Method development

Step	Description	Number & example
1 Radiology notes	a. Select note titles potentially relevant to IA b. Extract notes with titles potentially related to IA	a. 35,141 notes titles b. 2,926,113 radiology notes
2 Possible meaningful terms	a. Compile list of root terms that may indicate erosion b. Query radiology notes for root term variations c. Select possible meaningful terms	a. 11 root terms (i.e. ero*, pencil*cup, irreg*) b. 1178 variations (i.e. erosion, erotic, erode) c. 179 possible terms (i.e. erosion, erode)
3 Annotation	a. Extract snippets^ containing possible meaningful terms b. Classify snippets according to: 1) Meaningful term, 2) Relevance to joint, 3) Attribution to IA, 4) Affirmation	a. 5000 snippets from radiology notes b. 4068 classifications with 1017 snippets (in rounds of 50-417 snippets for NLP training & testing)
4 Rule development	a. Identify meaningful terms representing erosion b. Exclude erosive processes irrelevant to joint(s) c. Exclude articular erosive processes not attributed to IA d. Classify as affirmed/negated (erosion present/absent)	a. 6 terms (pencil * cup, erosion, erosive, etc.) b. 28 irrelevant processes (i.e. gastric erosion) c. 5 non-IA processes IA (i.e. infection) d. 83 affirmation/negation rules
5 NLP training	Design & revise NLP model until accuracy ≥90%	6 rounds, 817 snippets (AS 417, RA 200, PsA 200)
6 NLP testing	Test NLP model	200 snippets (AS 100, RA 50, PsA 50)
7 Pt classification	a. Develop rules for classifying pts with discordant snippets b. Build reference sample (pts classified as erosive or non-erosive via chart review)	a. 5 rules developed in 368 pts b. 30 IA pts (10 AS, 10 RA, 10 PsA)
8 NLP validation	Validate NLP model in reference sample at snippet level	149 snippets (29 AS, 76 RA, 44 PsA)
9 Method validation	Validate methods (NLP+pt classification) at pt level	30 IA pts (reference sample)

pt= patient. ^Snippets include text containing 30 words before & after meaningful terms

Results: In 168,667 veterans with IA, the mean age was 63.1 & 90.3% were male. Method development involved radiology note & erosion term selection, rule development, NLP model building, & method validation. The NLP model accuracy was 94.6% at the snippet level & 90.0% at the patient level, for all IA patients.

Accuracy of methods.

Conclusion: The methods accurately identify erosions from radiology reports of veterans with IA. They may facilitate a broad range of research involving cohort identification & disease severity stratification

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POS0263

CLINICAL RELEVANCE OF DFS70 ANTIBODIES – A MULTICENTRE STUDY

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Background: Anti-Dense Fine Speckled 70 (DFS70), also known as lens epithelium-derived growth factor (LEDGF) is a common finding when ANA are positive (1.7% in the whole population and 4.6% in the ANA-positive samples). DFS70 antibodies are rare in SARD, especially in the absence of clinical evidence or concomitant anti-extractable nuclear antigen (ENA) antibodies.

Objectives: Our study aimed to understand the meaning of anti-DFS70 antibodies and characterize the clinical and serological features of patients with anti-DFS70 positivity.

Methods: We performed a retrospective observational study of consecutive patients followed up at 9 Portuguese Rheumatology Centres observed from January 2018 until April of 2020 with anti-DFS70 antibodies positivity. Descriptive statistics were presented as mean ± standard deviation if normally distributed or as median and interquartile range if non-normally distributed (continuous variables) or as absolute and relative frequencies (categorical variables). Sensitivity and specificity were calculated. Positive and negative predictive values were calculated between patients with and without SARD-specific autoantibodies. Associations between DFS70 with other disease-specific antibody and clinical manifestations were tested using Chi-Square or Fischer's Exact Test, as appropriate.

Results: 120 patients were included, 99 (82.5%) were female with a mean age of 47.8 ± 18.2 years. 96.7% of the patients had ANA titers ≥1:160 (32.5% 1:160; 38.3% 1:320; 16.7% 1:640; 7.5% 1:1280 and 1.7% 1:2560) and 3.3% ANA <1:160.

The main clinical reasons for ANA determination was arthralgia (44.2%), arthritis (11.6%) and Raynaud Phenomenon (RP) (10%). The main analytical reason (7.5%) was an elevation of inflammatory parameters (C-Reactive Protein (CRP) or Erythrocyte Sedimentation Rate (ESR), leukopenia (3.3%) and anaemia (2.5%). Concerning the immunology: 58.3% of patients didn't have an associated antibody, 9.2% had a positive rheumatoid factor, 5.8% positive ds-DNA, 4.2% histone and 3.3% SS-A. 26 patients had more than one associated antibody.

30 (25%) patients were healthy; 43 (35.8%) patients had Systemic Autoimmune Rheumatic Diseases (SARD) and 47 patients (39.2%) had other diseases (non-SARD). Among patients with a SARD, 16 patients presented an isolated positive anti-DFS70 and 27 patients had other antibodies associated. There was found a positive association with non-SARD and arthralgia (p=0.001) and SARD with arthritis (p<0.001). There was an association with SARD and raised inflammatory parameters (p=0.045), but no association was found with anaemia (p=1.000) or leukopenia (p=0.131). Comparative analysis is described in Table 1, with chi-square or Fischer tests, as appropriated.

The sensitivity of isolated DFS70 was 70.1% and specificity was 62.8%. The positive predictive value was 77.1% and the negative predictive value was 54.0%.

Table 1. Comparative analysis using chi-square or Fischer test

	SARD	Non-SARD	p-value
Arthralgia, n	10	43	0.001
Arthritis, n	14	0	<0.001
Raynaud Phenomenon, n	7	5	0.114
Raised Inflammation parameters, n	6	3	0.045
Anaemia, n	1	2	1.000
Leukopenia, n	3	1	0.131

Conclusion: We concluded that 64.2% of patients with positive DFS70 did not present a SARD and if we only consider patients with isolated anti-DFS70, 77.1% didn't present a SARD. Therefore, in our study, 22.9% of the patients presented a SARD, which was associated with some clinical features like arthritis or raised inflammatory parameters ($p < 0.05$). Although isolated anti-DFS70 are not specific of a particular condition, our study supports that it can be used as a negative predictor of SARD, if a correlation with clinical and laboratory features is made.

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POS0264 THE EMERGING ROLE OF MAGNETIC RESONANCE IMAGING IN INTERSTITIAL LUNG DISEASE IN SYSTEMIC SCLEROSIS: EVIDENCE FOR ULTRA SHORT TE AND COMPRESSED SENSING VIBE ACQUISITIONS AS PROMISING TOOLS FOR THE EVALUATION OF PARENCHYMAL ALTERATIONS

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Background: Interstitial lung disease (ILD) is a frequent complication and the major cause of death in Systemic sclerosis (SSc). Computed tomography (CT) is the gold standard imaging technique to assess ILD but is burdened by exposure to ionizing radiations that limits its use for the follow-up. MRI sequences with Ultra Short Echo Time (UTE) are promising for ILD.

Objectives: We tested two MRI sequences, UTE Spiral VIBE and Compressed Sensing (CS) VIBE, in SSc-ILD, in comparison to chest CT.

Methods: SSc patients with suspected-ascertained ILD were evaluated for undergoing CT-MRI examinations in the same day. Two radiologists visually scored the extent of ground glass opacities (GGO), reticulations, honeycombing and consolidations on CT-MRI. The sum of alteration was assumed as ILD extent. A quantitative texture analysis (qCT) was also performed on CT. Cohen's κ was adopted for interreader concordance in ILD detection. MRI sensitivity and specificity in ILD detection were evaluated. Lin's concordance was adopted to compare extent analysis between readers and between CT (visual and qCT analysis) and MRI sequences.

Results: 54 patients performed both CT and MRI. MRI interreader concordance was moderate in ILD detection, while ILD and GGO extent analysis showed good or very good concordance. UTE Spiral VIBE had a sensitivity and specificity in ILD detection of 95.8% and 77.8%, while alterations extent analysis obtained a very good concordance with CT for ILD and GGO. CS VIBE showed a sensitivity and specificity in ILD detection of 46.7% and 95.0%, but a slight or fair concordance with CT in all alterations' extent analysis.

Conclusion: MRI UTE Spiral VIBE sequences are helpful in the evaluation of SSc-ILD. Larger cohorts of patients will be needed to confirm that MRI may be useful in clinical practice, reducing the radiological load of chest CT

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POS0265 CLINICAL AND ULTRASONOGRAPHIC ENTHESITIS IN INFLAMMATORY BOWEL DISEASE WITH AND WITHOUT PSORIASIS

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Background: Previous studies have reported an association between psoriasis (PsO) and inflammatory bowel disease (IBD). Coexistence of IBD and PsO has been associated with significant higher prevalence of enthesitis and dactylitis¹.

Objectives: To compare the prevalence of clinical and ultrasonographic peripheral enthesitis abnormalities in a consecutive series of patients with IBD and psoriasis (PsO) as compared to a group of IBD patients without psoriasis (IBD).

Methods: One-hundred seventy-four IBD consecutive patients [36 PsO and 138 IBD, M/F 91/83, mean age 42.6±14.7 years, mean disease duration 110 ±12.3 months] entered the study. A complete clinical examination, including rheumatological history, 66/68 peripheral joint count, MASES and LEI scores, BASDAI, and dactylitis count, was performed at study entry. Laboratory test (ESR, CRP, Hb, fecal calprotectin) were collected. Axial or peripheral SpA diagnosis was made using ASAS criteria².

US examination was executed by a rheumatologist blind to clinical data, using an Esaote MyLabClass, 18-6MHz linear multifrequency transducer both in B-mode and PD-mode. The following sites were examined bilaterally: lateral epicondyle of the humerus, distal quadriceps femoris insertion into the patella, inferior pole of the patella, tibial distal insertion of the patellar tendon, calcaneal insertion of the Achilles tendon, and plantar aponeurosis insertion. Knee and ankle joints were evaluated for synovial hypertrophy, PD signal and fluid effusion. Enthesitis was defined according to OMERACT³ and scored as 0-36 for GUESS and 0-136 for MASEI.

Results: PsO patients had later IBD onset (mean age 39±14.7 vs 33 ± 13.2 in IBD group, $p=0.02$). There weren't observed any significant differences in IBD duration and Crohn/UC prevalence.

No significant difference between the two groups in rheumatological history and clinical examination was detected, except for familiar history of psoriasis (PsO 44% vs IBD 16%, $p < 0.001$). Prevalence of SpA was 33,3% in PsO group and 37% in IBD group ($p = 0.687$).

146 patients (83.4%) showed structural damage at ≥ 1 enthesitis, 44 patients (25%) had at least 1 active enthesitis, with no significant difference between the two groups. PsO group showcased a significantly increased prevalence of patients having ≥ 1 thickened enthesitis (86.1% vs 63.9%, $p=0.009$) and of PD signal at knee examination (11.1% vs 2.2%, $p=0.034$). Higher values of GUESS score were observed in PsO (8.1 ± 5.1 vs 5.8 ± 3.9 , $p=0.017$). Enthesitis hypoechogenicity was more prevalent in IBD group (27.5% vs 11.1%, $p=0.049$).