

Supplemental Table S1 Baseline characteristics of identified studies and the US technique

Author Country, year	Disease	Disease course/ ±Controls Sample size	Model	Transducer, MHz	Scanned joint or region	Planes	SMI modes	Comparing instrumental tools	SMI scoring system
Matsuo et al. (11) Japan, 2022	RA	Relapse 210	Aplio 500	12 MHz linear (18L7)	Bilaterally: MCP II-V, radial wrist, ulnar wrist, MTP II-V, Lisfranc, cuneonavicular, Chopart, and ankle joints	N/A	N/A	Only US SMI examination (for comparing machine learning classifiers)	Semi-quantitive scale (four-point 0-3)
Diao et al. (16) China, 2022	RA	Active/ Remission 63/48	Aplio i700	Multifrequency 12-14 MHz linear	Bilaterally: MCP I-V, PIP I-V, knee, wrist, and ankle joints	Axial, longitudinal	N/A	SMI vs. CEUS	Semi-quantitive scale (four-point 0-3)
Matsuo et al. (12) Japan, 2021	RA	Remission/ Relapse 112/9	Aplio 500	12 MHz linear (18L7)	Bilaterally: MCP II-V, radial wrist, ulnar wrist, MTP II-V, Lisfranc, cuneonavicular, Chopart, and ankle joints	Based on OMERACT	Color	SMI result among groups	Semi-quantitive scale (four-point 0-3)
Kandemirli et al. (21) Turkey, 2021	JIA	Active 30	Aplio 500	14 MHz	Knee, hip, ankle, wrist, elbow joints; flexor hallucis longus/tibialis posterior tendons	Longitudinal, transverse	N/A	SMI vs. PD	Semi-quantitative scale (four-point 0-3)
Nas et al. (22) Turkey, 2021	BD	Active 14	Aplio 500 or Aplio i600	High-frequency linear	Distal posterior tibial, anterior tibial, distal superficial femoral, and peroneal arteries	N/A	Both	SMI vs. PD vs. DSA	Semi-quantitative scale (types I-IV)
Wang et al. (17) China, 2021	AS	Remission/ Controls 60/30	N/A	N/A	Sacroiliac joint	N/A	N/A	SMI vs. SWE result among groups	-
Ünal et al. (23) Turkey, 2020	JIA	N/A – Swelling or Arthralgia/ Controls 22/24	Aplio 500	N/A	Knee joint; infraarticular and supraarticular soft tissue (fat pads)	Longitudinal, transverse	N/A	SMI vs. PD vs. SWE	Vascularity index
Jin X al. (18) China, 2020	RA	Active/ Controls 41/20	Aplio 500	14 MHz high-frequency	Suprapatellar recess of the knee joints	N/A	N/A	SMI vs. PD vs. CD	Semi-quantitive scale (four-point, 0-III grades)
Oo et al. (25) Australia, 2020	OA	N/A 89	Aplio 500	Multi-frequency linear (using 10 MHz with 14 L5 MHz transducer)	Suprapatellar, medial and lateral parapatellar knee recesses	Longitudinal, transverse	N/A	SMI vs. PD vs. radiography and MRI	Semi-quantitive scale (four-point 0-3)

Matsuo et al. (13) Japan, 2020	RA	N/A 293	Aplio 500	12 MHz linear	Bilaterally: MCP II-V, radial wrist, ulnar wrist, MTP II-V, Lisfranc, cuneonavicular, Chopart, and ankle joints	N/A	Color	SMI with B-mode among groups	Semi-quantitive scale (four-point 0-3)
Ustabasıoğlu et al. (24) Turkey, 2020	pSS	N/A/ Controls 20/20	Aplio 500	5-14 MHz linear	Parotid and submandibular glands	Longitudinal, transverse	N/A	SMI vs. PD vs. CD	Vascularity index
Lee et al. (27) South Korea, 2019	RA	N/A/ Controls 56/5	Aplio 500	14 MHz	Bilaterally: wrists, MCP, and PIP	N/A	N/A	SMI vs. PD vs. B-mode	Semi-quantitive scale (four-point 0-3)
Horie et al. (14) Japan, 2019	RA	Prodrome of arthritis 15 rats	Aplio i800	Ultrahigh - frequency (8-24 MHz, used 12 MHz)	Ankle joints	Longitudinal	N/A	SMI vs. PD	Vascularity index
Yu et al. (19) China, 2018	RA	Remission 26	Aplio 500	5-14 MHz broadband linear	Bilaterally: wrists, MCP, and PIP	N/A	N/A	SMI vs. PD	Semi-quantitive scale (four-point 0-3)
Lim et al. (28) United Kingdom, 2018	RA OA PsA IA Only arthralgia	N/A - Arthralgia/ Controls 83/10	Aplio 500	18 MHz	Radiocarpal, MCP, PIP, and CMC joints; In 5 patients – tarso-metatarsal, talo-navicular or tibio-talar joints In 2 patients – acromioclavicular joints	Longitudinal, transverse	N/A	SMI vs. PD	Semi-quantitive scale (four-point 0-3)
Yokota et al. (15) Japan, 2018	RA and Non-RA*	Active RA/Non-RA 27/12	Aplio 300	9 or 18 MHz linear	Bilaterally: MCP, PIP, IP joints, wrists, elbows, knees	Longitudinal	Color	SMI vs. PD	Semi-quantitative scale (four-point 0-3)
Orlandi et al. (26) Italy, 2017	RA	N/A/ Controls 30 RA (15 early RA, 15 RA under RTX treatment)/5	Aplio 400	7-18 MHz broadband linear-array	Bilaterally: ulnar recess, MCP I-V and PIP I-V joints	Axial, longitudinal	N/A	SMI vs. PD vs. B-mode	Semi-quantitative scale (four-point 0-3)
Li et al. (20) China, 2016	RA	N/A/ Controls 75/10	Aplio 500	18 MHz broad band linear array	MCP, PIP joints	Longitudinal	N/A	SMI vs. PD	Semi-quantitative scale (four-point 0-3)

AOSSD = adult-onset Still's disease; AS = ankylosing spondylitis; BD = Buerger's disease; CD = color Doppler; CEUS = contrast-enhanced ultrasound; CMC = carpometacarpal; CRP = C-reactive protein; DSA = digital subtraction angiography; ESR = erythrocyte sedimentation rate; GPA = granulomatosis with polyangiitis; IA = inflammatory arthritis; IP = interphalangeal; JIA = juvenile idiopathic arthritis; MCP = metacarpophalangeal; MCTD = mixed connective tissue disease; MRI = magnetic

resonance imaging; MTP = metatarsophalangeal; N/A = not applicable; OA = osteoarthritis; PD = power Doppler; PIP = proximal interphalangeal; PR = polymyalgia rheumatica; PsA = psoriatic arthritis; pSS = primary Sjogren syndrome; RA = rheumatoid arthritis; RTX = rituximab; SLE = systemic lupus erythematosus; SMI = superb microvascular imaging; SpA = spondyloarthropathy; SWE = shear-wave elastography; UA = unclassified arthritis; US = ultrasound.

*2 SpA, 2 PR, 2 OA, 1 SLE, 1 MCTD, 1 AOSD, 1 GPA, 1 UA, 1 sarcoidosis.