(BASDAI) < 4) and active group (BASDAI $\geq$ 4). Remission group included 60 patients and active group included 57 patients. Fibrinogen, albumin, FAR, C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were collected. Relationships between FAR and BASDAI as well as other biochemical indexes were assessed by the Spearman's correlations analysis. Receiver operation characteristic (ROC) curves were performed to discriminate AS patients from healthy subjects and active group from remission group. Furthermore, binary logistic regression analysis was conducted to evaluate the risk factors of AS disease activity.

Fig.1 ROC curve was used to discriminate AS patients from healthy controls (A, B) and active group from remission group (C, D).

Figure 1

Results: FAR, fibrinogen, CRP and ESR were higher in AS patients compared with healthy controls ($P < 0.05$), while albumin was lower ($P < 0.05$). ROC results showed that area under curve (AUC) of FAR (0.818, 95%CI: 0.760 - 0.876) and albumin (0.841, 95%CI: 0.788 - 0.894) were higher than fibrinogen (0.772, 95%CI: 0.707-0.836), CRP (0.677, 95%CI: 0.598 - 0.756) and ESR (0.784, 95%CI: 0.721 - 0.847). Positive correlations were found between FAR and BASDAI ($r = 0.488$, $P < 0.001$), CRP ($r = 0.858$, $P < 0.001$) and ESR ($r = 0.817$, $P < 0.001$). Besides, FAR, fibrinogen, CRP and ESR in active group were higher than remission group ($P < 0.05$), while albumin was lower ($P < 0.05$). ROC results showed that AUC of FAR (0.691, 95%CI: 0.596-0.786) was higher than fibrinogen (0.676, 95%CI: 0.577 - 0.776), albumin (0.665, 95%CI: 0.567 - 0.763), CRP (0.646, 95%CI: 0.545 - 0.746) and ESR (0.667, 95%CI: 0.569 - 0.766). FAR was a risk factor of the disease activity in AS patients (OR: 1.354, 95%CI: 1.067 - 1.718, $P = 0.013$).

Conclusion: FAR was increased in AS patients compared with healthy controls and significantly correlated with the disease activity of AS. FAR might be a potential useful inflammatory biomarker to monitor disease activity of AS patients.

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AB1327

SEROLOGICAL BIOMARKERS IN PATIENTS WITH EARLY AXIAL SPONDYLOARTHRITIS: CORRELATION WITH IMAGING AND DISEASE ACTIVITY IN 24-MONTHS FOLLOW UP (ITALIAN ARM OF SPACE STUDY)

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Background: Recently studies have focused on the role of new markers to diagnose early axial spondyloarthritis (axSpA), to evaluate disease activity (DA) and to predict patients (pts) at higher risk for a worse outcome. Common biomarkers, erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) are often ineffective in assessing DA.

Objectives: To evaluate biomarkers and their correlations with clinical and DA indices and imaging in pts with early axSpA.

Methods: Seventy-five patients with low back pain (≥ 3 months, ≤ 2 years, onset ≤ 45 years) participating in the Italian arm of the SpondyloArthritis-Caught-Early SPACE study underwent a physical examination, questionnaires, laboratory tests, X-rays and MRI of the spine and sacroiliac joints (SIJ) at baseline (T0) and during a 24-months follow-up. Two expert rheumatologists formulated axSpA diagnosis and assessed fulfilment of Assessment of SpondyloArthritis International Society ASAS criteria. The DA and physical functioning were assessed using: Bath Ankylosing Spondylitis Metrology Index (BASMI); Maastricht Ankylosing enthesitis Spondylitis Score (MASES); Bath Ankylosing Spondylitis Disease Activity Index (BASDAI); Bath Ankylosing Spondylitis Functional Index (BASFI); Ankylosing Spondylitis disease activity score (ASDAS); Visual Analogue Scale (VAS pain); VAS night pain; VAS disease activity; Bath Ankylosing Spondylitis Patient Global Score (BASG1); BASG2; Health Assessment Questionnaire (HAQ); ESR; serum ultrasensitive CRP (hs-CRP); matrix metalloproteinase (MMP3); interleukin (IL) IL-22, IL-17, IL-23. Positive spine and SIJ MRI images were scored independently by 2 readers using the Spondyloarthritis Research Consortium of Canada (SPARCC) method; the spine and SIJ X-rays images were scored using mSASSS and NY-criteria. After the X-rays and MRI images of all pts were read, they were classified in accordance ASAS criteria as: 21 patients classified according to axSpA imaging arm; 29 patients classified according to axSpA clinical+/-imaging arm; 25 patients not fulfilling ASAS criteria.

Table 1a: Correlations between MMP-3, IL-22 and clinical indices and imaging scores.

	MMP3	IL-22
ESR	0.26 (0.041)	ns
hsCRP	0.28 (0.029)	ns
mSASSS	0.31 (0.005)	ns
SPARCC-SIJ	ns	0.043
BASMI	ns	0.28 (0.040)
BASFI	ns	0.35 (0.008)
BASG1	ns	0.34 (0.008)
HAQ	ns	0.27 (0.040)
VAS pain	ns	0.26 (0.013)

Table 1b: Correlations between hsCRP, ESR and clinical indices and imaging scores.

	hsCRP	ESR
BASG1	ns	0.27 (0.028)
BASG2	ns	0.26 (0.041)
ASDAS	ns	0.29 (0.025)
SPARCC-SIJ	0.35 (0.047)	ns
mSASSS	ns	-0.12 (0.038)

P was calculated according to Spearman's correlation test. Data are expressed as correlation coefficient (p value).

Results: Significant differences were found in the prevalence of radiographic sacroiliitis, active sacroiliitis on MRI and SPARCC SIJ scores. At T0 biomarker levels were not significantly increased in any of the patient groups. It was observed instead a significant decrease of all functional and DA indices values from T0 to 24 months in the three groups: MASES ($p=0.008$), BASG1 ($p=0.02$), BASG2 ($p<0.0001$), HAQ ($p=0.0002$), VAS pain ($p=0.01$), VAS pain night ($p=0.04$), VAS disease activity ($p=0.05$), BASFI ($p=0.02$), BASDAI ($p<0.0001$), ASDAS ($p<0.0001$). There were no differences in the serological markers values during the 2 years follow up period. The correlation of IL-17 and IL-23 with other indices was not significant. On the other hand significant correlations were found between IL-22 and some clinical indices (BASFI, BASG1, HAQ, VAS pain); between mSASSS and MMP3 and between mSASSS and hsCRP (Table 1a-b).

Conclusion: Although not significantly higher in any of the three groups, IL-22, MMP3 and hsCRP values correlated with some disease activity indices and with mSASSS. ILs, MMP-3 and hsCRP values were not significantly increased in any of the study groups and were not related to radiographic SIJ involvement or to clinical and DA indices. The limitation

of the study was the small numbers of the patients in the single group and the early disease stage. Further studies are needed to analyze the validity and reproducibility of these biomarkers in early axSpA.

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AB1328

MEASUREMENT PROPERTIES OF THE BRIEF PAIN INVENTORY-SHORT FORM (BPI-SF) AND THE REVISED SHORT-FORM MCGILL PAIN QUESTIONNAIRE-VERSION-2 (SF-MPQ-2) IN PAIN-RELATED MUSCULOSKELETAL CONDITIONS: A SYSTEMATIC REVIEW

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Background: The Brief Pain Inventory (BPI-SF) and McGill Pain Questionnaire (SF-MPQ-2) are general-use, self-report, multidimensional pain assessment outcomes frequently used for pain assessment in musculoskeletal (MSK) conditions. Synthesizing knowledge on their measurement properties, as assessed in MSK conditions, should provide a deeper understanding of their strengths and limitations.

Objectives: To systematically locate, critically appraise, compare and summarize clinical measurement research about the BPI-SF and SF-MPQ-2 in pain-related musculoskeletal conditions

Methods: Four databases (Medline, CINAHL, EMBASE & SCOPUS) were systematically searched for relevant citations, each for the BPI-SF and SF-MPQ-2. We included articles that reported the psychometric properties (e.g. validity, reliability, responsiveness) and interpretability indices (e.g. minimal clinical important difference) of both tools, as assessed in mixed and specific MSK studies. Independently, two reviewers extracted data and assessed the quality of evidence with a structured quality assessment tool for measurement studies and according to the updated CON-sensus-based Standards for the selection of health Measurement Instruments (COSMIN) guidelines.

Results: Twenty-five articles were included (BPI-SF, n=17; SF-MPQ-2, n=8). Both tools lack reporting on their cross-cultural validities and measurement error indices. High quality studies suggest that they are internally consistent ($\alpha = 0.83-0.96$), and they associate modestly with similar outcome measures ($r = 0.3-0.69$). There is evidence that the BPI-SF conforms to its two-dimensional structure in MSK studies; the SF-MPQ-2 four-factor structure was not clearly established. In seven reports, high to moderate quality evidence was seen in supports of the BPI-SF known group validity (n=2) and responsiveness (n=5) but none was available for the SF-MPQ-2. Furthermore, the SF-MPQ-2 was more frequently associated with floor effects in MSK studies than the BPI-SF (SF-MPQ-2, 42% vs BPI-SF, 6%).

Conclusion: The SF-MPQ-2 has emerging evidence whereas the BPI-SF evidence is more mature. Both tools displayed high-quality evidence in support of their internal consistency and criterion-convergent validities. High to moderate quality evidence suggests the BPI-SF subscales have a better responsiveness, retest reliability, known group validity and structural validity than the SF-MPQ-2.

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AB1329

THE PRELIMINARY VALIDATION OF LASER DOPPLER FLOWMETRY IN SYSTEMIC SCLEROSIS ACCORDING TO THE OMERACT FILTER: A SYSTEMATIC REVIEW

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Background: Systemic sclerosis (SSc) is characterised by a widespread vasculopathy. The vasculopathy comprises the skin microcirculation and results in features such as Raynaud's phenomenon (RP) and digital trophic lesions. The quantification of the skin blood perfusion at the level of the finger (FBP) is a major need in the assessment of SSc in clinical and research setting¹. Up to now, laser doppler flowmetry (LDF) has been the most thoroughly investigated instrument to assess the FBP in SSc.

Objectives: To investigate the validation status of LDF in SSc according to the 'Outcome Measures in Rheumatologic Clinical Trials' (OMERACT) filter.

Methods: Literature was systematically reviewed to detect all reports in which the assessment of the FBP in SSc patients was described. The OMERACT filter, including the domains of truth, discrimination and feasibility was applied and a quality assessment was done by the Good Methods Checklist². Comparison between studies was eased by grouping the results per dynamic test situation (basal circumstances, cold/heat challenge and occlusion).

Results: The systematic search resulted in 4340 hits. After title and abstract screening 228 hits remained and of these, 79 full texts described the assessment by LDF. Fifty studies were included for quality assessment of which 17 studies were retained for conclusion making (fig 1).

Figure 1. Flowchart of the systematic search

An overview of the validation status of LDF is given in table 1. Expert consensus is lacking on the face and content validity of LDF in SSc. The construct validity of LDF is partially validated (e.g. the correlation with laser speckle contrast imaging was attested in one study). Conflicting results exist on the discriminant capacity of LDF to distinguish healthy from diseased, primary from secondary RP and to differentiate between disease subsets. The addition of a heat challenge, as well as the evaluation of the post-occlusive hyperemic response to the LDF-measurement has the potential to elicit a difference between healthy and diseased. Lastly, there are no data on the feasibility of LDF in SSc.