

Two structural damage phenotypes in RA: new revelations by 8-year MRI-based study

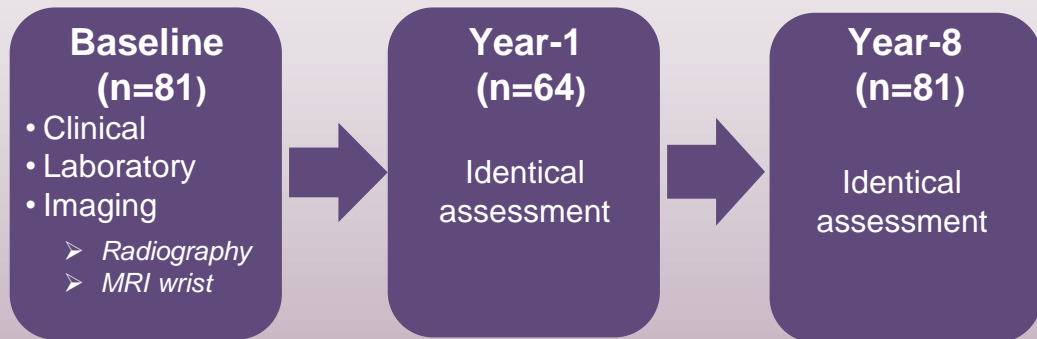
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Imaging and Interventional Radiology

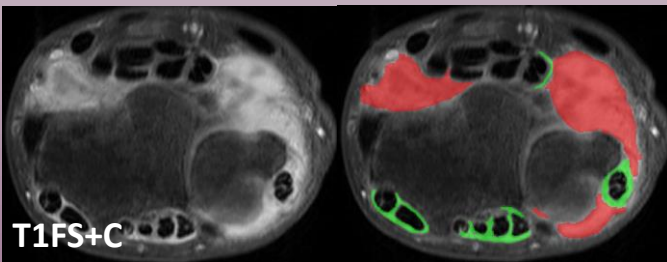
Objective

Follow-up a group of early rheumatoid arthritis patients for eight years and determine how inflammatory and structural parameters and which baseline parameter best predicts long-term structural damage

Methods



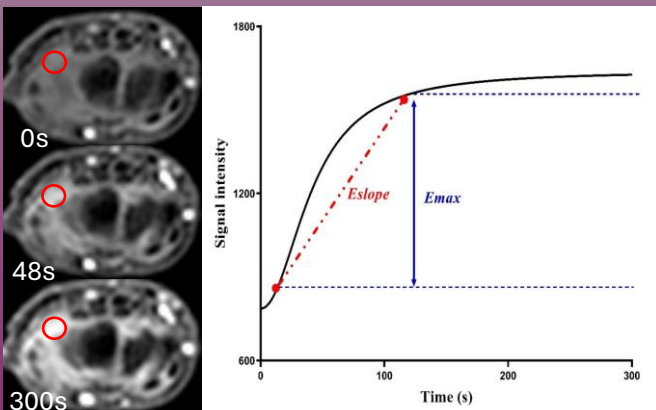
1. Synovial volume



3. BME proportion



2. Synovial perfusion



	Proportion	Mean	Std
Overall	22.14	4.68	2.6
Carpal	33.44	4.54	2.4
Radius	6.28	2.93	0.99
Ulna	1.95	3.41	1.51
Scaphoid	28.71	4.22	2.34
Lunate	27.12	4.32	2.35

Synovial volume, perfusion and BME proportion were used to analysis MRI images

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Results

Table: Results of MRI-detected inflammatory and structural damage parameters

	Baseline N=81	Year-1 N=64	Year-8 N=81	p value
Inflammatory parameters				
Synovitis volume	6.3 ± 4.8	2.6 ± 3.1	3.2 ± 3.0	<0.001
Tenosynovitis volume	1.2 ± 1.5	0.2 ± 0.5	0.4 ± 0.7	<0.001
Total volume	7.4 ± 5.4	2.8 ± 3.5	3.5 ± 3.3	<0.001
BME Proportion	12.2 ± 8.1	7.1 ± 5.6	9.2 ± 9.7	<0.001
Emax (%)	70.1 ± 38.9	42.0 ± 45.7	47.7 ± 41.1	<0.001
Eslope (%/s)	6.3 ± 6.9	2.9 ± 4.8	2.7 ± 5.2	<0.001
Structural damage parameters				
Bone erosion	6.6 ± 7.4	8.6 ± 12.2	11.0 ± 14.3	<0.001
Joint space narrowing score	3.7 ± 7.9	3.5 ± 7.7	6.7 ± 11.0	<0.001

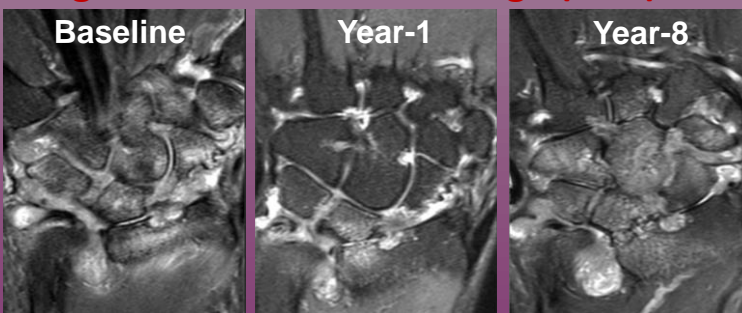
Two structural damage pattern

Non-progressive structural damage (62%)



62% patients belongs to **non-progressive structural damage** group, patients have non-mild structural damage from baseline to year-8

Progressive structural damage (38%)



38% patients belongs to **progressive structural damage** group, patients have moderate to severe structural damage from baseline to year-8

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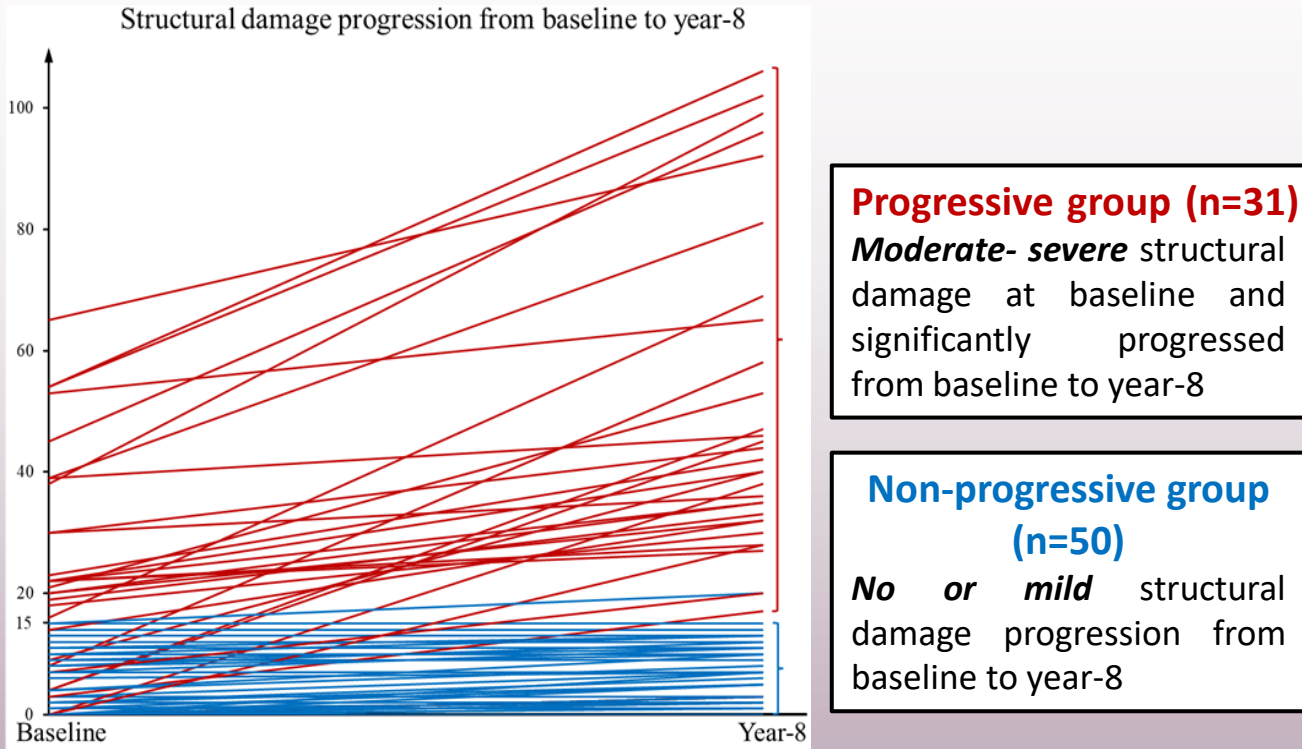


Fig 1: Case-by-case presentation of structural damage score from baseline to year-8

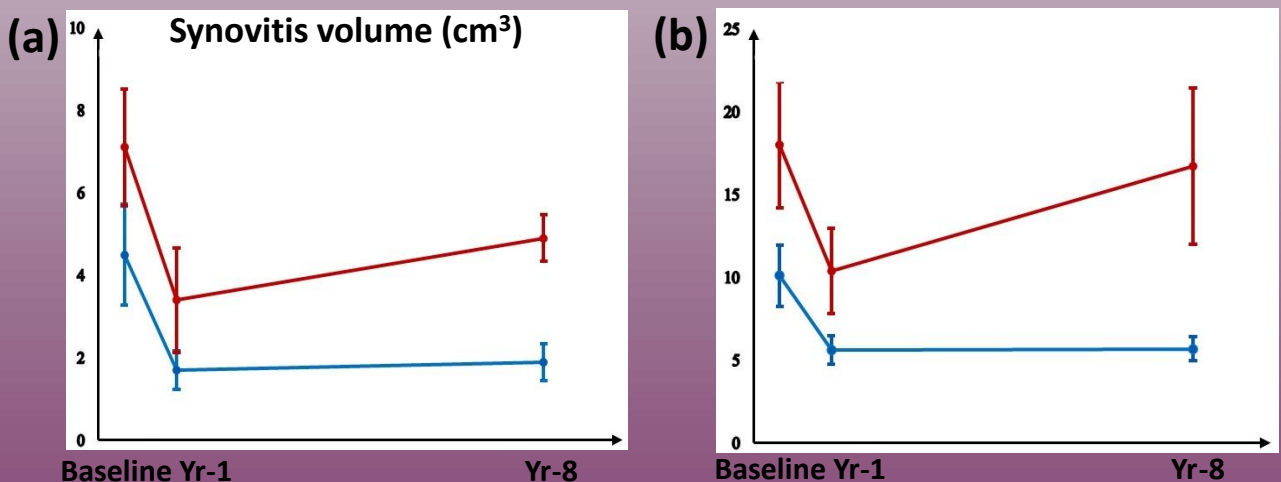


Fig 2: Progressive structural damage group (red line) have more synovitis (a) and BME (b) than non-progressive group (blue line) at baseline year-1 and year-8.

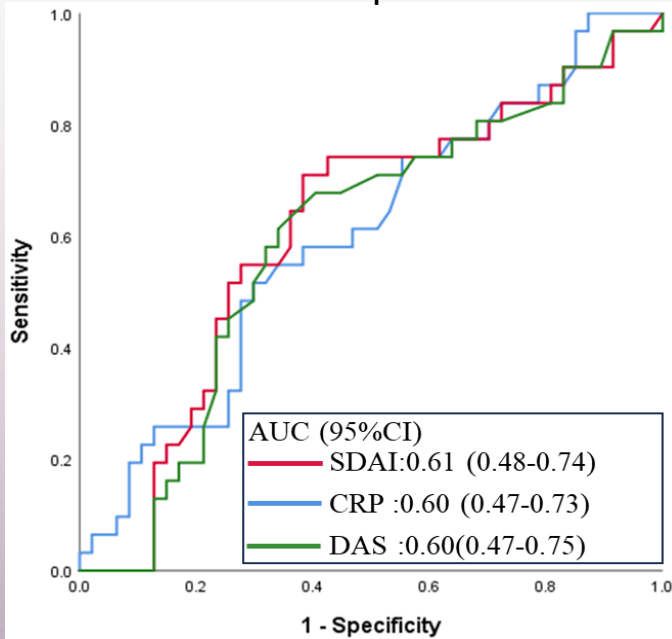
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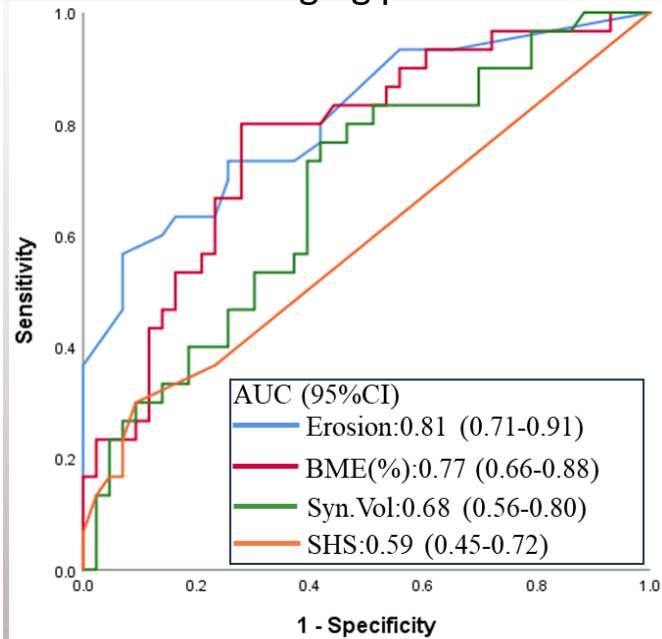
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Results

Baseline clinical predictors



Baseline imaging predictors



MRI bone erosion score is the best baseline predictor of year-8 structural damage progression better than clinical, laboratory or radiographic assessment.

Conclusion

There are **two** structural damage patterns in ERA patients, **progressive** and **non-progressive** structural damage group.

Baseline **bone erosion** score was better than clinical, laboratory, or radiographic assessment at predicting long-term structural damage progression in ERA patients.