Online Supplemental Table 1. Study characteristics of 7 studies

Author Year Region Period

India

India

Germany

Total N

84

30

150

69

34

128

199

2013 - 2016

2017 - 2019

2012 - 2020

Design

R

R

R

R

R

R

NOS

4

210110112		Guillary	
Ashour	2021	Egypt	2018 - 2020
Abdelrahman	2020	Egypt	2018 - 2020
Wangaryattawanich	2020	United States	2006 - 2018
Hsu	2019	United States	2014-2016

P, prospective; R, retrospective; NOS, Newcastle-Ottawa Scale

2022

2022

2022

Jajodia

Kumar

Elsholtz

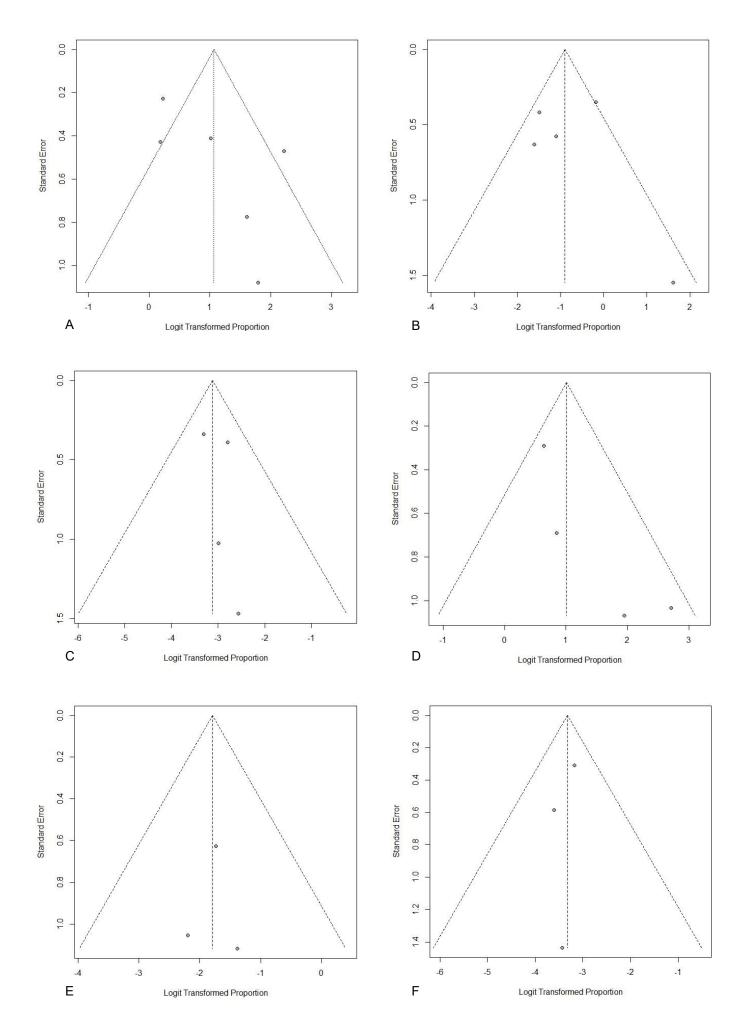
	Sex			Treatment	Imaging	СТ	device	MRI	device	PET	device	Imaging period	Referen	ce standard	
Author	(M/F)	Age	Tumor subsite	method	modality	Vendor	Model	Vendor	Model	Vendor	Model	from therapy (month)	Recurrence	non-recurrence	Evaluator
Jajodia	NR	59 (median)	Oral cavity	Sur	CEMRI	NA	NA	Siemens	Avant 1.5T	NA	NA	3≥	His or FU	FU	1 head and neck radiologist (20yr)
Kumar	28/2	49 (mean)	Hypopharynx Oropharynx Larynx	CRT	CECT	GE Healthcare	NA	LightSpeed VCT 64	NA	NA	NA	3≥	His or FU	FU or His	2 radiologists (8, 17yr)
Elsholtz	85/65	62 (median)	Oral cavity	$Sur \pm CRT$ $Sur \pm RT$	CEMRI CECT	NR	NR	NR	NR	NR	NR	1.5≥	His or FU	FU	2 head and neck radiologists (6, 7yr)
Ashour	41/28	50.6 (mean)	Larynx Oral cavity Oropharynx Hypopharynx Sinonasal cavity Skull base Nasopharynx	Sur ± RT CRT Sur ± CRT RT	CEMRI	NA	NA	Philips	Infenia 1.5T	NA	NA	2.5	His or FU	FU or His	1 neuroradiologist
Abdelrahman	27/7	54.5 (mean)	Salivary glands Oral cavity Larynx	NR	CEMRI CECT	GE Healthcare	Optima 660 128 Slice CT Scanner	Philips	Achieva 1.5T	NA	NA	1.5≥	His or FU	FU or His	2 head and neck radiologists (11, 15yr)
Wangaryattawanich	97/31	59 (mean)	Oropharynx Oral cavity Larynx Hypopharynx Nasopharynx Unknown primary Skin	Sur ± RT CRT Sur ± CRT RT	PET/CT	NA	NA	NA	NA	GE Healthcare Siemens	Discovery Emotion	2-3≥	His or FU	FU	1 neuroradiologist
Hsu	141/58	63.4 (mean)	Parotid glands Oropharynx Oral cavity Larynx Hypopharynx Nasopharynx Unknown primary Skin Parotid glands	CRT Sur ± CRT Sur + RT	PET/CT and CECT	NA	NA	NA	NA	GE Healthcare	Discovery PET/CT 600 Discovery PET/CT 690	3≥	His or FU	FU or His	1 of 4 dedicated head and neck radiologists (30, 15, 11, 9yr)

Online Supplemental Table 3. Recurrence and non-recurrence lesions in each NI-RADS category in 7 studies (number)

Author	Primary site NI-RADS 1 Author		Primary sit	e NI-RADS 2	Primary sit	e NI-RADS 3	Lymph node	es NI-RADS 1	Lymph nodes NI-RADS 2		Lymph nodes NI-RADS 3	
Author	Recurrence	Non-recurrence	Recurrence	Non-recurrence	Recurrence	Non-recurrence	Recurrence	Non-recurrence	Recurrence	Non-recurrence	Recurrence	Non-recurrence
Jajodia	NA	NA	15	18	46	5	NA	NA	NA	NA	NA	NA
Kumar	0	6	4	12	6	1	NA	NA	NA	NA	NA	NA
Elsholtz	7	114	2	0	10	2	3	110	1	9	15	1
Ashour	1	20	3	15	22	8	NA	NA	NA	NA	NA	NA
Abdelrahman	NA	NA	NA	NA	NA	NA	0	15	1	4	7	1
Wangaryattawanich	NA	NA	NA	NA	44	35	NA	NA	NA	NA	34	18
Hsu	9	245	7	31	12	10	11	263	3	17	7	3

NA, not available

Online Supplemental Figure 1: Funnel plots of the results of proportional meta-analyses of the recurrence rates for each NI-RADS category



A) Funnel plot of the result of proportional meta-analyses of the recurrence rate of NI-RADS3 in the primary lesion B) Funnel plot of the result of proportional meta-analyses of the recurrence rate of NI-RADS2 in the primary lesion C) Funnel plot of the result of proportional meta-analyses of the recurrence rate of NI-RADS1 in the primary lesion D) Funnel plot of the result of proportional meta-analyses of the recurrence rate of NI-RADS3 in the lymph node E) Funnel plot of the result of proportional meta-analyses of the recurrence rate of NI-RADS2 in the lymph node F) Funnel plot of the result of proportional meta-analyses of the recurrence rate of NI-RADS1 in the lymph node

Online Supplemental Figure 2: Forest plot of the summary estimated sensitivity (A), specificity (B), and diagnostic odds ratio (C) in the primary site with NI-RADS3 as the cutoff

Study	Events	Total	Proportion	95%-CI
Kumar 2022	6	10 -	0.600	[0.262; 0.878]
Elsholtz 2022	10	19	0.526	[0.289; 0.756]
Ashour 2021	22	26		[0.651; 0.956]
Hsu 2019	12	28 —		[0.245; 0.628]
Random effects mod		83	0.606	6 [0.395; 0.784]
Heterogeneity: $I^2 = 68\%$,	$\tau^2 = 0.5108$			
A		C	0.7 0.8 0.9 y	

Study	Events	Total	Proportion	95%-CI
Kumar 2022	18	19		7 [0.740; 0.999]
Elsholtz 2022	114	116	0.983	3 [0.939; 0.998]
Ashour 2021	35	43 -	0.814	4 [0.666; 0.916]
Hsu 2019	276	286	0.965	5 [0.937; 0.983]
Random effects model		464		6 [0.846; 0.983]
Heterogeneity: $I^2 = 82\%$, τ	= 1.0400	p < 0.0		
В			0.7 0.75 0.8 0.85 0.9 0.95 Specificity	

	Experim	nental	C	ontrol			
Study	Events	Total	Events	Total	Odds Ratio	OR	95%-CI
Kumar 2022	6	7	4	22	- i	27.000	[2.504; 291.186]
Elsholtz 2022	10	12	9	123		63.333	[12.007; 334.074]
Ashour 2021	22	30	4	39	_	24.062	[6.471; 89.480]
Hsu 2019	12	22	16	292		20.700	[7.777; 55.095]
Common effect model Heterogeneity: $I^2 = 0\%$, τ^2		71		476		26.557	[13.452; 52.428]
C	1.5				0.01 0.1 1 10 100 Diagnostic Odds Ratio		

Online Supplemental Figure 3: Forest plot of the summary estimated sensitivity (A), specificity (B), and diagnostic odds ratio (C) in the primary site with NI-RADS2 as the cutoff

Study	Events	Total						P	roportion	95%-CI
Kumar 2022	10	10			-	-	,	-		[0.692; 1.000]
Elsholtz 2022 Ashour 2021	12 25	19 — 26				-	_		0.962	[0.384; 0.837] [0.804; 0.999]
Hsu 2019	19	28	95						0.679	[0.476; 0.841]
Random effects mo Heterogeneity: $I^2 = 639$	Control of the contro	83 7, p = 0.05	i	Ī	Ŧ	Ť	-		0.818	[0.545; 0.944]
A	8	0.4	0.5	0.6 Se	0.7 ensitiv	0.8 rity	0.9	1		

Study	Events	Total		Proportion	95%-CI
Kumar 2022	6	19 -	-		[0.126; 0.566]
Elsholtz 2022 Ashour 2021	114 20	116 43		0.465	[0.939; 0.998] [0.312; 0.623]
Hsu 2019	245	286			[0.811; 0.895]
Random effects mode Heterogeneity: $I^2 = 95\%$, 1		464 8, p < 0.01		0.766	[0.295; 0.962]
280 N N			0.2 0.4 0.6	0.8	
В			Specificity		

	Experin	nental	C	ontrol			
Study	Events	Total	Events	Total	Odds Ratio	OR	95%-CI
Kumar 2022	10	23	0	6		10.111	[0.510; 200.536]
Elsholtz 2022	12	14	7	121	 	97.714 [18.206; 524.436]
Ashour 2021	25	48	1	21	- 	21.739	[2.698; 175.175]
Hsu 2019	19	60	9	254	-	12.615	[5.342; 29.791]
Common effect model Heterogeneity: $I^2 = 36\%$, τ		145 4, p = 0).19	402		18.867	[9.384; 37.933]
С		35.J			0.01 0.1 1 10 100 Diagnostic Odds Ratio		

Online Supplemental Figure 4: Forest plot of the summary estimated sensitivity (A), specificity (B), and diagnostic odds ratio (C) in the lymph node with NI-RADS3 as the cutoff

Study	Events	Total				Proportion	95%-CI
Elsholtz 2022	15	19			-	0.789	[0.544; 0.939]
Abdelrahman 2020	7	8	<u> </u>		-	0.875	[0.473; 0.997]
Hsu 2019	7	21 —	1	-		0.333	[0.146; 0.570]
Random effects mod		48	==		_	0.669	[0.289; 0.909]
Heterogeneity: $I^2 = 81\%$,	$\tau^2 = 1.5145$	5, p < 0.01		18 173	1		
A		0.2	0.4 Se	0.6 ensitivity	0.8		

Study	Events	Total					Proportion	95%-CI
Elsholtz 2022 Abdelrahman 2020 Hsu 2019	119 19 280	120 20 — 283				-	0.950	[0.954; 1.000] [0.751; 0.999] [0.969; 0.998]
Random effects mode Heterogeneity: $I^2 = 6\%$, τ		p = 0.34	Ī		1	_ ⇒	0.986	[0.967; 0.994]
В		• 10000000	8.0	0.85 Spec	0.9 cificity	0.95		

	Experin	nental	C	ontrol				
Study	Events	Total	Events	Total	Odds F	Ratio	OR	95%-CI
Elsholtz 2022	15	16	4	123	9	+ =		[46.746; 4260.011]
Abdelrahman 2020	1	8	1	20				[7.288; 2427.127]
Hsu 2019	1	10	14	294			40.007	[10.891; 199.967]
Common effect mode		34		437			95.981	[31.098; 296.239]
Heterogeneity: $I^2 = 28\%$,	$\tau^2 = 0.621$	8, p = 0	0.25		0.004 0.4 4	10 1000		
C					0.001 0.1 1 Diagnostic C	10 1000 Odds Ratio		

Online Supplemental Figure 5: Forest plot of the summary estimated sensitivity (A), specificity (B), and diagnostic odds ratio (C) in the lymph node with NI-RADS2 as the cutoff

Study	Events	Total	Proportio	n 95%-CI
Elsholtz 2022 Abdelrahman 2020 Hsu 2019	16 8 10	19 8 21 -	1.00	2 [0.604; 0.966] 0 [0.631; 1.000] 6 [0.257; 0.702]
Random effects mode Heterogeneity: $I^2 = 74\%$,	The state of the s		2	7 [0.385; 0.940]
A		0	0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 Sensitivity	

Study	Events	Total					Proportion	95%-CI
Elsholtz 2022 Abdelrahman 2020 Hsu 2019	110 15 263	20 —		-		-	0.750	[0.852; 0.959] [0.509; 0.913] [0.893; 0.956]
Random effects model. Heterogeneity: $I^2 = 71\%$, τ^2		423 0, $p = 0.03$		0.7	—== 1		0.893	[0.788; 0.950]
В			0.6	0.7 Specif	0.8 ficity	0.9		

	Experin	nental	C	ontrol			
Study	Events	Total	Events	Total	Odds Ratio	OR	95%-CI
Elsholtz 2022	16	26	3	113	1	58.667	[14.573; 236.177]
Abdelrahman 2020	8	13	0	15		-47.909	[2.353; 975.351]
Hsu 2019	10	30	11	274		11.955	[4.534; 31.522]
Common effect mode	- 4330	69		402		21.264	[9.852; 45.897]
Heterogeneity: $I^2 = 46\%$,	$\tau^2 = 0.5848$	8, p = 0	0.16				
С					0.01 0.1 1 10 100 Diagnostic Odds Ratio		