E.1 Coupled sensitivity and specificity forest plots

Radiography

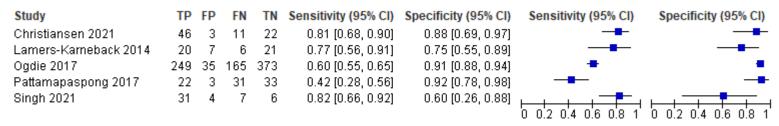
Figure 2: Radiography for the diagnosis of gout



Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Ahmad 2016	30	13	0	12	1.00 [0.88, 1.00]	0.48 [0.28, 0.69]		
Glazebrook 2011	12	2	0	17	1.00 [0.74, 1.00]	0.89 [0.67, 0.99]		
Singh 2021	35	1	3	9	0.92 [0.79, 0.98]	0.90 [0.55, 1.00]		

Ultrasound

Figure 4: Sensitivity and specificity of DC sign on ultrasound for gout



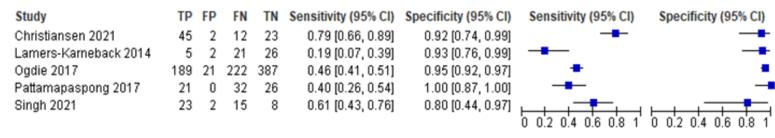


Figure 5: Sensitivity and specificity of tophi on ultrasound for gout

Figure 6: US: aggregates

Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Christiansen 2021	54	17	3	8	0.95 [0.85, 0.99]	0.32 [0.15, 0.54]		
Pattamapaspong 2017	31	3	22	33	0.58 [0.44, 0.72]	0.92 [0.78, 0.98]		

Figure 7: US: erosions

Study	TP FP FN T	N Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Christiansen 2021	44 11 13 1	4 0.77 [0.64, 0.87]	0.56 [0.35, 0.76]		

Figure 8: US: synovial hypertrophy

Study	ΤР	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Christiansen 2021	56	23	1	2	0.98 [0.91, 1.00]	0.08 [0.01, 0.26]		

Figure 9: US: doppler activity

Study	ΤР	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Christiansen 2021	56	23	1	2	0.98 [0.91, 1.00]	0.08 [0.01, 0.26]		0 0.2 0.4 0.6 0.8 1

Figure 10: US: diagnosis of gout (DC sign/ tophus as per OMERACT definitions)

Study	TP	FP	FN	ΤN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Singh 2021	32	4	6	6	0.84 [0.69, 0.94]	0.60 [0.26, 0.88]		· · · · · · · · · · · · · · · · · · ·
_							0 0.2 0.4 0.6 0.8 1	

Diagnostic criteria for gout not defined in the paper but DC sign and tophus as per OMERACT assessed by ultrasound in the paper.

Figure 11: US: any abnormality (DC sign/ snowstorm/ tophus)

Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Lamers-Karneback 2014	25	9	1	19	0.96 [0.80, 1.00]	0.68 [0.48, 0.84]		
Ogdie 2017	320	64	96	344	0.77 [0.73, 0.81]	0.84 [0.80, 0.88]		

Figure 12: US: snowstorm appearance

Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Lamers-Karneback 2014	10	4	16	24	0.38 [0.20, 0.59]	0.86 [0.67, 0.96]		
Ogdie 2017	125	37	287	370	0.30 [0.26, 0.35]	0.91 [0.88, 0.94]		
							0 0.2 0.4 0.6 0.8 1	0 0.2 0.4 0.6 0.8 1

Figure 13: US: all 3 features (DC sign/aggregates/tophi)

Study	ТР	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Pattamapaspong 2017	9	0	44	36	0.17 [0.08, 0.30]	1.00 [0.90, 1.00]	0 0.2 0.4 0.6 0.8 1	

Figure 14: 2 features of gout (DC sign/ snowstorm/ tophus)

Study	TP FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Ogdie 2017	184 19	233	389	0.44 [0.39, 0.49]	0.95 [0.93, 0.97]		

Figure 15: 3 features of gout (DC sign/ snowstorm/ tophus)

Study	TP FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Ogdie 2017	60 10	356	398	0.14 [0.11, 0.18]	0.98 [0.96, 0.99]		
						0 0.2 0.4 0.6 0.8 1	

Figure 16: USS: any abnormality (DC sign/ aggregates/ tophus)

Study	TP	FP	FN	ΤN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Pattamapaspong 2017	40	4	13	32	0.75 [0.62, 0.86]	0.89 [0.74, 0.97]		

Figure 17: USS: DC sign (joints only)

Study	ΤР	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Elsaman 2016	30	2	41	58	0.42 [0.31, 0.55]	0.97 [0.88, 1.00]		-
Loffler 2015	65	51	9	91	0.88 [0.78, 0.94]	0.64 [0.56, 0.72]		

Figure 18: USS: tophi (joints only)

Study	ΤР	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Elsaman 2016	20	0	51	60	0.28 [0.18, 0.40]	1.00 [0.94, 1.00]		

Figure 19: USS: erosions (joints only)

Study	TP FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Elsaman 2016	28 23	43	37	0.39 [0.28, 0.52]	0.62 [0.48, 0.74]		

Figure 20: USS: diagnosis of gout (joints only). Based on one or more of the 4 sonographic signs (echogenic foci, erosions, DC signs , tophi)

Study	ΤР	FP	FN	ΤN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Elsaman 2016	61	8	10	52	0.86 [0.76, 0.93]	0.87 [0.75, 0.94]		

Figure 21: USS: echogenic foci (joints only)

Study	TP FP FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Elsaman 2016	56 21 15	39	0.79 [0.68, 0.88]	0.65 [0.52, 0.77]		

Figure 22: USS: echogenic foci + DC sign (joints only)

Study	TP	FP	FN	ΤN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Elsaman 2016	24	2	47	58	0.34 [0.23, 0.46]	0.97 [0.88, 1.00]		

Figure 23: USS: echogenic foci +/or DC sign (joints only)

Study	TP	FP	FN	ΤN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Elsaman 2016	61	21	10	39	0.86 [0.76, 0.93]	0.65 [0.52, 0.77]	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
							0 0.2 0.4 0.6 0.8 1	

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Figure 24: USS: DC sign + doppler activity (joints only)

Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Loffler 2015	50	35	24	107	0.68 [0.56, 0.78]	0.75 [0.67, 0.82]		

Figure 25: USS: DC sign + doppler activity + SUA (joints only)

Study	ΤР	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Loffler 2015	31	10	43	132	0.42 [0.31, 0.54]	0.93 [0.87, 0.97]		