FRI0660 **USEFULNESS OF MICHIGAN HAND OUTCOMES QUESTIONNAIRE (MHQ) IN HAND OSTEOARTHRITIS**

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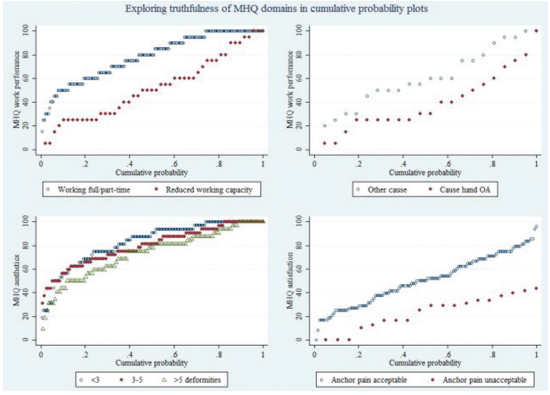
Background: Several tools are available to measure hand pain and function in hand osteoarthritis (OA), though all have their disadvantages, e.g. being not freely available (Australian/Canadian Hand OA Index, AUSCAN), outdated (Functional assessment In Hand OA, FIHOA) or a single-item tool (Visual Analogue Scale, VAS). The MHQ is free to use, validated in other diseases, and has 6 scales assessing pain, function (overall function and activities of daily living [ADL]), and 3 unique domains: work performance, aesthetics, satisfaction (all range 0–100, and higher is better except for pain).
Objectives: To investigate truth and discrimination of MHQ in hand OA.
Methods: At baseline (n=383) and two-year follow-up (n=293) symptomatic hand OA patients from the Hand OSTeoArthritis in Secondary care (HOSTAS) cohort completed questionnaires (MHQ, AUSCAN, FIHOA, VAS pain). Work status was categorized into (fulltime/part-time) employed, reduced working capacity (sick leave or partial/complete disability to work), or not in the workforce (unemployed or retired). Reduced working capacity could be due to hand OA or other causes. Anchor questions assessed whether level of pain/function was acceptable or unacceptable, and different (worse, unchanged or improved) compared to baseline. Number of joints with deformities was assessed, and split into tertiles (<3, 3–5, >5). To appraise validity of MHQ pain and function domains correlation with existing instruments (Spearman correlation coefficients, r_s) was evaluated. Using external anchors to categorize patients, validity of the unique domains and discrimination of all domains was visualized in cumulative probability plots (figure 1), and mean between-group difference (MD) was calculated with linear regression.
Results: At baseline patients (84% women, median age 60.3, 90% fulfilling ACR criteria) reported moderate pain (median, interquartile range MHQ pain 45, 31.3–60) and functional impairment (MHQ overall function 57.5, 50–67.5; ADL 80.5, 68.2–89.6). MHQ pain and function scales correlated well with existing instruments (table 1). Patients with reduced working capacity had worse MHQ work performance scores than employed patients (MD -25.7, 95% confidence interval [CI] -32.8;-18.6), and scores were worse if it was due to hand OA than when there was another cause (MD -21.4, -37.1;-5.8). MHQ aesthetics scores were worse in patients with more deformities (MD -1.03, -1.60;-0.45 per additional deformity). Patients with 'unacceptable' pain/function had worse MHQ satisfaction scores (eg. pain: MD -27.2, -37.1;-17.3). All instruments measuring pain/function could discriminate between patients with acceptable vs. unacceptable pain/function (not shown). MHQ ADL scale and AUSCAN function outperformed MHQ overall function and FIHOA in discriminating between patients whose function improved vs. worsened over time (not shown). For discrimination of change in pain over time, MHQ and AUSCAN pain both outperformed VAS pain.



Conclusions: MHQ performs at least as good and may replace existing instruments in measuring pain and function in hand OA. In addition, MHQ provides information on work performance, aesthetics and satisfaction, which is not measured by other questionnaires. Sensitivity-to-change has to be assessed in future trials.
Disclosure of Interest: None declared
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FRI0661 **ULTRASOUND OF SUBTALAR JOINT SYNOVITIS IN PATIENTS WITH RHEUMATOID ARTHRITIS: RESULTS OF AN OMERACT RELIABILITY EXERCISE USING CONSENSUAL DEFINITIONS**

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Background: The incidence of subtalar joint (STJ) disease in patients with rheumatoid arthritis (RA) is greatly increased between five and ten years of disease duration and regularly precedes changes in the tibiotalar joint [1]. The joint is notoriously difficult to assess clinically and frequently overlooked in favour of the more accessible tibiotalar joint.
We hypothesized that US might be used as a reliable outcome measure to evaluate synovitis of the STJ in patients with RA. The objectives of this study were first, to develop an expert consensus derived definition of synovitis and scanning protocol for the STJ and second, to test the reliability of the definitions and protocol.
Objectives: To evaluate the intra- and interobserver reliability of the US assessment of STJ synovitis in patients with RA.
Methods: Following a Delphi process, twelve sonographers conducted an US reliability exercise on 10 RA patients with hindfoot pain. The anteromedial, posteromedial, and posterolateral STJ was assessed using B-mode and power Doppler (PD) techniques according to an agreed US protocol and using a 4-grade semiquantitative grading score for synovitis (synovial hypertrophy (SH) and power Doppler (PD) signal) and a dichotomous score for the presence of joint effusion (JE). Intraobserver and interobserver reliability were computed by Cohen and Light kappa (k). Weighted k coefficients with absolute weighting were computed for B-mode and PD signal.
Results: Mean weighted Cohen's kappa for SH, PD, and JE, was 0.80 (0.62–0.98), 0.61 (0.48–0.73), and 0.52 (0.36–0.67), respectively. Weighted Cohen's kappa for SH, PD, and JE in the anteromedial, posteromedial and posterolateral STJ was -0.04–0.79, 0.42–0.95, and 0.28–0.77; 0.31–1, -0.05–0.65, and -0.2–0.69; 0.66–1, 0.52–1, and 0.42–0.88, respectively. Weigthed Light kappa for SH was 0.67 (95%CI 0.58–0.74), 0.46 (0.35–0.59) for PD, and 0.16 (0.08–0.27) for JE. Weighted Light kappa for SH, PD, and JE was 0.63 (0.45–0.82),0.33 (0.19–0.42) and 0.09 (-0.01–0.19), for the anteromedial; 0.49 (0.27–0.64), 0.35 (0.27–0.4), and 0.04 (-0.06–0.1) for posteromedial, and 0.82 (0.75–0.89), 0.66 (0.56–0.8), and 0.18 (0.04–0.34) for posterolateral STJ, respectively.
Conclusions: Ultrasound is a feasible and reliable tool for assessing synovitis of the posterolateral STJ in RA, but not for the anteromedial and posteromedial STJ. SH can be reliably detected in B-mode and PD mode, but this is not true for JE.

REFERENCE:

1. Van der Leeden M, Steultjens MP, Van Ursem J, et al. Prevalence and course of forefoot impairments and walking disability in the first eight years of rheumatoid arthritis. Arthritis Rheum 2008;59:1596–1602.

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FRI0662 **CALPROTECTIN S100 A8/A9 IN A SOUTH AFRICAN RHEUMATOID ARTHRITIS (RA) COHORT**

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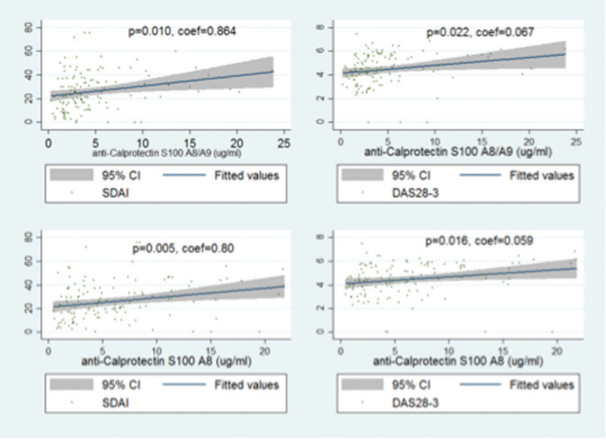
Background: Calprotectins(CLP) S100 A8/A9 are small calcium binding proteins[1] belonging to the group of damage-associated molecular patterns (DAMPs) or alarmins. They play a key role in the inflammatory response in RA. [2, 3]The measurement of CLP S100 A8/A9 in serum may be a useful strategy to optimize management of patients with RA.[4]

Objectives: To evaluate serum calprotectin S100 protein (A8 and A8/A9) levels in a South African RA Cohort in relation to disease severity at presentation in comparison with traditional RA-associated autoantibodies.
Methods: This was an observational, single-centre study, involving patients attending the Rheumatology Clinic of the Department of Internal Medicine, Chris Hani Baragwanath Academic Hospital (CHBAH) and University of the Witwatersrand, South Africa. The cohort consisted of 128 ethnic black RA DMARD-naïve patients. The study was approved by the local ethics committee and patients gave informed consent to participate.
Results: The baseline demographics and clinical data of the cohort are summarized in table 1. Calprotectin S100 A8 demonstrated a statistically significant association with disease severity[(both SDAI (p=0.005) and DAS 28 (p=0.016)] by linear regression analysis. Calprotectin S100A8/A9 also showed significant associations with SDAI (p=0.010) and DAS28 (p=0.022) figure 1.

Table 1 Clinical and demographic data of patients with RA

Sex	Freq	Percent	Cum
Male	23	17.97	17.97
Female	105	82.03	100.00
DAS 28 Inactive	25	19.53	19.53
DAS 28 Moderate	57	44.53	64.06
DAS 28 Very Active	46	35.94	100.00
SDAI Remission	9	7.03	7.03
SDAI Low DA	16	12.50	19.53
SDAI Mod DA	45	35.16	54.69
SDAI High DA	58	45.31	100.00
CCP Negative	10	7.81	7.81
CCP Positive	118	92.19	100.00
RF Negative	8	6.25	6.25
RF Positive	120	93.75	100.00
MCV Negative	7	5.47	5.47
MCV Positive	121	94.53	100.00



Conclusions: Unlike those of traditional autoantibodies, serum levels of calprotectin correlate strongly with disease severity of RA patients. These findings suggest that calprotectin S100 is a promising biomarker for assessment and monitoring of disease activity in **RA.**

REFERENCES:

1. Cesaro A, Anceriz N, Plante A, Page N, Tardif MR, Tessier PA. An inflammation loop orchestrated by S100A9 and calprotectin is critical for development of arthritis. PLoS ONE 2012;7(9):e45478.
2. Geven EJ, Van Den Bosch MH, Di Ceglie I, Ascone G, Abdollahi-Roodsaz S, Sloetjes AW, et al. S100A8/A9, a potent serum and molecular imaging biomarker for synovial inflammation and joint destruction in seronegative experimental arthritis. Arthritis Res Ther 2016;18(1):247.
3. Nielsen UB, Bruhn LV, Ellingsen T, Stengaard-Pedersen K, Hornung N. Calprotectin in patients with chronic rheumatoid arthritis correlates with disease activity and responsiveness to methotrexate. Scand J Clin Lab Invest 2017. doi:10.1080/00365513.2017.1413591:1-6
4. Obry A, Lequerre T, Hardouin J, Boyer O, Fardellone P, Philippe P, et al. Identification of S100A9 as biomarker of responsiveness to the methotrexate/etanercept combination in rheumatoid arthritis using a proteomic approach. PLoS ONE 2014;9(12):e115800.

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FRI0663

THE FINE SPECIFICITY OF ANTI-DRUG ANTIBODY RESPONSES TO ORIGINATOR AND BIOSIMILAR INFLIXIMAB: ANALYSES ACROSS FIVE DISEASES FROM THE 52-WEEK RANDOMIZED NOR-SWITCH STUDY

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Background: Norway's government funded the NOR-SWITCH study to investigate switching from originator infliximab (INX) to biosimilar CT-P13 in Crohn's disease (CD), ulcerative colitis (UC), spondyloarthritis (SpA), rheumatoid arthritis (RA), psoriatic arthritis (PsA) and chronic plaque psoriasis (Ps). Previously, the main analyses have been published[1]. Immunogenicity is associated with treatment failure and is of particular concern in switching[2].
Objectives: To evaluate the consistency and fine specificity of anti-drug antibody (ADAb) responses to INX and CT-P13, in arthritis and IBD patients, after switching from INX to CT-P13.
Methods: The study included adult patients with CD, UC, SpA, RA, PsA or Ps[1]. Assays for drug serum levels and ADAb have been described[1]. ADAb positive sera were tested for cross-reactivity to 5 batches of INX and CT-P13. We quantified IgG4 ADAb, testing for functional inhibition. Infliximab peptides were used to compare epitope recognition of positive sera. Immunogenic infliximab-epitopes were identified by ELISA and sera compared across diseases.
Results: We tested 15 controls, 15 arthritis, 21 IBD patients. No Ps patients had ADAbs in our study. All 23 anti-CT-P13 and 13 anti-INX sera cross-reacted with INX and CT-P13, respectively. ADAb concentrations to INX or CT-P13 correlated strongly (r values between 0.92 and 0.99, p<0.001 for all experiments, Spearman's correlation test). Sera negative for CT-P13 ADAb (10 healthy controls, 5 RA patients) were also anti-INX negative. IgG4 ADAb in all sera recognized 5 different batches of CT-P13 and INX. All positive sera had similar functional inhibition of CT-P13 or INX TNF-binding capacity, showing reduced binding to CT-P13 in the presence of 5 different batches of CT-P13 and INX. 60%_79% of patients recognized 7 synthetic peptides corresponding to major anti-infliximab epitopes, with no significant differences between CT-P13 and INX ADAb. Three minor epitopes in framework regions of infliximab showed reduced antibody reactivity in 30% _50% of patients. Stratifying by diagnostis, we found two epitopes in the variable and constant heavy-chains of infliximab specifically recognized in IBD patients but not rheumatic patients.
Conclusions: ADAbs to INX also recognize CT-P13, with similar epitopes. We found no consistent difference in ADAb epitope specificity between diagnoses. However, two specific minor epitopes are only recognized by IBD patients which might reflect the importance of HLA background for ADAb.

REFERENCES:

1. Jørgensen KK, Olsen IC, Goll GL, et al. Switching from originator infliximab to biosimilar CT-P13 compared to maintained treatment with originator infliximab (NOR-SWITCH): a 52-week randomised double-blind non-inferiority trial. Lancet, 2017 Jun 10;389(10086):2304–2316. [Epub 2017 May11].
2. Dörner T, Jay J. Biosimilars in rheumatology: current perspectives and lessons learnt. Nat Rev Rheumatol 2015 Dec;11(12):713–24.

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