individual patient goals

		T2T achieved, n (%)		
		Yes	No	Overall
Patient goal(s) achieved, n (%)	Yes	44 (43.6)	22 (21.8)	66 (65.3)
	No	18 (17.8)	17 (16.8)	35 (34.7)
Overall		62 (61.4)	39 (38.6)	101 (100.0)

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SAT0105 HAND DISABILITY IN RHEUMATOID ARTHRITIS: AN ENGINEERED GLOVE FOR THE COMPUTERISED QUANTIFICATION OF THE DAMAGE

Massimo Patané¹, Luca Carmisciano², Emanuele Gotelli¹, Veronica Tomatis¹, Federica Goegan¹, Elisa Alessandri¹, Massimo Ghio¹, Alessio Signori², Maurizio Cutolo¹. ¹Research Laboratory and Academic Division of Clinical Rheumatology, Department of Internal Medicine, IRCCS Polyclinic Hospital San Martino, University of Genoa, Genoa, Italy; ²Biostatistics Unit, Department of Health Sciences, University of Genoa, Genoa, Italy

Background: Tenderness, swelling and loss of motility of the joints are the main determinants of the disability function (DF) of Rheumatoid Arthritis (RA) patients (RApts)¹. The evaluation of DF is performed by Patient Reported Outcomes (PROs), like Health Assessment Questionnaire (HAQ)². The lack of objective evaluation of DF is one of the most important "unmet needs" in RA. The Hand Test System (HTS, ETT) is an engineered glove, nowadays applied for neuroscience studies to evaluate hands motility with interesting perspectives of use in other clinical research fields³⁻⁴.

Objectives: To quantify the DF of RApts by the analysis of speed and right execution of fingers opposition movement in both hands, evaluated by HTS. To verify the correspondence with the HAQ.

Methods: In this pilot study 14 consecutive RApts (3 males, 11 females, age 61 ± 11.5 years, mean duration of disease 11.21 ± 5.07 years), classified according to 2010 ACR/EULAR criteria⁵, and 13 healthy controls (HC – 7 males, 6 females, age 50 ± 15 years) were enrolled from the RA clinic. After consent, all participants undergone HTS test that recognizes the touches between the finger tips during the opposition movements of the hands in standard sequences of movements, after dressed the glove. A multiple finger evaluation (MFE) and a single finger evaluation (SFE) were performed using a dedicated software that provided the physician the following quantitative parameters: Touch Duration (TD), Inter Tapping Interval (ITI) and Movement Rate (MR). Average time for hand 2 minutes. RApts compiled the HAQ and a tender and swollen joint count of the hands was performed. Continue variables were summarized as mean and standard deviation (SD) or median and interquartile range

(IQR), discrete variables were summarized with count and percentage. Variables with skewed distribution was converted to natural logarithm. T-test was used to compare log glove parameters between groups. Pearson's r and p value were used to report the correlation between log-converted glove parameters and HAQ score.

Results: In MFE, glove parameters TD and ITI were significantly higher in RApts (TD 257.34 ± 123.93 ms, ITI 377.8 ± 211.35 ms) than HC (TD 172.25 ± 59.36 ms, ITI 177.98 ± 78.53 ms) (p = 0.004 and p < 0.001) and MR was significantly lower in RApts (1.51 ± 0.47 Hz) compared to HC (2.87 ± 0.9 Hz) (p < 0.001). TD of RApts had a significant correlation with the total score of the HAQ (Pearson r = 0.79, p = 0.001). In SFE non-active fingers (NAF, not swollen and not tender) of RApts seemed to perform slightly better than a clinically active finger (AF) but significantly worse than average HC finger (ANOVA, p < 0.001). **Conclusion:** HTS is a new easy and totally safe tool that seems to quantify in an objective manner the hand DF in RApts. The significant correlation found with HAQ underlines the value and veracity of self-assessment tools in clinical practice. Further studies are ongoing with larger number of RApts to validate its application to monitor the improvement or the worsening of RA in order to optimize pharmacological treatments. The study is now extended in other Rheumatic and Musculoskeletal Diseases.

REFERENCE

- [1] Hakkinen A, et al. *Ann Rheum Dis*. 2005; 64:59–63. 2 Fries J, et al. *Arthritis Rheum*. 1980; 23:137–45. 3 Bonzano L, et al. *Eur J Neurol*. 2019;26 (1):162-167. 4 Signori A, et al. *PLoS One*. 2017 Oct 18;12(10): e0186524. 5 Aletaha D, et al. *Ann Rheum Dis*. 2010;69(9):1580-8.

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SAT0106 NOVEL SUBCLASS OF INTRAVASCULAR NON-CLASSICAL SYNOVIAL MONOCYTES ARE CRITICAL FOR RHEUMATOID ARTHRITIS

Anna Montgomery, Deborah Winter, Harris Perlman. Northwestern University, Medicine/Rheumatology, Chicago, United States of America

Background: There are at least three populations of circulating monocytes; classical, intermediate and non-classical. We demonstrated that circulating non-classical monocytes are required for the effector phase of arthritis and spontaneous models of arthritis in mice. While the vast majority of studies on monocytes have focused those in circulation, very little is known about the monocytes in the synovium.

Objectives: The aim of this study was to examine the heterogeneity of tissue monocytes with those circulation and determine their involvement in inflammation.

Methods: Female 8-10-week-old NR4A1^{-/-}, CX3CR1^{EGFP}, and C57BL/6 mice were used in all studies. CX3CR1^{EGFP} were utilized for cell tracking studies and joint shielded bone marrow chimeras via administration of tamoxifen (tam). Intravascular monocytes were identified using fluorescent anti CD45 antibody before perfusion. STIA was induced via I.V. KBxN sera. Monocyte populations were quantified by flow cytometry and FACS sorted for RNA-sequencing (RNA seq). Nonclassical tissue monocytes were identified CD45⁺CD11b⁺Ly6G⁺TIM4⁺CD64⁺Ly6c^{lo} and subdivided into intravascular (CD45-labeled, CD43⁺), trans-vascular (CD45-labeled CD43⁻) and extravascular (no CD45-label). Human synovium was obtained from ultrasound guided synovial biopsies and CD45⁺ cells were FAC-Sorted for single cell RNA seq.

Results: NR4A1^{-/-} mice exhibit a 95% reduction in circulating Ly6c^{lo} monocytes but retain Ly6c^{lo} cells in the joint and develop STIA. The transcriptional profiling of bulk populations of Ly6c^{lo} cells in the synovium are distinct from those circulating in the blood. We then identified three populations of Ly6c^{lo} monocytes in the joint; extra-vascular, trans-vascular cells, and intra-vascular cells using 18 color flow cytometry. Lineage tracing studies reveal that the origin of extra-vascular and trans-vascular synovial monocytes are from the embryo while the intravascular monocytes are derived post-natally. The intravascular monocytes are depleted with clodronate loaded liposomes while the extravascular and trans-vascular remain unaffected. Moreover, the intravascular monocytes rapidly expand during the first 1 hour of STIA, increasing by 30x in population size. RA patients also display similar populations of non-classical monocytes using single cell RNA seq

Conclusion: We have identified and described three previously uncharacterized populations of non-classical monocytes cells in the joint, an intra-vascular adherent, a trans-vascular population and an extra-vascular