Table 1. Characteristics of the unenhanced MR pulmonary angiography studies

Author	Year	Country	Study Design	Center	n	PE Prevalence (%)	Time interval*	Selection	Scanner	Sequences	MR phased-array coil	Non-diagnostic exams (%)
Kalb et al.	2012	USA	Prospective	Single	22	38.1 (67/176) **	30.3h	Confirmed	1.5T, Siemens Healthcare	Non–breath-hold free-induction TrueFISP	8-channel anterior coil + 6-channel posterior coil	1/23 (4.3)
Kaya et al.	2019	Turkey	Prospective	Single	44	75.0 (33/44)	72h	Suspected	1.5T, GE Medical Systems	Non–breath-hold and breath-hold fat-suppressed bSSFP	8-channel torso coil	1/44 (2.3)
Kluge et al.	2006	Germany	N/A	Single	62	31.0 (19/62)	16min	Suspected	1.5T, Siemens Healthcare	Non-breath TrueFISP	6-element coil + two-dorsal segments of the spine-array coil	8/62 (12.9)
Salehi Ravesh et al.	2020	Germany	Prospective	Single	30	50.0 (30/60)¶	24h	Suspected	1.5T, Siemens Healthcare	Cartesian bSSFP-MRA, ECG-gated radial QISS-MRA	18-element body coil + 32-element spine coil	44/1500 (2.9)
Nyren et al.	2016	Sweden	Prospective	Single	70	41.4 (29/70)¶	48h	Suspected	1.5T, Siemens Healthcare	2D free-breathing SSFP	18-element body coil + 32-element spine coil	N/A
Osman et al.	2016	Egypt	Prospective	Single	50	70.0 (35/50)	48h	Suspected	1.5T, Philips	Axial & Coronal WB bSSFP; Axial BB	8-channel cardiac coil	N/A
Pasin et al.	2017	Brazil	Prospective	Single	91	22.0 (20/91)	N/A	Suspected	1.5T, Siemens Healthcare	Non-breath TrueFISP	8-channel body surface coil	N/A

Note. - BB = black blood; bSSFP = balanced steady-state free precession; ECG = electrocardiography; MRA = magnetic resonance angiography; N/A = not available; PE = pulmonary embolism; QISS = quiescent-interval slice-selective; TrueFISP = true fast imaging with steady-state precession; WB = white blood.
* Average time interval between the CTPA and MRI scans
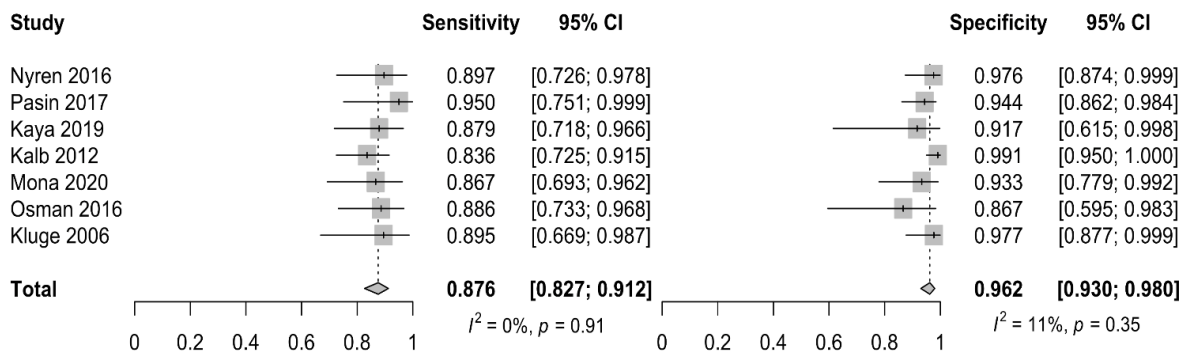** Authors only reported PE prevalence per pulmonary artery branches, not per-patient
¶ In these studies, cases of PE were paired with healthy volunteers without PE

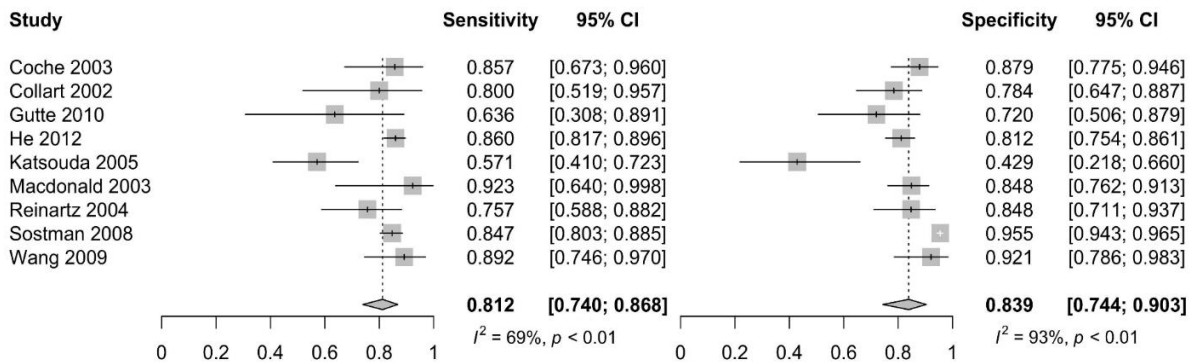**Table 2. Characteristics of the included V/Q studies**

Author	Year	Country	Study Design	Center	Sample size	PE Prevalence (%)	Average interval*	Selection	Scanner	RP - Ventilation	RP - Perfusion	Diagnostic criteria	Non-diagnostic exams (%)
Coche et al.	2003	Belgium	Prospective	Single	94	29.8 (28/94)	24h	Suspected	Single-headed γ-camera, 400AC, GE Medical Systems	81mKr	99mTc-MAA	PIOPED	N/A
Collart et al.	2002	Belgium	Prospective	Single	70	22.8 (15/66)	24h	Suspected	Double-headed γ-camera, PRISM 2000 XP, Picker	81mKr	99mTc-MAA	PISA-PED	44/70 (62.9)
Gutte et al.	2010	Denmark	Prospective	Single	41	30.5 (11/36)	N/A	Suspected	Single-headed γ-camera, ADAC, Philips Medical Systems	81mKr	99mTc-MAA	N/A	N/A
He et al.	2012	China	Prospective	Multi	544	59.0 (321/544)	24-72h	Suspected	Double-headed γ-camera, ECAM, Siemens	99mTc Technegas	99mTc-MAA	PISA-PED	N/A
Katsouda et al.	2005	Greece	Prospective	Single	63	66.7 (42/63)	3-12h	Suspected	N/A	N/A	N/A	PIOPED	14/63 (22.2)
Macdonald et al.	2004	Australia	Prospective	Single	112	24.1 (27/112)	24h	Suspected	N/A	99mTc Technegas	99mTc-MAA	Modified PIOPED	81/112 (72.3)
Reinartz et al.	2004	Germany	Retrospective	Single	83	44.6 (37/83)	72h	Suspected	Double-headed γ-camera, ECAM, Siemens	99mTc Technegas	99mTc-MAA	Modified PIOPED	15/83 (18.1)
Sostman et al	2008	USA	Prospective	Multi	910	22.6 (168/742)	N/A	Confirmed	Different single- and double-headed γ-cameras	133Xe or 99mTc-DTPA or 99mTc-PYP	99mTc-MAA	PIOPED II	241/742 (26.5)
Wang et al.	2009	China	Prospective	Single	82	51.2 (42/82)	24-72h	Suspected	Single-headed γ-camera, GCA 7100A, Toshiba	99mTc-DTPA	99mTc-MAA	Modified PIOPED	5/82 (6.1)

Note. - 133Xe = xenon gas; 81mKr = krypton 81m; 99mTc = technetium 99m; DTPA = diethylenetriaminepentaacetic acid; MAA = macroaggregated albumin; N/A = not available; PE = pulmonary embolism; PIOPED = Prospective Investigation of Pulmonary Embolism Diagnosis; PISAPED = Prospective Investigative Study of Acute Pulmonary Embolism Diagnosis; PYP = pyrophosphate; RP = Radiopharmaceutical
* Average time interval between the CTPA and V/Q scans

Figure 1. Forest plot of the pooled sensitivity of non-contrast MR pulmonary angiography in the detection of pulmonary embolism

Study	Sensitivity	95% CI		Specificity	95% CI
Nyren 2016	0.897	[0.726; 0.978]		0.976	[0.874; 0.999]
Pasin 2017	0.950	[0.751; 0.999]		0.944	[0.862; 0.984]
Kaya 2019	0.879	[0.718; 0.966]		0.917	[0.615; 0.998]
Kalb 2012	0.836	[0.725; 0.915]		0.991	[0.950; 1.000]
Mona 2020	0.867	[0.693; 0.962]		0.933	[0.779; 0.992]
Osman 2016	0.886	[0.733; 0.968]		0.867	[0.595; 0.983]
Kluge 2006	0.895	[0.669; 0.987]		0.977	[0.877; 0.999]
Total	**0.876**	**[0.827; 0.912]**		**0.962**	**[0.930; 0.980]**

$I^2 = 0\%, p = 0.91$ $I^2 = 11\%, p = 0.35$

Figure 2. Forest plot of the pooled specificity of V/Q scintigraphy in the detection of pulmonary embolism

Study	Sensitivity	95% CI		Specificity	95% CI
Coche 2003	0.857	[0.673; 0.960]		0.879	[0.775; 0.946]
Collart 2002	0.800	[0.519; 0.957]		0.784	[0.647; 0.887]
Gutte 2010	0.636	[0.308; 0.891]		0.720	[0.506; 0.879]
He 2012	0.860	[0.817; 0.896]		0.812	[0.754; 0.861]
Katsouda 2005	0.571	[0.410; 0.723]		0.429	[0.218; 0.660]
Macdonald 2003	0.923	[0.640; 0.998]		0.848	[0.762; 0.913]
Reinartz 2004	0.757	[0.588; 0.882]		0.848	[0.711; 0.937]
Sostman 2008	0.847	[0.803; 0.885]		0.955	[0.943; 0.965]
Wang 2009	0.892	[0.746; 0.970]		0.921	[0.786; 0.983]
	0.812	**[0.740; 0.868]**		**0.839**	**[0.744; 0.903]**

$I^2 = 69\%, p < 0.01$ $I^2 = 93\%, p < 0.01$

Figure 3. Summarized receiver-operating curves (SROC) using a bivariate approach