

**SUPPLEMENTAL TABLE 1.** Modified QUADAS-2 questions used to assess the methodological quality of the included studies.

	<b>Risk of Bias</b> (Low/ High/ Unclear risk)	<b>Concerns regarding applicability</b> (Low/ High/ Unclear risk)
<b>Patient Selection</b>	<p><b>Could the selection of patients introduced bias?</b></p> <ul style="list-style-type: none"> <li>▪ Was a consecutive or random sample of patients enrolled? (Yes/ No)</li> <li>▪ Was a case-control design avoided? (Yes/ No)</li> <li>▪ Did the study avoid inappropriate exclusion? (Yes/ No)</li> </ul>	<p><b>Are there concerns that the spectrum of included patients do not match the topic of our study?</b></p>
<b>Index Test</b>	<p><b>Could the conduct or interpretation of the index test have introduced bias?</b></p> <ul style="list-style-type: none"> <li>▪ Were the index test results interpreted blind to the results of the reference standard? (Yes/ No)</li> </ul>	<p><b>Are there concerns that the index test, its conduct, or interpretation differs from the topic of our study?</b></p>
<b>Reference Standards</b>	<p><b>Could the reference standard or its conduct have introduced bias?</b></p> <ul style="list-style-type: none"> <li>▪ Are the reference standard likely to correctly classify the target condition? (Yes/ No)</li> <li>▪ Was the reference standards result interpreted without knowledge of the results of the index test? (Yes/ No)</li> </ul>	<p><b>Are there concerns that the target condition as defined by the reference standard does not match the review question?</b></p>
<b>Flow and Timing</b>	<p><b>Could the patient flow have introduced bias?</b></p> <ul style="list-style-type: none"> <li>▪ Was there an appropriate interval between index test and the reference standard? (Yes/No)</li> <li>▪ Did all patients receive a reference standard? (Yes/ No)</li> <li>▪ Were all patients included in the analysis? (Yes/ No)</li> </ul>	

**SUPPLEMENTAL Table 2. Summary of characteristics of the included studies**

Author, Year	Country	Study design	N. patients (M: F)	Median age (range- Yrs)	Paraneoplastic presentation (N)	Patients with Positive paraneoplastic Ab (type of Ab) †	Previous history of treated cancer	Prior negative or inconclusive imaging ‡
Rees JH, 2001	UK	R	43 (24:19)	62 (39- 86)	Neurologic (43)	9/43 (20.9%) [8 anti-Hu, 1 anti-Yo]	3 [1 Bladder ca, 1 Melanoma, 1 Breast ca]	43/43 (100%)
Berner U, 2003	Germany	R	30 (17:13)	55 (22- 76)	Dermatologic (24) Neurologic (6)	NR	NR	12/ 12 (100%)
Younes-Mhenni S, 2004	France	P	20 (12:8)	62 (49- 78)	Neurologic (20)	20/20 (100%) [12 anti-Hu, 1 anti Hu+anti CV2, 1 anti CV2, 4 anti-Yo, 1 anti Ri, 1 anti amphiphysin]	4 [2 Ovarian ca, 1 Breast ca, 1 Vocal cord ca]	20/20 (100%)
Linke R, 2004	Germany	P	13 (4:9)	59 (22- 79)	Neurologic (13)	13/13 (100%) [8 anti-Hu, 4 anti-Yo, 1 Anti-Tr]	6 [1 Neuroblastoma, 3 Ovarian ca, 1 SCLC, 1 Breast ca]	10/13 (77%)
Patel RR, 2008	US	R	104 (46:58)	56 (17- 84)	Neurologic (104)	73/104 (70.2%) [14 AchR, 19 ANNA, 1 Amphiphysin, 11 CRMP-5 IgG, 6 Striational, 9 N type Na channel, 9 VGCC, 12 K channel, 9 Glutamic acid decarboxylase]	NR	45 /71 (63.4%)
Hadjivassiliou M, 2008	UK	P	80 (NA)	NR	Neurologic (80)	7/80 (8.7%) [5 Anti-Hu, 2 voltage-gated Ca Ab]	NR	80/80 (100%)
Masangkay N, 2008	US	R	22 (8:14)	NR (28- 82)	Neurologic (22)	NR	NR	11/22 (50%)
lyngkaran G, 2009	Australia	R	24 (9: 15)	62 (36- 80)	Neurologic (24)	NR	NR	NR
Bannas P, 2010 *	Germany	R	46 (22:24)	65 (21- 81)	Neurologic (46)	4/40 (10%) [2 Anti-Hu, 1 anti-Ri, 1 CV2/CRMP5]	NR	38/46 (82.6%)

McKeon A, 2010 *	US	R	56 (28:28)	61 (22- 80)	Neurologic (56)	39/56 (69.6%) [6 ANNA-I, 2 PCA, 8 CRMP-5 IgG, 1 Amphihysin A, 9 AChR, 7 VGCC, 6 Striational, 2 VGKC, 1 Ma1, 3 unclassified]	10 [3 Breast ca, 2 Testicular ca, 1 Uterine ca, 1 Myeloma, 1 Lymphoma, 1 Lung ca, 1 Prostate ca]	56/56 (100%)
Selva-O'Callaghan A, 2010	Spain	P	55 (18:37)	58 (46- 69)	Dermatomyositis/ Polymyositis (55)	NR	0	46/55 (83.6%)
Grozdic I, 2011	Serbia	R	124	NR	NR	NR	NR	NR
Han S, 2011	Scotland	R	47 (18: 29)	58 (46- 70)	All types	NR	NR	NR
Matsushia A, 2012	Japan	R	27 (16:11)	65 (41- 96)	Neurologic (27)	2/7 (28.6%) [1 anti VGCC, 1 anti Hu]	2 [1 Lung ca, 1 HCC]	NR
Vaidyanathan S, 2012	UK	R	68 (24:44)	58 (23- 82)	Neurologic (55), Musculoskeletal (5), Endocrine (3), Constitutional (5)	34/68 (50%) [6 CA19-9, 6 CEA, 3 CA-125. 3 Anti-Hu, 3 Antiampiphysin, 2 Anti-MAG, 2 Anti-NMDA, 2 IgG, 1 Anti MA-2, 1 Anti Yo, 1 Anti CV2, 1 Anti AChR, 1 Anti PNMA, 1 Anti VGCC, 1 Anti VGKC, 1 beta HCG, 1 Anti-Ri]	8 [1 Breast ca, 1 Rectal ca, 1 Thyroid ca, 1 NHL, 1 Melanoma, 1 AML, 1 Lung ca, 1 Pancreatic ca]	NR
Chakraborty PS, 2013	India	R	65 (44: 21)	65 (52- 78)	Neurologic (65)	12/ 65 (18.5%) [Anti-Hu]	NR	NR
Fuster D, 2013	Spain	R	24 (13: 11)	(38- 87)	Neurologic (18), Hematologic (3), others (3)	NR	NR	NR
Schramm N, 2013	Germany	R	66 (28:38)	60 (21- 87)	Neurologic (60)	19/58 (32.7%)	NR	54/66 (81.8%)
Crandall J, 2014	US	R	226 (102:124)	60 (5- 86)	All types	NR	NR	NR
Gupta N, 2014 *	India	R	80 (58: 22)	NR (10- 86)	Neurologic (80)	NR	NR	NR

Kristensen SB, 2015	Denmark	R	137 (70:67)	61 (19- 63)	Neurologic (67) Dermatologic (18) Rheumatologic(25) ) Nephrologic (6) Hematologic (2) others (19)	NR	NR	NR
Penapardo FJ, 2016	Spain	R	73(47:26)	61 (NR)	Neurologic (73)	14/55 (25.4%)	8 [1 Lymphoma, 2 Breast ca, 1 Prostate ca, 2 Colorectal ca, 1 Teratoma, 1 Renal ca]	NR
Vatankulu B, 2016	Turkey	R	42 (26:16)	58 (14- 82)	Neurologic (42)	21/34 (61.8%) [19 Anti-Hu, 18 Anti-yo, 9 Anti-Ri]	NR	NR
Gupta K, 2016	India	R	44 (25: 19)	NR	NR	NR	NR	NR

\*Excluded from the quantitative analysis No reference standard for PET negative patients were reported

†: Proportion of patients with at least one positive paraneoplastic antibody among those with available results for paraneoplastic antibodies

‡: Proportion of patients with prior negative or inconclusive radiologic investigation among those with available prior imaging examinations

Ca, cancer; R, retrospective; P, prospective; Ab, antibody; NR, not reported; NHL, non-Hodgkin lymphoma; HCC, hepatocellular carcinoma; M:F, male to female ratio; VGCC, Voltage gated Ca Channel; VGKC, Voltage gated K channel; CRMP-5 IgG, collapsin response-mediator protein 5 IgG; Yrs, years.

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**SUPPLEMENTAL Table 4.** Detailed information on true positive, false negative and false positive results among the included studies.

Author, Year	Detailed information on true positive, false negative and false positive sites (N)
Rees JH, 2001	<p><b>TP (9):</b> SCLC (3), Lung (2), Adenoca unknown primary (1), Cecal ca (2), Colon ca (1)</p> <p><b>FN (1):</b> Breast ca (1)</p> <p><b>FP (7):</b> Prostate (1), pleural fibrosis (1), hilum (1), Died w/o PM [Hilum (4)]</p>
Berner U, 2003	<p><b>TP (6):</b> Bronch ca(3), Colon ca (1), Ovarian ca (1), Lymphoma (1)</p> <p><b>FN (1):</b> Bronchial ca (1)</p> <p><b>FP (2):</b> Adrenal adenoma (1), NR (1)</p>
Younes-Mhenni S, 2004	<p><b>TP (15):</b> SCLC (9), Lung adenoca (2), Breast ca (2), Ovarian Ca (1), Thymoma (1)</p> <p><b>FN (1):</b> Abdominal metastasis from ovarian ca (1), SCLC (1)</p> <p><b>FP (3):</b> Parotid (1), mediastinum (2)</p>
Linke R, 2004	<p><b>TP (10):</b> SCLC (5), HL (1), LN adenoca (1), Ovarian ca (2), Neuroblastoma (1)</p> <p><b>TN (0):</b> None</p> <p><b>FP (1):</b> Axillary node (1)</p>
Patel RR, 2008	<p><b>TP (8):</b> thymoma (1), mixed adenoca/SCLC (1), mixed large cell/SCLC(1), SCLC (4), adenoca of unknown origin (1)</p> <p><b>FN (2):</b> Serous ca of fallopian tube (1), metastatic spindle cell uterine ca (1)</p> <p><b>FP (16):</b> NR</p>
Hadjivassiliou M, 2008	<p><b>TP (9):</b> SCLC (4), NHL (1), Colon ca (1). Thymoma (1), Endometrial ca (1), high clinical suspicion (2)</p> <p><b>FN (3):</b> SCLC in LN (1), high clinical suspicion (2)</p> <p><b>FP (9):</b> Liver (1), Mediastinum (1), Hilum (1), Lung (1), Died w/o PM [Thoracic vertebra (1)]</p>



	and Mediastinum (4)]
Masangkay N, 2008	NR
Iyngkaran G, 2009	NR
Bannas P, 2010	<b>TP (6):</b> Neuroendocrine ca (1), SCLC (1), Adenoca (1), Gastric ca (1), Thymoma (1) <b>FN:</b> Not mentioned <b>FP (4):</b> Vagina (1), Urinary bladder (1), Uterus (1), Maxilla (1)
McKeon A, 2010	<b>TP (10):</b> PC Thyroid (2), NSCLC (1), SCC of tonsil (1), Lung adenoca (1), Prostate ca (1), SCLC (2), Breast ca (1), Colon ca (1) <b>FN:</b> Not mentioned <b>FP (12):</b> Colon (1), Thyroid (2), LN (4), Lung (2), Esophagus (1), Cecum (1), Multiple foci (1)
Selva-O'Callaghan A, 2010	<b>TP (6):</b> Pancreatic ca (1), Lung ca (1), Colon ca (1), Breast ca (3) <b>FN (3):</b> Breast ca (2), Vaginal ca (1) <b>FP (1):</b> colon (1)
Grozdic I, 2011	<b>TP (13):</b> NR <b>FN (1):</b> cerebral tumor (1)
Han S, 2011	<b>TP (7):</b> PTC (1) SCLC (2), pulmonary carcinoid (1), recurrent colorectal ca (1), multiple metastases (1), active TB (1) <b>FN (2):</b> Lymphoma (1), brain tumor (1) <b>FP (6):</b> Vocal cord (1), thyroid (1), stomach (1), colon (1), ovary (1), bone marrow (1)
Matsushia A, 2012	<b>TP (5):</b> SCLC (1), Colon ca (1), Pancreas ca (1), Lung adenoca (1), PCT (1) <b>FN (1):</b> HCC (1) <b>FP (1):</b> lung granuloma (1)
Vaidyanathan S, 2012	<b>TP (8):</b> Pulmonary carcinoid (1), PCT (2), SCLC (2), Sigmoid ca (1), LN enlargement by CT

	<p>treated as Ca (1), Died soon after (1)</p> <p><b>FN (0):</b> None</p> <p><b>FP (11):</b> NR</p>
Chakraborty PS, 2013	<p><b>TP &amp; FP (14):</b> Thyroid ca (4), Lung ca (2), lymphoma (2), Colon ca (2), breast ca (1), Prostate ca (1), brain metastases (1), bone metastases (1)</p> <p><b>FN (0):</b> None</p>
Fuster D, 2013	<p><b>TP &amp; FN (9):</b> Lung ca (4), CNS tumor (3), ovarian ca (1), duodenal ca (1)</p> <p><b>FP (1):</b> NR</p> <p><b>FN (1):</b> NR</p>
Schramm N, 2013	<p><b>TP (9):</b> SCLC (1), Cervical ca (2), Bladder ca/bronchial ca (1), Breast ca (2), Ovarian ca (1), Lung adenoca/ tonsil ca (1), Tonsil ca (1)</p> <p><b>FN (0):</b> None</p> <p><b>FP (5):</b> Thymus (1), NR (4)</p>
Crandall J, 2014	<p><b>TP (26):</b> SCLC (6), Adenoca of UO (2), Ca of UO (1), Pancreas ca (3), Ovarian ca (2), NSCLC (2), Lymphoma (2), Thyroid ca (1), Renal ca (1), Esophageal ca (1), Colorectal ca (1), Breast ca (1), high clinical suspicion (3)</p> <p><b>FN (20):</b> NR</p> <p><b>FP (8):</b> NR</p>
Gupta N, 2014	<p><b>TP (8):</b> Lung ca (3), urinary bladder transitional cell ca (1), Colon ca (2), Sarcoidosis (1), Tuberculosis (1)</p> <p><b>FP (4):</b> NR</p>
Kristensen SB, 2015	<p><b>TP (9):</b> NSCLC (4), Breast ca (1), Lymphoma (2), Pheochromocytomoa (1), Unknown primary (1)</p> <p><b>FN (3):</b> Gastric ca(1), Glottis ca (1), Parotid Small cell neuroendocrine ca(1)</p> <p><b>FP (22):</b> Lymph node (5), pelvis (1), breast (3), intestine (3), rectum (4), lung (4), uterus (1),</p>

	bone marrow (1)
Penapardo FJ, 2016	<b>TP (7):</b> Lung ca (3), Breast ca (1), Lymphoma (1), Rectal ca (1), NR (1) <b>FN (4):</b> Prostate ca (1), Bladder ca (1), NR (2) <b>FP (18):</b> NR
Vatankulu B, 2016	<b>TP (6):</b> NHL (1), Thymic ca (1), SCLC (3), Gallbladder ca (1) <b>FN (1):</b> Gastric ca (1) <b>FP (0):</b> None
Gupta K, 2016	<b>TP (8):</b> mostly SCLC, lymphoma

NR, not reported; HL, Hodgkins' lymphoma; NHL, Non-Hodgkin lymphoma; ca, cancer; UO, unknown origin; SCLC, small cell lung cancer; adenoca, adenocarcinoma; N, number; PCT, papillary thyroid carcinoma; w/o PM, without proven malignancy; ca, Cancer; (N), number of patients; LN, lymph node.

