**SUPPLEMENTARY DATA**

**Search formulas**

*Pubmed*

(ultrasound OR ultrasonography OR Doppler OR color OR colour OR power OR B-mode OR "grey scale") AND ((rheumatoid arthritis) OR (rheumatoid AND RA) OR (arthritis AND RA) OR RA[title]) and (MRI OR "magnetic resonance imaging") AND (sensitivity OR specificity OR "predictive value" OR "likelihood" OR "true positive" OR "true negative" OR "false positive" OR "false negative" OR diagnostic OR diagnosis) AND (synovitis OR tenosynovitis OR (bone edema) OR (bone erosion))

*EMBASE*

('ultrasound'/exp OR ultrasound OR 'ultrasonography'/exp OR ultrasonography OR doppler OR 'color'/exp OR color OR 'colour'/exp OR colour OR power OR 'b mode' OR 'grey scale') AND ('rheumatoid arthritis'/exp OR 'rheumatoid arthritis' OR (rheumatoid AND ra) OR ('arthritis'/exp OR arthritis AND ra)) AND ('mri'/exp OR mri OR 'magnetic resonance imaging'/exp OR 'magnetic resonance imaging') AND (sensitivity OR specificity OR 'predictive value'/exp OR 'predictive value' OR 'likelihood' OR 'true positive' OR 'true negative' OR 'false positive' OR 'false negative') AND ('synovitis'/exp OR synovitis OR 'tenosynovitis'/exp OR tenosynovitis OR ('bone'/exp OR bone AND ('edema'/exp OR edema)) OR ('bone'/exp OR bone AND ('erosion'/exp OR erosion)))

*Cochrane Central Register of Controlled Trials*

(ultrasound OR ultrasonography OR Doppler OR color OR colour OR power OR B-mode OR "grey scale") AND ((rheumatoid arthritis) OR (rheumatoid AND RA) OR (arthritis AND RA)) and (MRI OR "magnetic resonance imaging") AND (synovitis OR tenosynovitis OR (bone edema) OR (bone erosion))

*Web of Science Core Collection*

TS=(ultrasound OR ultrasonography OR Doppler OR color OR colour OR power OR B-mode OR "grey scale") AND TS=((rheumatoid arthritis) OR (rheumatoid AND RA) OR (arthritis AND RA) OR RA[title]) AND TS= (MRI OR "magnetic resonance imaging") AND TS= (sensitivity OR specificity OR "predictive value" OR "likelihood" OR "true positive" OR "true negative" OR "false positive" OR "false negative" OR diagnostic OR diagnosis) AND TS= (synovitis OR tenosynovitis OR (bone edema) OR (bone erosion))

**Supplementary Table S1. Summary of results of MRI mode subgroup analysis**

|  |
| --- |
| Overall diagnostic value |
| Joints | Wrist | MCP | PIP | Knee |
| MRI quality | High | Moderate or high | High | Moderate or high | High | Moderate or high | High | Moderate or high |
| DOR, 95% CII2 | 5.6 (0.87-37)0% | 11.6 (5.6-23.9)0% | 28 (12-66)11% | 33 (15-70)11% | 21 (3.1-142)24% | 19 (4.8-76)30% | 5.3 (0.60-48)0% | 5.3 (0.60-48)0% |
| AUC  | 0.89 (good) | 0.81 (good) | 0.91 (good) | 0.92 (good) | 0.81 (good) | 0.90 (good) | 0.61 (not accurate) | 0.61 (not accurate) |
| Cohorts (Joints) | 2 (49) | 5 (275) | 7 (726) | 10 (1856) | 4 (377) | 5 (993) | 2 (31) | 2 (31) |
| Cutoff absence/presence |
| Joints | Wrist | MCP | PIP | Knee |
| Sensitivity (95%CI) | 0.90 (0.75-0.96) | 0.73 (0.51-0.87) | 0.77 (0.57-0.89) | 0.60 (0.37-0.80) | 0.75 (0.19-0.98) | 0.64 (0.20-0.92) | 0.91(0.56-0.99) | 0.91(0.56-0.99) |
| Specificity (95%CI) | 0.40 (0.17-0.68) | 0.78 (0.46-0.94) | 0.95 (0.93-0.97) | 0.96 (0.95-0.97) | 0.93 (0.87-0.96) | 0.95 (0.90-0.98) | 0.60 (0.20-0.90) | 0.60 (0.20-0.90) |
| PLR(95%CI) | 1.5 (1.0-2.8)a  | 3.3 (1.3-12)b  | 15 (9.3-24)d | 15 (8.6-22)d | 11 (2.2-21)d | 12.8 (3.4-32) d | 2.3 (0.97-8.8)b  | 2.3 (0.97-8.8)b  |
| NLR(95%CI) | 0.25 (0.082-0.84)b  | 0.35 (0.16-0.75)b  | 0.24 (0.11-0.45)c  | 0.42 (0.21-0.66)b  | 0.27 (0.024-0.89)b  | 0.38 (0.081-0.84)b | 0.15 (0.018-1.1)c  | 0.15 (0.018-1.1)c  |
| Cohorts (Joints) | 2 (49) | 5 (275) | 6 (572) | 9 (1702) | 3 (254) | 4 (870) | 1 (16) | 1 (16) |

PLR is a value in the range of -2, 2-5, 5-10, and 10- are recognized as anot meaningful (N), bsmall (S), cmoderate (M), and dlarge (L) increase of probability. NLR is a value in the range of 0.5-, 0.2-0.5, 0.1-0.2, and -0.1 are recognized as anot meaningful (N), bsmall (S), cmoderate (M), and dlarge (L) decrease of probability. Sensitivity, specificity, PLR, and NLR were obtained from data that uses studies with cutoff value between absence/presence or 0/1. MCP: metacarpophalangeal; PIP: proximal interphalangeal; DOR: diagnostic odds ratio; AUC: area under hierarchical summary receiver operating characteristics curve; PLR: positive likelihood ratio; NLR: negative likelihood ratio; AUC: area under the HSROC curve was interpreted in a four-grade scale as follows: -0.75 not accurate, 0.75-0.92 good, 0.93-0.96 very good, 0.97- excellent.

**Supplementary Table S2. Summary of results of ultrasonography mode subgroup analysis**

|  |
| --- |
| Overall diagnostic value |
| Joints | Wrist | MCP | PIP | Knee |
| US mode | Gray scale, 95% CI | Power Doppler, 95% CI | Gray scale, 95% CI | Power Doppler, 95% CI | Gray scale, 95% CI | Power Doppler, 95% CI | Gray scale, 95% CI | Power Doppler, 95% CI |
| DOR95% CII2 | NA | 12 (5.6-23.9)0% | 12 (1.7-85)31% | 30 (11-86)5% | 16 (1.0-246)0% | 30 (6.0-154)27% | NA | NA |
| AUC  | 0.54 (not accurate) | 0.81 (good) | 0.88 (good) | 0.94 (very good) | 0.87 (good) | 0.95 (very good) | 0.57 (not accurate) | 0.57 (not accurate) |
| Cohorts (Joints) | 1 (12) | 5 (275) | 3 (294) | 10 (1826) | 2 (203) | 4 (870) | 1 (15) | 1 (15) |
| Cutoff absence/presence |
| Joints | Wrist | MCP | PIP | Knee |
| Sensitivity  | 0.79 (0.49-0.94) | 0.73 (0.51-0.87) | 0.89 (0.58-0.98) | 0.60 (0.37-0.80) | 0.91 (0.80-0.96) | 0.64 (0.20-0.92) | NA | NA |
| Specificity  | 0.25 (0.01-0.09) | 0.78 (0.46-0.94) | 0.66 (0.11-0.97) | 0.96 (0.95-0.97) | 0.88 (0.63-0.97) | 0.95 (0.90-0.98) | NA | NA |
| PLR | 1.1 (0.63-1.67)a  | 3.3 (1.2-12)b  | 2.6 (0.90-28)b  | 15 (8.6-22)d | 7.6 (2.4-30) c  | 13 (3.4-32)d  | NA | NA |
| NLR | 0.84 (0.20-3.2)a  | 0.35 (0.16-0.76)b  | 0.17 (0.030-1.5)c  | 0.42 (0.21-0.66)b | 0.10(0.045-0.24)c  | 0.38 (0.080-0.84)b | NA | NA |
| Cohorts (Joints) | 1 (12) | 5 (275) | 2 (140) | 9 (1702) | 1 (80) | 4 (870) | 0 (0) | 0 (0) |

Sensitivity, specificity, PLR, and NLR were obtained from data that uses studies with cutoff value between absence/presence or 0/1. PLR: a value in the range of -2, 2-5, 5-10, and 10- are recognized as anot meaningful (N), bsmall (S), cmoderate (M), and dlarge (L) increase of probability; NLR: a value in the range of 0.5-, 0.2-0.5, 0.1-0.2, and -0.1 are recognized as anot meaningful (N), bsmall (S), cmoderate (M), and dlarge (L) decrease of probability. MCP: metacarpophalangeal; PIP: proximal interphalangeal; DOR: diagnostic odds ratio; AUC: area under hierarchical summary receiver operating characteristics curve; PLR: positive likelihood ratio; NLR: negative likelihood ratio; AUC: area under the HSROC curve was interpreted in a four-grade scale as follows: -0.75 not accurate, 0.75-0.92 good, 0.93-0.96 very good, 0.97- excellent; NA: not available.

**Supplementary Figure S1. The Cochrane risk of bias graph**