Table 1. Hypothesized and actual correlations for convergent validity

	Hypothesized		Actual		Hypotheses Met
	Direction	R	R	p-value	
Internal resource					
Pain self-efficacy	+	0.30 – 0.50	0.48	0.000	Yes
Mental well-being					
HADS anxiety	-	-0.30 – -0.50	-0.37	0.000	Yes
HADS depression	-	-0.30 – -0.50	-0.31	0.000	Yes
SF-36 mental health	+	0.30 – 0.50	0.30	0.000	Yes
Physical well-being					
WOMAC physical function	-	> -0.30	-0.17	0.000	Yes
WOMAC pain	-	> -0.30	-0.16	0.000	Yes
WOMAC stiffness	-	> -0.30	-0.11	0.005	Yes
SF-36 physical functioning	+	< 0.30	0.15	0.000	Yes
Social well-being					
Lubben's social network score	+	< 0.30	0.22	0.000	Yes

HADS: Hospital Anxiety & Depression Scale; SF-36: Short-Form 36; WOMAC: Western Ontario & McMaster Universities Osteoarthritis Index

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AB1325

HAND FUNCTION IS IMPAIRED IN PATIENTS WITH RHEUMATOID ARTHRITIS, PSORIATIC ARTHRITIS, AND PSORIASIS COMPARED TO HEALTHY CONTROLS

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Background: Inflammatory-rheumatic diseases affect hand joints with swelling and pain, leading to joint destruction. Even patients with psoriasis only may suffer subclinical inflammation in the hand joints, leading to changes of bone [1]. Finger joint involvement is different for rheumatoid arthritis (RA), psoriatic arthritis (PsA) and psoriasis (Pso) but hand function in these patients is not well characterized.

Objectives: To quantify and compare grip strength and hand function in patients with RA, PsA and Pso and to relate these outcomes to disease activity.

Figure 1

Methods: Patient diagnosed with RA (ACR/EULAR 2010), PsA (Caspar) and Pso and 54 healthy individuals were included in the study after written informed consent. Maximal isometric grip strength (kPa) was

measured with a hand dynamometer (Lafayette Instrument, Lafayette, IN, USA) as the highest value out of three measurements. Hand function was determined by way of the Moberg Picking-Up Test (MPUT) and the fastest (s) of two measurements was used. Disease activity was calculated as DAS28_ESR and TJC/SJC 78/76 was recorded. One-way Analysis of Variance (ANOVA), factorial ANOVA and Games-Howell post-hoc testing was performed ($p < 0.05$).

Results: 101 RA (63 f; 38 m; age: 59.1 ± 13.2 yrs), 92 PsA (48 f, 44 m; age 54.8 ± 11.6 yrs) and 51 Pso patients (19 f, 32 m; age 47.3 ± 14.1 yrs), as well as 54 healthy control subjects (30 f, 24 m; age 54.6 ± 16.5 yrs) participated in the study. Disease duration (yrs) was not different between groups (RA: 11.03 ± 10.1 , PsA: 9.1 ± 9.75 , Pso: 12.5 ± 11.7 ; $p = 0.156$) but Pso patients in our cohort were younger compared to RA and PsA patients. Mean DAS28_ESR was < 3.2 for all patient groups with control subjects ($\text{DAS28 } 1.6 \pm 0.7$) having lower scores compared to all patient groups and Pso patients presenting with lower DAS28 (2.3 ± 1.3) compared to RA (3.0 ± 1.3) and PsA (2.9 ± 1.3). While TJC was higher for all patients compared to controls (RA: 5.2 ± 6.8 , PsA: 5.9 ± 8.1 , Pso: 3.2 ± 6.4 ; CON: 0.5 ± 1.4 ; $p = 0.00$), SJC was higher for RA and PsA compared to Pso and CON (RA: 0.7 ± 1.0 , PsA: 0.9 ± 2.2 , Pso: 0.1 ± 0.3 ; CON: 0.5 ± 1.4 ; $p = 0.000$). Grip strength of the dominant and/or affected hand of RA patients was lower compared to PsA, Pso and CON (Figure 1A). In contrast to this, hand function of the same hand in all tested patient groups was reduced compared to CON (Figure 1B). The results for grip strength and hand function were not different for the dominant and the affected hand and are independent of age differences between groups.

Conclusion: Overall, RA patients showed significantly lower grip strength compared to PsA and Pso patients as well as to the control group, whereas all three patient groups performed worse in the MPUT compared to the control cohort. This suggests that grip strength may be preserved longer than hand function in patients with inflammatory rheumatic disease. Further, it was surprising that hand function was reduced in Pso patients without arthritic correlate compared to healthy subjects. This suggests that hand function may provide a potential parameter for discriminating Pso patients at risk for subclinical joint involvement.

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REFERENCES

- [1] Faustini F, Simon D, et al. 2016, Ann Rheum Dis 75: 2068-2074.

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AB1326

INCREASED FIBRINOGEN TO ALBUMIN RATIO IN ANKYLOSING SPONDYLITIS: CORRELATION WITH DISEASE ACTIVITY

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Background: Fibrinogen to albumin ratio (FAR) has emerged as a new effective biomarker which can reflect the severity of chronic inflammation. However, none of study has focused on the role of FAR in ankylosing spondylitis (AS).

Objectives: The study aimed to investigate the association between FAR and the disease activity of AS.

Methods: The retrospective study included 117 AS patients and 165 age- and gender-matched healthy controls. AS patients were divided into remission group (Bath Ankylosing Spondylitis Disease Activity Index

(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.

REFERENCES

- [1] Karahan O, Acet H, Ertas F, et al. The relationship between fibrinogen to albumin ratio and severity of coronary artery disease in patients with STEMI[J]. Am J Emerg Med. 2016;34(6):1037-1042.
- [2] Yang W M, Zhang W H, Ying H Q, et al. Two new inflammatory markers associated with disease activity score-28 in patients with rheumatoid arthritis: Albumin to fibrinogen ratio and C-reactive protein to albumin ratio[J]. Int Immunopharmacol. 2018;62:293-298.

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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