Supplementary information

Full Title: **Prognostic capacity of hyperdense middle cerebral artery sign in anterior circulation acute ischaemic stroke patients receiving reperfusion therapy: A systematic review and meta-analysis**

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1. Search Strategy (Keywords/MeSH Terms)

1. hyperdense MCA sign.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
2. Hyperdense artery sign.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
3. hyperdensity artery sign.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
4. HDMCA.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
5. HMCAS.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
6. 1 or 2 or 3 or 4 or 5
7. Stroke.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
8. anterior circulation.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
9. acute ischaemic stroke.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
10. 7 or 8 or 9
11. Thrombectomy.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
12. Thrombolytic therapy.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
13. Tissue plasminogen activator.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
14. tPA.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
15. outcomes.mp. [mp=ti, ot, ab, sh, hw, kw, tn, dm, mf, dv, fx, dq, nm, kf, ox, px, rx, ui, sy]
16. 11 or 12 or 13 or 14 or 15
17. 6 and 10 and 16
18. remove duplicates from 17
19. limit 18 to english language
20. limit 19 to human [Limit not valid in CCTR; records were retained]
21. limit 20 to yr="2000 -Current"
22. limit 21 to full text

2. Quality, risk of bias and funding bias assessment

2a. Supplementary Table 1. Methodological Quality Assessment of all included studies using Newcastle Ottawa Scale

Study	**Selection**				**Comparability**		**Outcomes**			**Total**
	Representativeness of exposed cohort	Selection of non-exposed cohort	Ascertainment of exposure	Outcome not present at the start of the study	Control for main factor	Control for additional factor	Assessment of outcomes	Length of follow-up	Adequacy of follow-up	
Kim et al 2017	1	1	1	1	1	1	1	1	1	9
Elofuke et al 2016	1	1	1	1	1	0	1	1	0	7
Ozdemir et al 2015	1	1	1	1	1	1	1	1	1	9
Man et al 2015	1	1	1	1	1	1	1	1	1	9
Topcuoglu et al 2015	1	1	1	1	1	1	1	1	1	9
Li et al 2014	1	1	1	1	1	1	1	0	1	8
Topcuoglu et al 2014	1	1	1	1	1	1	1	1	1	9
Paliwal et al 2012	1	1	1	1	1	1	1	1	1	9

Abul-Kasim et al 2010	1	1	1	1	1	1	1	1	1	9
Kharitonova et al 2009	1	1	1	1	1	0	1	1	0	7
Aries et al 2009	1	1	1	1	1	1	1	1	1	9
Tartaglia et al 2008	1	1	1	1	1	0	1	1	0	7
Agarwal et al 2004	1	1	1	1	1	1	1	1	1	9
Barber et al 2000	1	1	1	1	1	1	1	1	1	9

2b. Supplementary Table 2. Funding bias assessment of included studies

Study	Funding
Kim et al 2017	0
Elofuke et al 2016	0
Ozdemir et al 2015	0
Man et al 2015	unable to determine
Topcuoglu et al 2015	unable to determine
Li et al 2014	0
Topcuoglu et al 2014	unable to determine
Paliwal et al 2012	0
Abul-Kasim et al 2010	unable to determine
Kharitonova et al 2009	1
Aries et al 2009	unable to determine
Tartaglia et al 2008	unable to determine
Agarwal et al 2004	1
Barber et al 2000	unable to determine

2c. Supplementary Table 3. Quality and Risk of Bias Assessment of Included Studies

ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total score (Out of 14)
	Yes (1), No (0), Other (CD, NR, NA) CD, cannot determine; NA, not applicable; NR, not reported"														
Kim et al 2017	1	1	1	1	1	1	1	1	1	1	1	CD	1	1	13
Elofuke et al 2016	1	1	1	1	1	1	1	1	0	1	1	1	1		12
Ozdemir et al 2015	1	1	1	1	1	1	1	0	1	CD	1	CD	1	1	11
Man et al 2015	1	1	1	1	1	1	1	1	0	1	1	1	1	1	13
Topcuoglu et al 2015	1	1	1	1	1	1	1	0	1	CD	1	CD	1	1	11
Li et al 2014	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12

Topcuoglu et al 2014	1	1	1	1	1	1	1	0	1	1	1	CD	1	0	11
Paliwal et al 2012	1	1	1	1	1	1	1	0	1	CD	1	1	1	1	12
Abul-Kasim et al 2010	1	1	1	1	1	1	1	0	0	1	1	1	1	1	12
Kharitonova et al 2009	1	1	1	1	1	1	1	0	0	0	1	0	1	1	10
Aries et al 2009	1	1	1	1	1	1	1	0	1	CD	1	CD	1	1	11
Tartaglia et al 2008	1	1	1	1	1	1	1	0	1	1	1	CD	1	1	12
Agarwal et al 2004	1	1	1	1	1	1	1	0	1	1	1	CD	1	0	11
Barber et al 2000	1	1	1	1	1	1	1	0	0	CD	1	CD	1	1	10

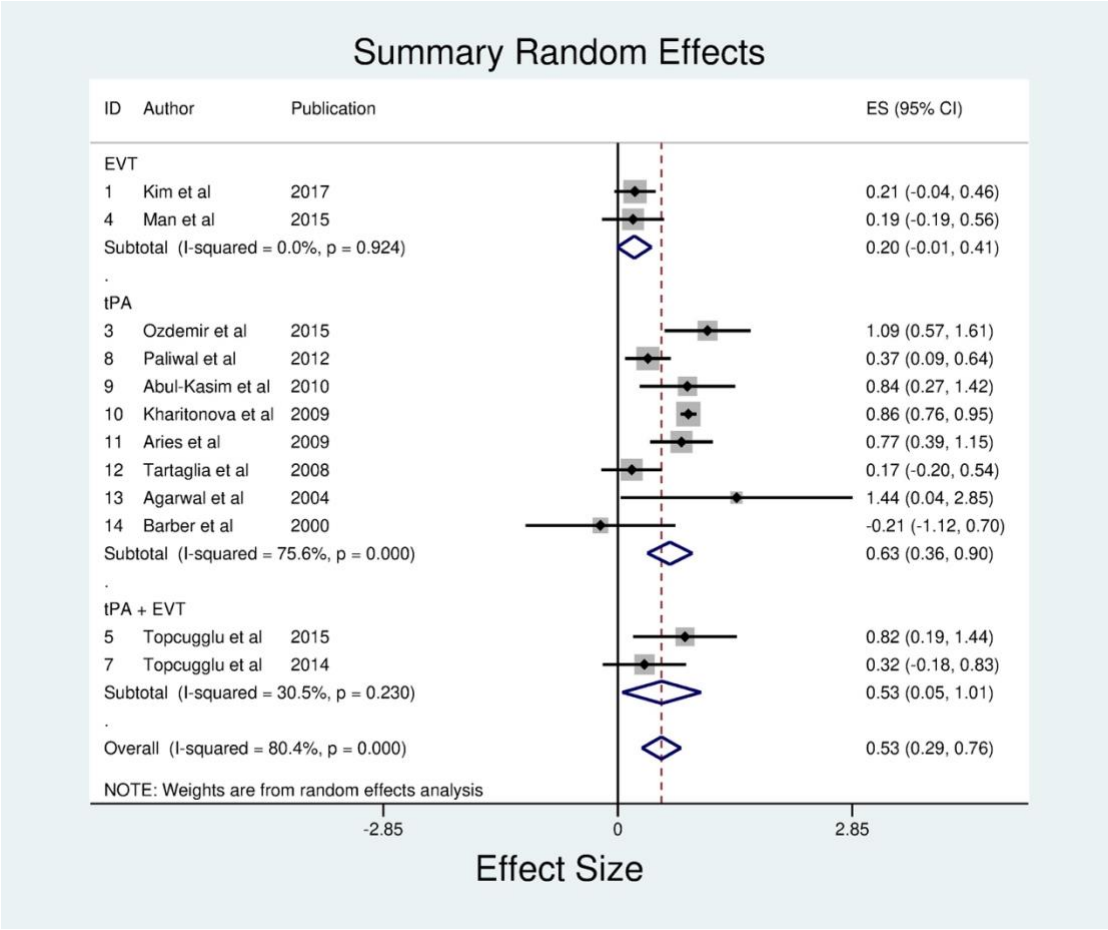
1. Was the research question or objective in this paper clearly stated?
2. Was the study population clearly specified and defined?
3. Was the participation rate of eligible persons at least 50%?
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?
5. Was a sample size justification, power description, or variance and effect estimates provided?
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g.,

categories of exposure, or exposure measured as continuous variable)?

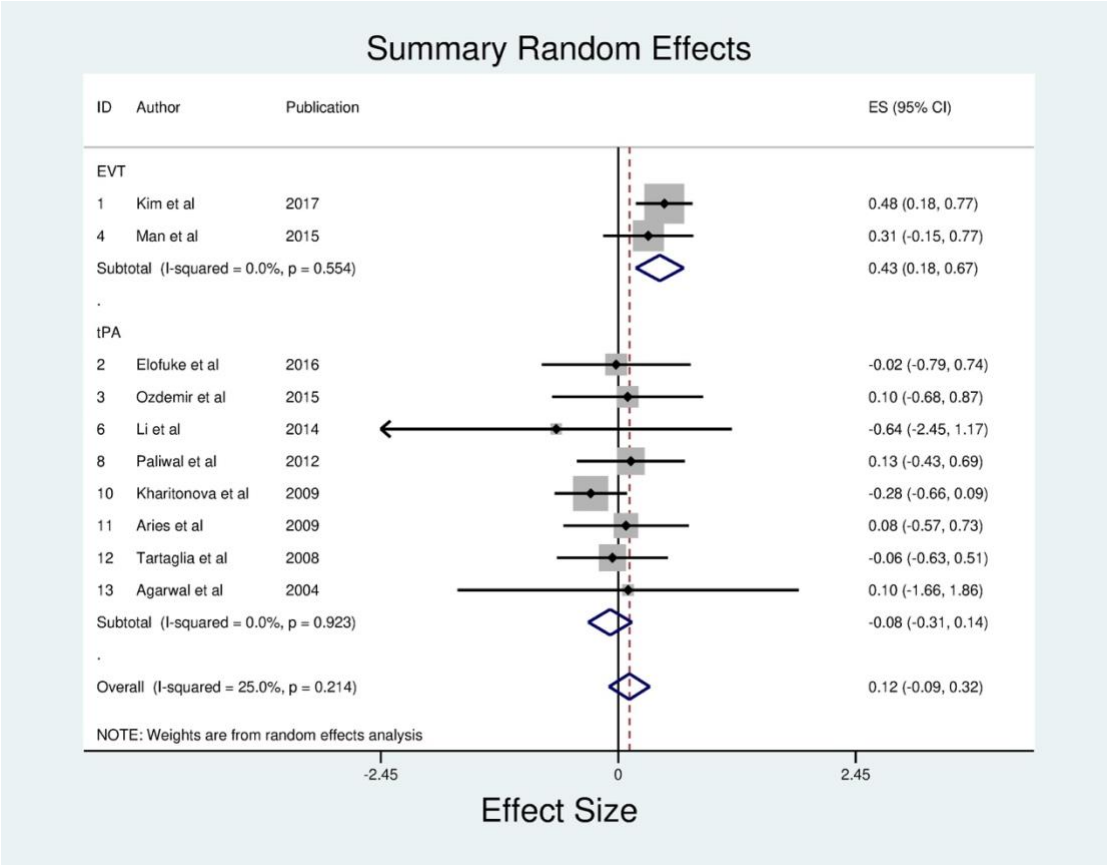
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
10. Was the exposure(s) assessed more than once over time?
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
12. Were the outcome assessors blinded to the exposure status of participants?
13. Was loss to follow-up after baseline 20% or less?
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?

3. Random effect size analysis

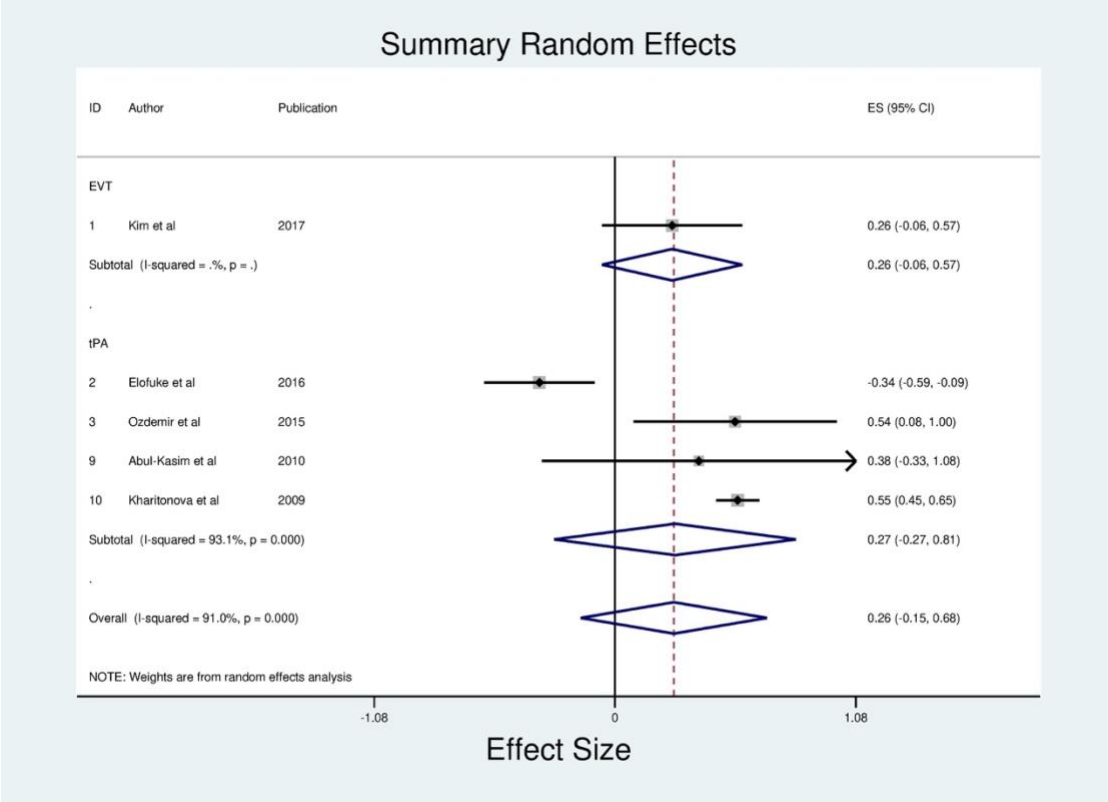
3a. Supplementary Figure 1. Random effect size analysis (functional outcome)



3b. Supplementary Figure 2. Random effect size analysis (sICH)

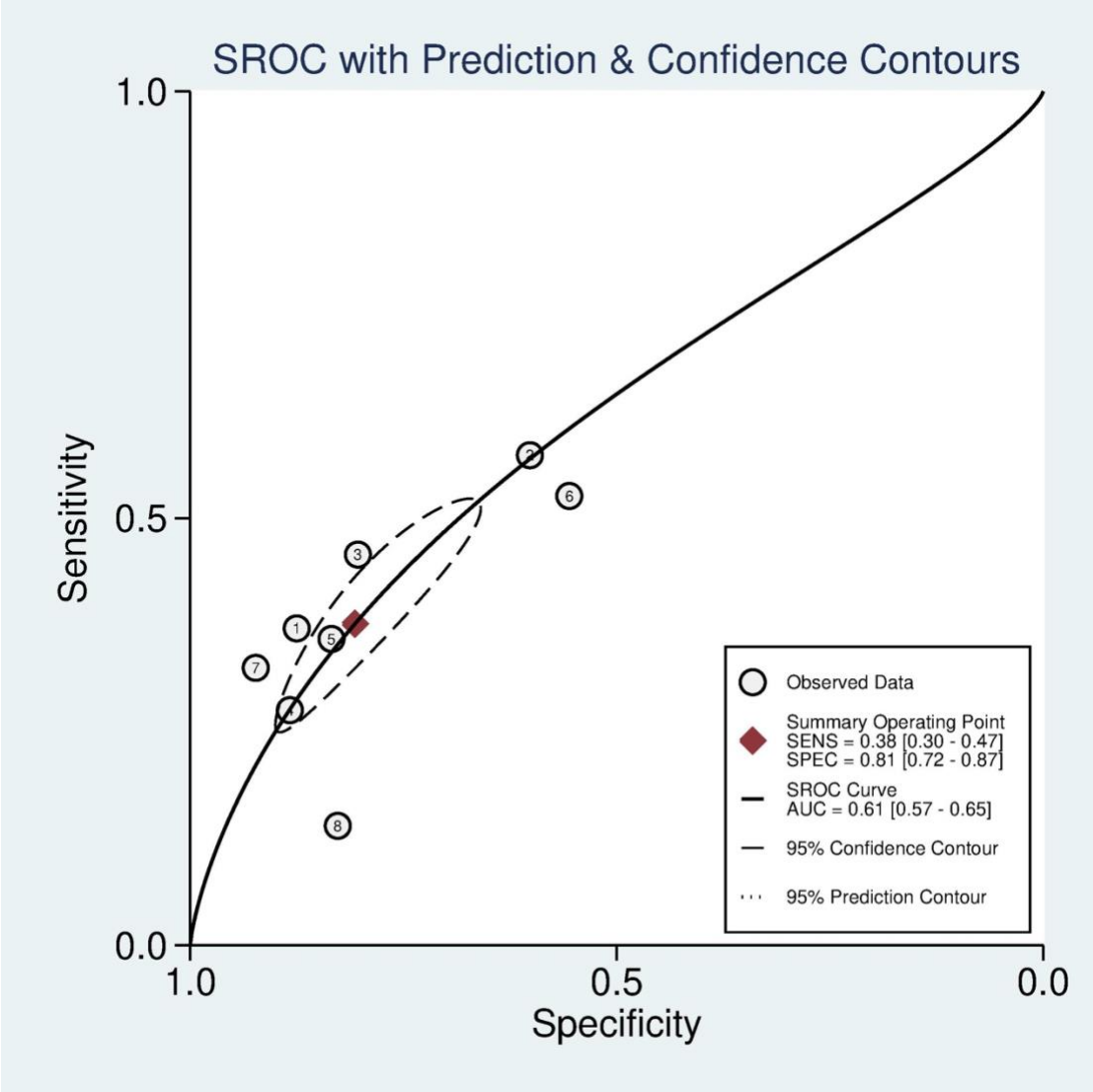


3c. Supplementary Figure 3. Random effect size analysis (Mortality)

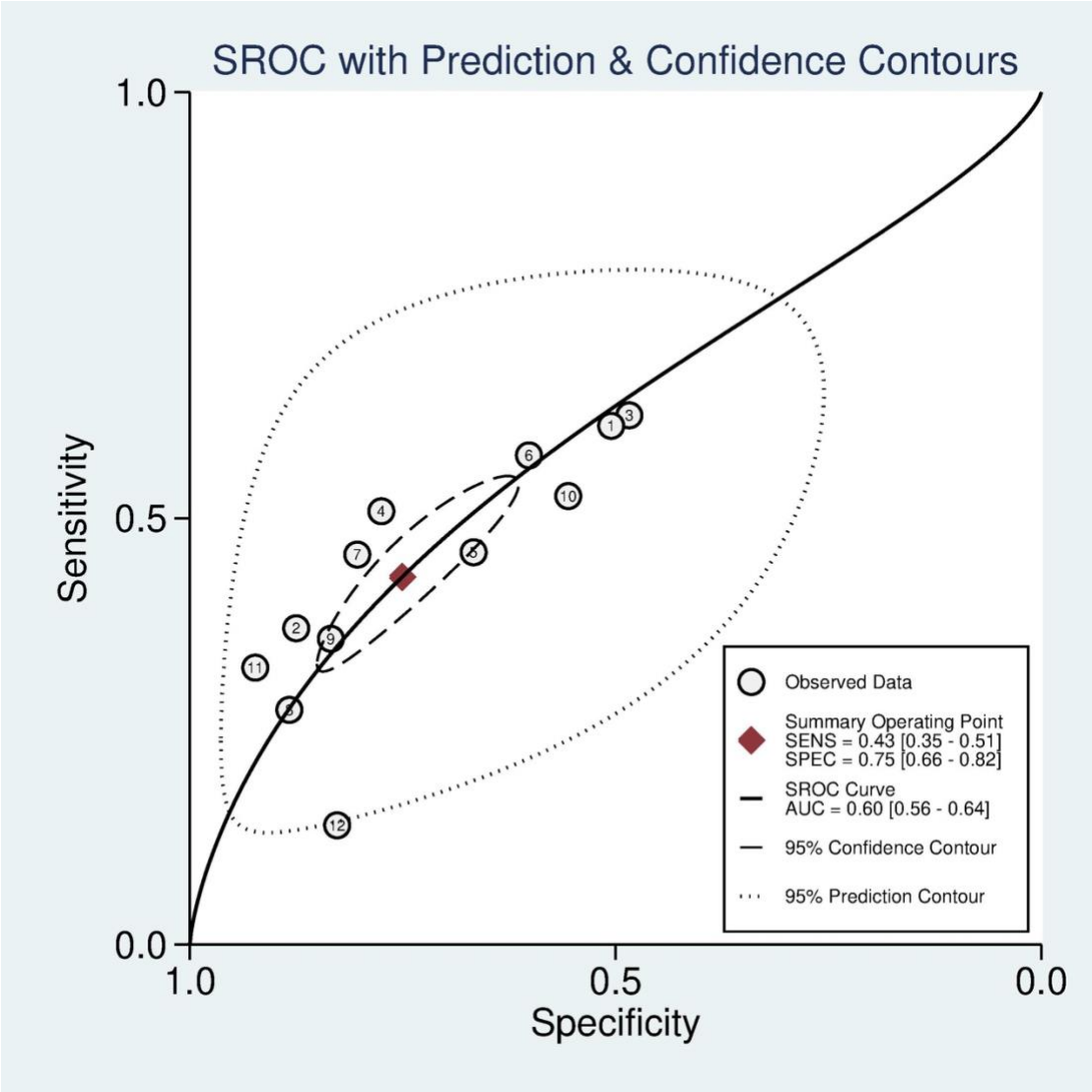


4. SROC with prediction & confidence contours

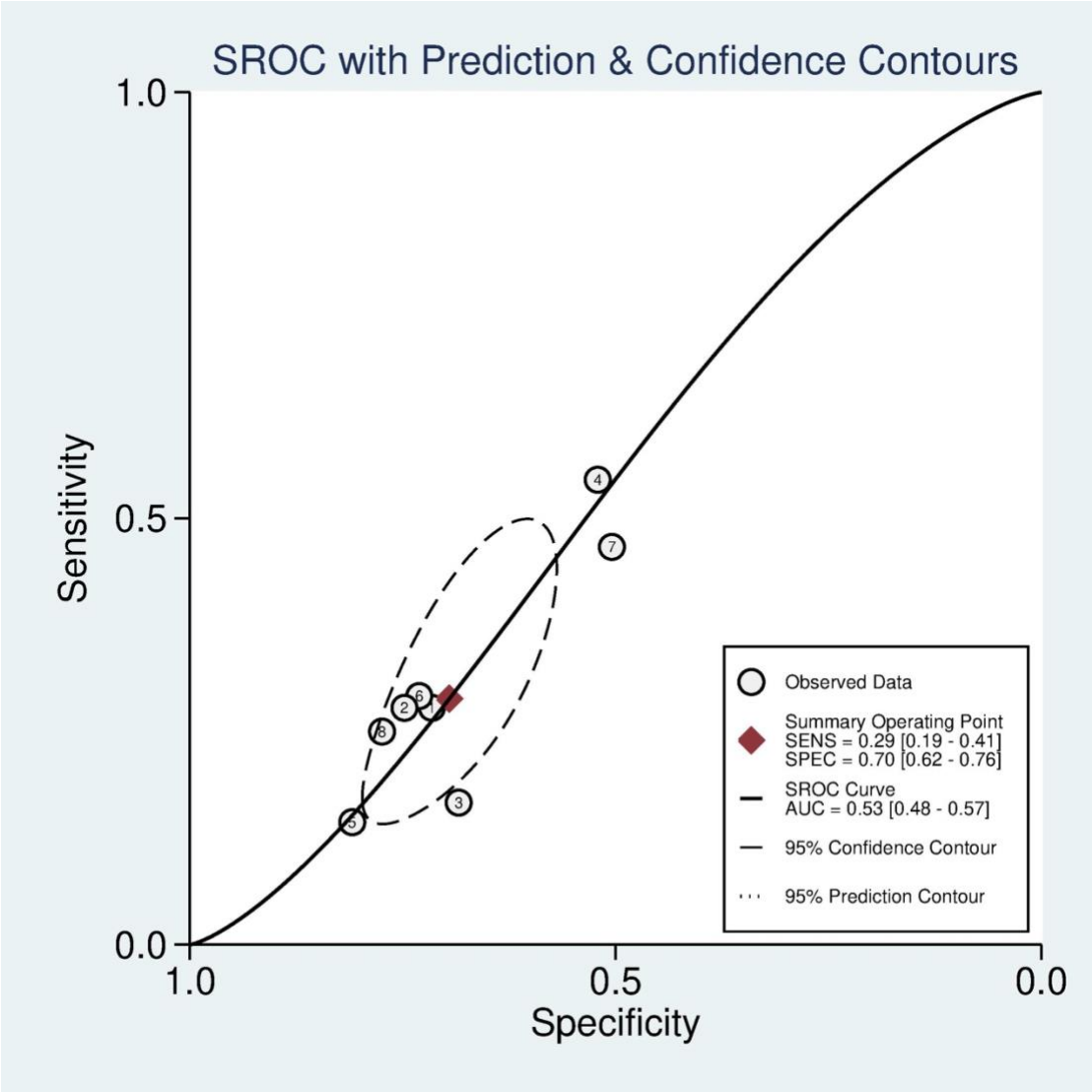
4a. Supplementary Figure 4a. SROC curve of predictive ability of HMCAS in patients receiving thrombolysis only (poor functional outcome)



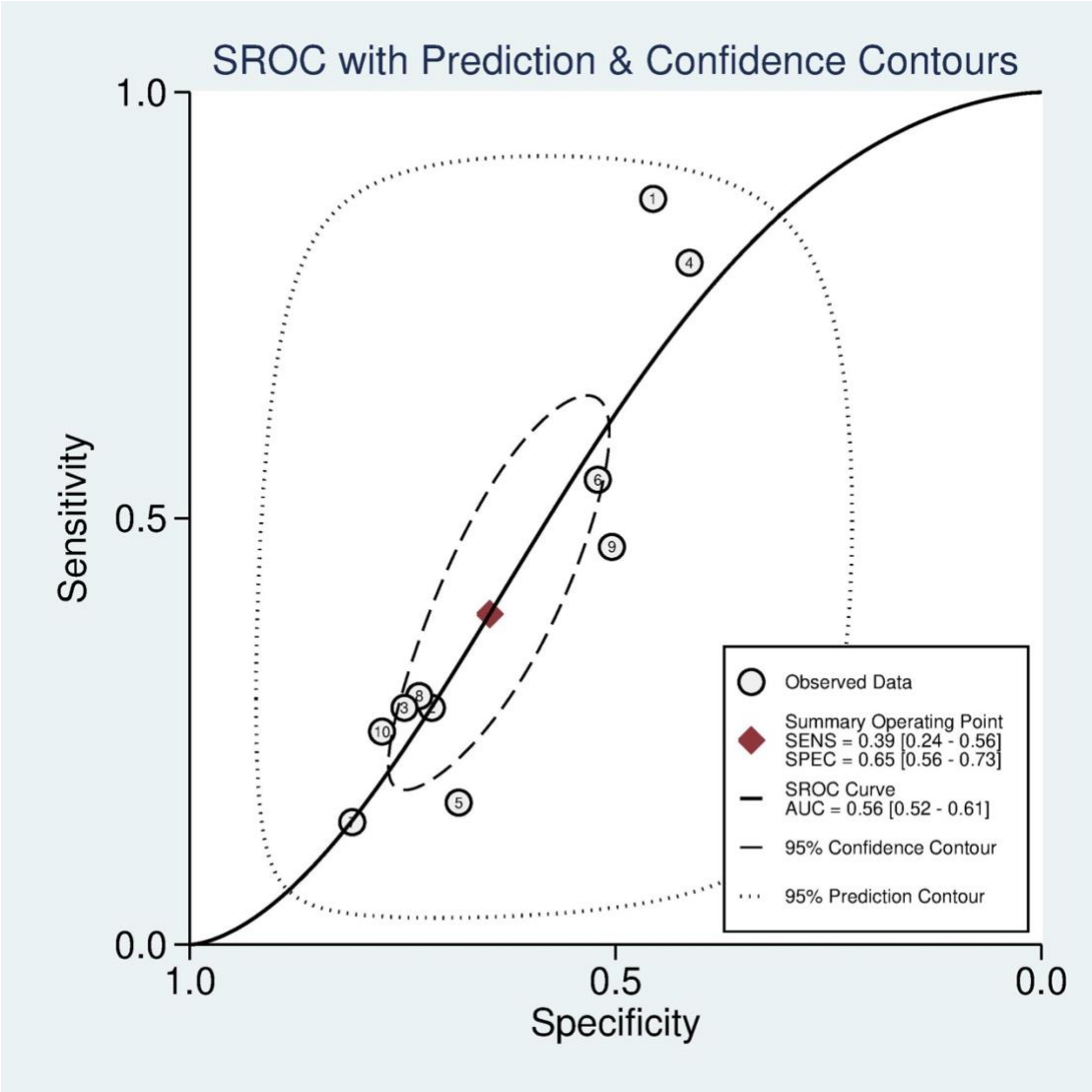
4b. Supplementary Figure 4b. SROC curve of predictive ability of HMCAS in patients receiving mechanical thrombectomy and/or thrombolysis (poor functional outcome)



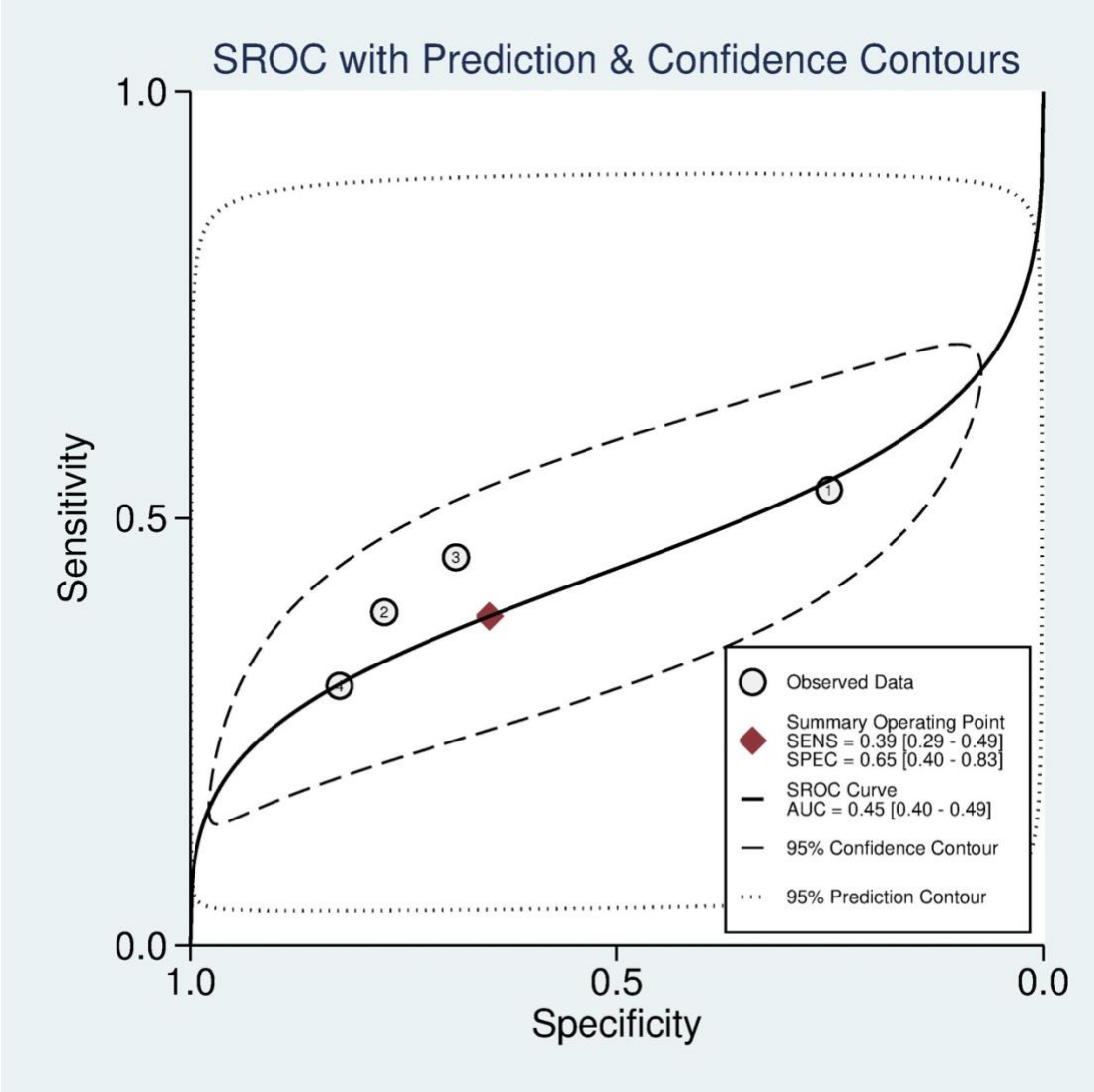
4c. Supplementary Figure 4c. SROC curve of predictive ability of HMCAS in patients receiving thrombolysis only (sICH)



4d. Supplementary Figure 4d. SROC curve of predictive ability of HMCAS in patients receiving **mechanical thrombectomy and/or thrombolysis** (sICH)



4e. Supplementary Figure 4e. SROC curve of predictive ability of HMCAS in patients receiving thrombolysis only (Mortality)



4f. Supplementary Figure 4f. SROC curve of predictive ability of HMCAS in patients receiving **mechanical thrombectomy and/or thrombolysis** (Mortality)