Table S1: MOOSE Checklist for Meta-analyses of Observational Studies

Item No	Recommendation	Reported on Page No
Reporting of background should include		
1	Problem definition	4
2	Hypothesis statement	4
3	Description of study outcome(s)	4
4	Type of exposure or intervention used	6
5	Type of study designs used	8
6	Study population	5
Reporting of search strategy should include		
7	Qualifications of searchers (eg, librarians and investigators)	5
8	Search strategy, including time period included in the synthesis and key words	5
9	Effort to include all available studies, including contact with authors	5
10	Databases and registries searched	5
11	Search software used, name and version, including special features used (eg, explosion)	5
12	Use of hand searching (eg, reference lists of obtained articles)	Not performed
13	List of citations located and those excluded, including justification	8 and figure 1
14	Method of addressing articles published in languages other than English	5
15	Method of handling abstracts and unpublished studies	5
16	Description of any contact with authors	5
Reporting of methods should include		
17	Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested	5
18	Rationale for the selection and coding of data (eg, sound clinical principles or convenience)	5-6
19	Documentation of how data were classified and coded (eg, multiple raters, blinding and interrater reliability)	5
20	Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)	Table S5

Table S1: MOOSE Checklist for Meta-analyses of Observational Studies

Item No	Recommendation	Reported on Page No
21	Assessment of study quality, including blinding of quality assessors, stratification or regression on possible predictors of study results	Table 1 + Table S5
22	Assessment of heterogeneity	Figures 2-4
23	Description of statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated	7
24	Provision of appropriate tables and graphics	16-20
Reporting of results should include		
25	Graphic summarizing individual study estimates and overall estimate	Figures 2-4
26	Table giving descriptive information for each study included	Table S3-4
27	Results of sensitivity testing (eg, subgroup analysis)	Not performed
28	Indication of statistical uncertainty of findings	Table 1
Reporting of discussion should include		
29	Quantitative assessment of bias (eg, publication bias)	Figure S1-3
30	Justification for exclusion (eg, exclusion of non-English language citations)	5
31	Assessment of quality of included studies	Table S5
Reporting of conclusions should include		
32	Consideration of alternative explanations for observed results	13
33	Generalization of the conclusions (ie, appropriate for the data presented and within the domain of the literature review)	13
34	Guidelines for future research	13
35	Disclosure of funding source	14-15

From: Stroup DF, Berlin JA, Morton SC, et al, for the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) Group. Meta-analysis of Observational Studies in Epidemiology. A Proposal for Reporting. *JAMA*. 2000;283(15):2008-2012. doi: 10.1001/jama.283.15.2008.
Transcribed from the original paper within the NEUROSURGERY® Editorial Office, Atlanta, GA, United Sates. August 2012.

Table S2: PRISMA checklist

Topic	No.	Item	Location where item is reported
Title			
Title	1	Identify the report as a systematic review.	Line 1-2
Abstract			
Abstract	2	See the PRISMA 2020 for Abstracts checklist	Page 2-3
Introduction			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Line 64-77
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Line 78-81
Methods			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Line 95-105 and 116-131
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Line 86-87
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Line 87-91
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Line 96-105
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Line 106-115
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. For all measures, time points, analyses), and if not,	Line 106-115

Table S2: PRISMA checklist

Topic	No.	Item	Location where item is reported
		the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. Participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Line 106-115
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Line 132-138
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. Risk ratio, mean difference) used in the synthesis or presentation of results.	Line 139-146
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. Tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item 5)).	Line 139-146
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Line 139-146
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Line 139-146
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Line 139-146
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. Subgroup analysis, meta-regression).	Line 139-146
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	None performed
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Line 132-138

Table S2: PRISMA checklist

Topic	No.	Item	Location where item is reported
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Line 132-138
Results			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Line 148-158+ Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	-
Study characteristics	17	Cite each included study and present its characteristics.	Table S3-4
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table S6-7
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. Confidence/credible interval), ideally using structured tables or plots.	Figure 2-4 Table 1, Table S5
Results of syntheses	20a	For each synthesis, briefly summarize the characteristics and risk of bias among contributing studies.	Table S5
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. Confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Table 1 + Figure 2-4
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	None performed
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	None performed
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Table S6-7

Table S2: PRISMA checklist

Topic	No.	Item	Location where item is reported
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Table 1 and Table S5
Discussion			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Line 248-275
	23b	Discuss any limitations of the evidence included in the review.	Line 276-288
	23c	Discuss any limitations of the review processes used.	Line 276-288
	23d	Discuss implications of the results for practice, policy, and future research.	Line 289-295
Other information			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Not registered
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	No protocol available
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	No protocol available
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Line 296-328
Competing interests	26	Declare any competing interests of review authors.	Line 296-328
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Data sharing statement

Table S3: Description of conventional treatment	
Arakawa 2004[1]	Stable blood pressure and positive fluid balance. I.v. calcium channel blockers, Ozagrel sodium, and Fasudil hydrochloride.
Bissolo 2021[2]	A minimal mean arterial pressure (MAP) of >90 mmHg was maintained with fluids and, when necessary, with vasopressors in all the patients after successful aneurysm securing by either microsurgical clipping or endovascular coiling. Induced hypertension, defined as MAP = 100–110 mmHg, was used in case of clinical signs of delayed neurological deficit.
Ding 2020[3]	External ventricular drain
Fistouris 2022[4]	Not reported
Haldrup 2023[5]	External ventricular drain
Inagawa 1991[6]	Not reported
Kim 2014[7]	Spontaneous drainage for 7 days
Nakagomi 2011[8]	IV mannitol (200–300 ml/patient) is administered at the time of skin incision. Patients have postoperative management both with normovolemia and normo- to mild hypertension
Roelz 2017[9]	Not reported
Yamamoto 2010[10]	Normovolemia and normotensive conditions Induced hypertension was attempted in patients with deteriorated neurological status due to vasospasm. Fasudil hydrochloride 90mg was administered every day for 14 days
Yoshikane 2021[11]	Hemodynamics at normotension, normovolemia, and normohydration in the perioperative period. The patients received 30 mg of intravenous Fasudil 3 times a day for 14 days

Table S4: Irrigation details

Study ID	Catheter placement (inlet)	Catheter placement (outlet)	Irrigation solution and description	Irrigation Rate	Irrigation duration	Analysis group
Bissolo 2021[2]	Sylvian Fissure	Fenestrated Lamina Terminalis	High risk patients in intervention group received continuous irrigation with Jonosteril with Urokinase (100 IU/ml). In patients showing signs of cerebral vasospasm, nimodipine (0.005 or 0.01 mg/ml) was added (rescue therapy)	50 ml/h	14 days	Fibrinolytic irrigation
Fistouris 2022[4]	Prepontine Cistern	Sylvian Fissure	High risk patients in intervention group received continuous irrigation with electrolyte solution with urokinase (100 IU/ml) for 7-14 days. In patients showing signs of cerebral vasospasm, nimodipine (0.01mg/ml) was added (rescue therapy). Drug free irrigation was continued until day 14-21.	50 ml/h	14-21 days	Fibrinolytic irrigation
Jito 2004[12]	N/a	N/a	Patients received intracisternal injection of a bolus of 20 ml tpa (400-800 µg/ml) during surgery, followed by irrigation of the opened cisterns with Lactated ringer.	2000 ml one time	During surgery	Fibrinolytic irrigation
Kim 2014[7]	Sylvian Fissure	Interpeduncular Cistern	Intervention 1: Continuous irrigation with lactated Ringer with urokinase (120 IU/ml)	21 ml/h	7 days	Fibrinolytic irrigation
Kodama 2001[13]	Sylvian Fissure	Prepontine Cistern or Chiasmal Cistern	Continuous irrigation with Lactated Ringer with urokinase (120 IU/ml) and ascorbic acid (4 mg/ml). During the first 12 hours, only Lactated Ringer was used.	30 ml/h/side	Mean: 9.9 days (range: 2-18)	Fibrinolytic irrigation
Matsukawa 2015[14]	N/a	N/a	Opened cisterns were irrigated with Saline solution 0,9% with urokinase (120 IU/ml), using Suction Plus device. Area irrigated depended on aneurysm location.	N/a	During surgery	Fibrinolytic irrigation
Nakagomi 2011[8]	Lateral Ventricle	Carotid Cistern, Chiasmatic Cistern or Sylvian Cistern	Continuous irrigation with Lactated Ringer with Urokinase (120 IU/ml)	60-180 ml/h	3 days	Fibrinolytic irrigation

Table S4: Irrigation details

Study ID	Catheter placement (inlet)	Catheter placement (outlet)	Irrigation solution and description	Irrigation Rate	Irrigation duration	Analysis group
Ota 2017[15]	N/a	N/a	Opened cisterns were irrigated with Saline solution 0,9% with urokinase (120 IU/ml), using Suction Plus device. Area irrigated depended on aneurysm location.	N/a	During surgery	Fibrinolytic irrigation
Roelz 2017[9]	Interpeduncular Cistern	External ventricular drain	Continuous irrigation with Jonosteril with urokinase (100 UI/ml) for 14 days, followed by irrigation with only Jonosteril until day 21. In case of mean velocity flow ≥160 cm/s in transcranial doppler, nimodipine (0.005mg/ml) was added (rescue therapy).	50-100 ml/h	21 days	Fibrinolytic irrigation
Roelz 2019a[16]	Sylvian Fissure (Third Ventricle)	Fenestrated Lamina Terminalis	Continuous irrigation with Jonosteril with urokinase (100 UI/ml) for 14 days. In case of mean velocity flow ≥160 cm/s in transcranial doppler, nimodipine (0.005mg/ml) was added (rescue therapy).	50 ml/h	14 days	Fibrinolytic irrigation
Roelz 2022[17]	Fenestrated lamina terminalis	Sylvian fissure	Intervention 1: Continuous irrigation with Electrolyte solution with urokinase (100 UI/ml) for 14 days, followed by drugfree irrigation until day 21. In case of mean velocity flow ≥160 cm/s in transcranial doppler, nimodipine (0.005mg/ml) was added (rescue therapy).	50 ml/h	21 days	Fibrinolytic irrigation
Sasaki 2000[18]	Sylvian Fissure	Prepontine or Chiasmatic Cistern	Continuous irrigation with Lactated Ringer with urokinase (30, 60 or 120 IU/ml). During the first 12 hours, only Lactated Ringer was used.	30 ml/h	Mean (SD): 9.6 (±2.5) days	Fibrinolytic irrigation
Scheiwe 2023[19]	Third ventricle through fenestrated lamina terminalis	Third ventricle through fenestrated lamina terminalis or External ventricular drain	Continuous irrigation with Jonosteril with Urokinase (100000 IU/ml). In patients showing signs of cerebral vasospasm, nimodipine (0.01mg/ml) was added (rescue therapy).	50 ml/h	14-20 days	Fibrinolytic irrigation
Yamamoto 2010[10]	Basal Cistern	Basal Cistern	Continuous irrigation with Lactated Ringer with tisokinase (96 IU/ml)	20 ml/h	2 days	Fibrinolytic irrigation
Yoshikane 2021[11]	N/a	N/a	Opened cisterns were irrigated with Saline solution 0,9% with urokinase (120 IU/ml), using Suction Plus device during surgery.	N/a	During surgery	Fibrinolytic irrigation

Table S4: Irrigation details

Study ID	Catheter placement (inlet)	Catheter placement (outlet)	Irrigation solution and description	Irrigation Rate	Irrigation duration	Analysis group
Arakawa 2004[1]	Sylvian Fissure, Lateral Ventricle or Chiasmal Cistern	Chiasmal Cistern or Spinal Drainage	Continuous irrigation with Lactated Ringer with urokinase (120 IU/ml), ascorbic acid (3.5 mg/ml) and milrinone (3.6 µg/ml)	30 ml/h	14 days	Vasodilatory irrigation (preventive)
Kim 2014[7]	Sylvian Fissure	Interpeduncular Cistern	Intervention 2: Continuous irrigation with Lactated Ringer with Papaverin (0.4 mg/ml)	21 ml/h	7 days	Vasodilatory irrigation (preventive)
Suzuki 1994[20]	N/a	N/a	The opened subarachnoid space was irrigated with Hartmanns solution with Solumedrol (1 mg/ml) during surgery to remove clots.	10-20 ml/kg total	During surgery	Vasodilatory irrigation (preventive)
Yamamoto 2016[21]	Basal Cistern	Spinal	Continuous irrigation with $mgso_4$ Solution (5 mmol/l). In addition; intermittent intracisternal administration of alteplase (0.2 mg) every 8 hours for 2 days.	20 ml/h	10 days	Vasodilatory irrigation (preventive)
Hänggi 2008[22]	Lumbar catheter	External ventricular drain	Continuous irrigation with Lactated Ringer with nimodipine (0.02 mg/ml) for three days, repeated max three times, in patients with vasospasm (rescue therapy).	20 ml/h	3 -9 days	Vasodilatory irrigation (rescue)
Roelz 2019b[23]	Interpeduncular Cistern	External ventricular drain	Continuous irrigation with Jonosteril with Nimodipine (0.005 mg/ml) as rescue therapy in patients with cerebral vasospasm	50 ml/h	Up to 15 days	Vasodilatory irrigation (rescue)

Table S4: Irrigation details

Study ID	Catheter placement (inlet)	Catheter placement (outlet)	Irrigation solution and description	Irrigation Rate	Irrigation duration	Analysis group
Roelz 2022[17]	Prepontine Cistern	Sylvian fissure	Intervention 2: Irrigation with electrolyte solution with Nimodipine (0.01 mg/ml) in patients with a mean velocity flow ≥160 cm/s in transcranial doppler (rescue therapy).	50 ml/h	Mean (SD): 12.3 (±3.4) days	Vasodilatory irrigation (rescue)
Mori 2009[24]	Prepontine cistern or sylvian fissure	Spinal	Continuous irrigation with $mgso_4$ solution (15 mmol/l) in patients with symptomatic cerebral vasospasm.	20 ml/h	14 days	Vasodilatory irrigation (rescue)
Inagawa 1991[6]	Frontal horn, Sylvian Cisterns or Interhemispheric Fissures	Prechiasmic Cisterns	Continuous irrigation with lactated Ringer solution.	500-1500 ml/day	7-9 days	Simple irrigation
Ding 2020[3]	N/a	N/a	Intraventricular irrigation was performed during surgery with saline solution with gentamicin (40 IU/ml)	500 ml In total	25 min.	IVH
Haldrup 2023[5]	Lateral Ventricle	Lateral Ventricle	Continuous intraventricular irrigation with Ringer Acetate, through irraflow system.	20-180 ml/h (mean: 1093 ml/day)	11 or 12 days (SD: 8.6 or 6.6)	IVH

Table S5: Detailed summary of findings and GRADE assesment

Combined Irrigation compared to no irrigation for subarachnoid hemorrhage.
Bibliography: Arakawa 2004[1], Bissolo 2021[2], Fistouris 2022[4], Inagawa 1991[6], Kim 2014[7], Nakagomi 2011[8], Roelz 2017[9], Scheiwe 2023[19], Yamamoto 2010[10], Yoshikane 2021[11]

Certainty assessment							Summary of findings				
Participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect OR (95% CI)	Anticipated absolute effects	
							With no irrigation	With Irrigation		Risk with no irrigation per 1000	Risk difference per 1000 (95%CI) Ref: no irrigation
Probability of favorable outcome											
1113 (2 RCTs, 5 observational)	Not serious	Not Serious	Not Serious	Not Serious	None	⊕⊕⊕⊕ High	275/526 (52.3)	414/587 (70.5)	**1.83** (1.35; 2.48)	523	**144** (74; 208)
Mortality											
1858 (2 RCTs, 8 observational)	Not serious	Not Serious	Not Serious	Not Serious	None	⊕⊕⊕⊕ High	189/1001 (18.9)	105/857 (12.3)	**0.65** (0.45; 0.94)	189	**-57** (-94; -9)
Risk of delayed cerebral ischemia											
1237 (1 RCT, 6 observational)	Serious	Serious	Not Serious	Not Serious	None	⊕⊕◯◯ low	174/692 (25.1)	58/545 (10.6)	**0.33** (0.19; 0.58)	251	**-152** (-191; -88)
Risk of cerebral vasospasm											
1075 (1 RCT, 5 observational)	Serious	Serious	Not Serious	Not Serious	None	⊕⊕◯◯ Low	198/491 (40.3)	102/584 (17.5)	**0.31** (0.23; 0.42)	403	**-230** (-269; -182)

Table S5: Detailed summary of findings and GRADE assesment

Fibrinolytic cisternal irrigation compared to no irrigation treatment for subarachnoid hemorrhage.
Bibliography: Bissolo 2021[2], Fistouris 2022[4], Kim 2014[7], Nakagomi 2011[8], Roelz 2017[9], Scheiwe 2023[19], Yamamoto 2010[10], Yoshikane 2021[11]

Certainty assessment							Summary of findings				
Participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect OR (95% CI)	Anticipated absolute effects	
							With no irrigation	With fibrinolytic irrigation		Risk with no irrigation per 1000	Risk difference with fibrinolytic irrigation per 1000 (95%CI) Ref: no irrigation
Probability of favorable outcome											
1031 (2 RCTs, 4 observational)	Not Serious	Not Serious	Not Serious	Not Serious	None	⨁⨁⨁⨁ High	266/496 (53.6)	374/535 (69.9)	**1.80** (1.30; 2.51)	536	**139** (64; 207)
Mortality											
1715 (2 RCTs, 6 observational)	Not Serious	Not Serious	Not Serious	Not Serious	None	⨁⨁⨁⨁ High	172/945 (18.2)	96/770 (12.5)	**0.68** (0.46; 1.00)	182	**-51** (-89; 0)
Risk of delayed Cerebral Ischemia											
1176 (1 RCT, 5 observational)	Not Serious	Not Serious	Not Serious	Not Serious	Strong association	⨁⨁⨁⨁ High	165/666 (24.8)	45/510 (8.8)	**0.28** (0.18; 0.42)	248	**-163** (-192; -126)
Risk of cerebral vasospasm											
974 (1 RCT, 4 observational)	Not Serious	Not Serious	Not Serious	Not Serious	Strong association	⨁⨁⨁⨁ High	177/465 (38.1)	66/509 (13.0)	**0.28** (0.18; 0.42)	381	**-234** (-281; -175)

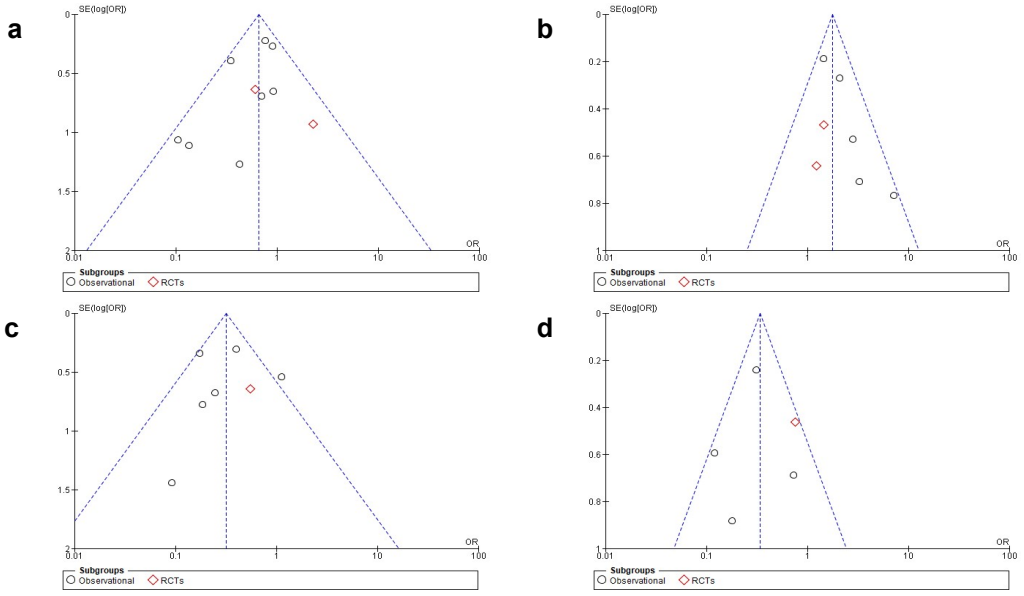
Table S5: Detailed summary of findings and GRADE assesment

Vasodilatory cisternal irrigation compared to no vasodilatory cisternal irrigation for subarachnoid hemorrhage.
Bibliography: Arakawa 2004[1], Kim 2014[7], Suzuki 1994[20], Yamamoto 2016[21]

Certainty assessment							Summary of findings				
Participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Study event rates (%)		Relative effect OR (95% CI)	Anticipated absolute effects	
							With no vasodilatory irrigation	With vasodilatory irrigation		Risk with no vasodilatory irrigation per 1000	Risk difference with vasodilatory irrigation Per 1000 (95%CI) Ref: no vasodilatory irrigation
Probability of favorable outcome											
317 (2 RCTs, 2 observational)	Not Serious	Serious	Not Serious	Serious	None	⨁⨁◯◯ Low	114/175 (65.1)	116/142 (81.7)	**2.03** (0.97; 4.26)	651	**140** (-7; 237)
Mortality											
317 (2 RCTs, 2 observational)	Not Serious	Not Serious	Serious	Not Serious	None	⨁⨁⨁◯ Moderate	30/175 (17.1)	7/142 (4.9)	**0.32** (0.13; 0.79)	171	**-109** (-145; -31)
Risk of delayed cerebral ischemia											
70 (1 RCT)	Not Serious	Not Serious	Serious	Very Serious	None	⨁◯◯◯ Very low	9/35 (25.7)	5/35 (14.3)	**0.48** (0.14; 1.62)	257	**-115** (-211; 102)
Risk of cerebral vasospasm											
275 (2 RCTs, 1 observational)	Not serious	Serious	Serious	Serious	None	⨁◯◯◯ Very low	49/145 (33.8)	21/130 (16.2)	**0.37** (0.17; 0.79)	338	**-179** (-258; -51)

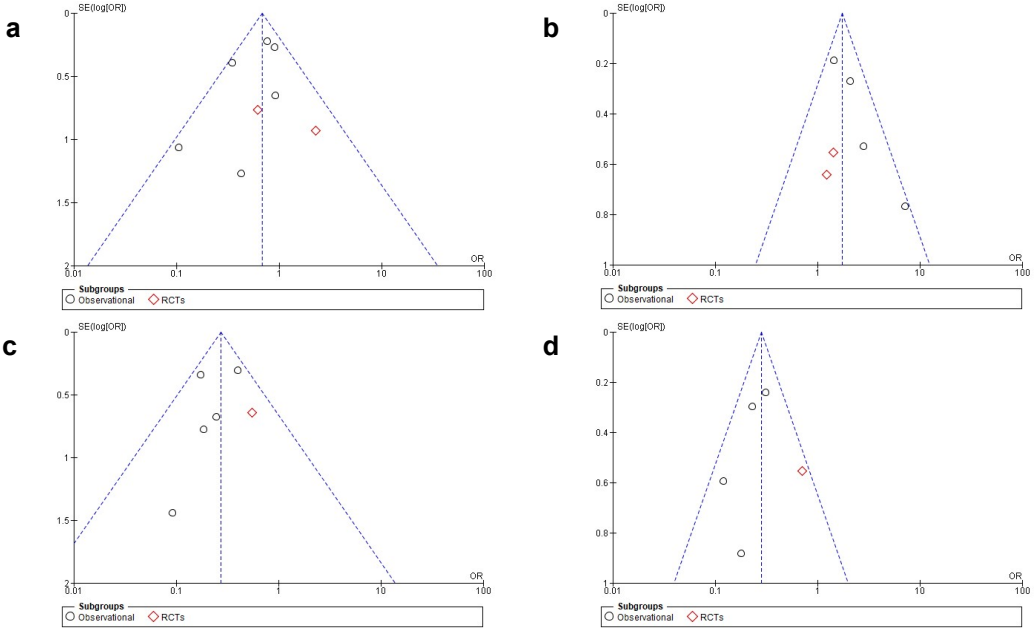
CI: confidence interval; **OR:** odds ratio, **RCT:** Randomized controlled trial

Figure S1: Funnel plots for combined cisternal irrigation compared to conventional treatment.



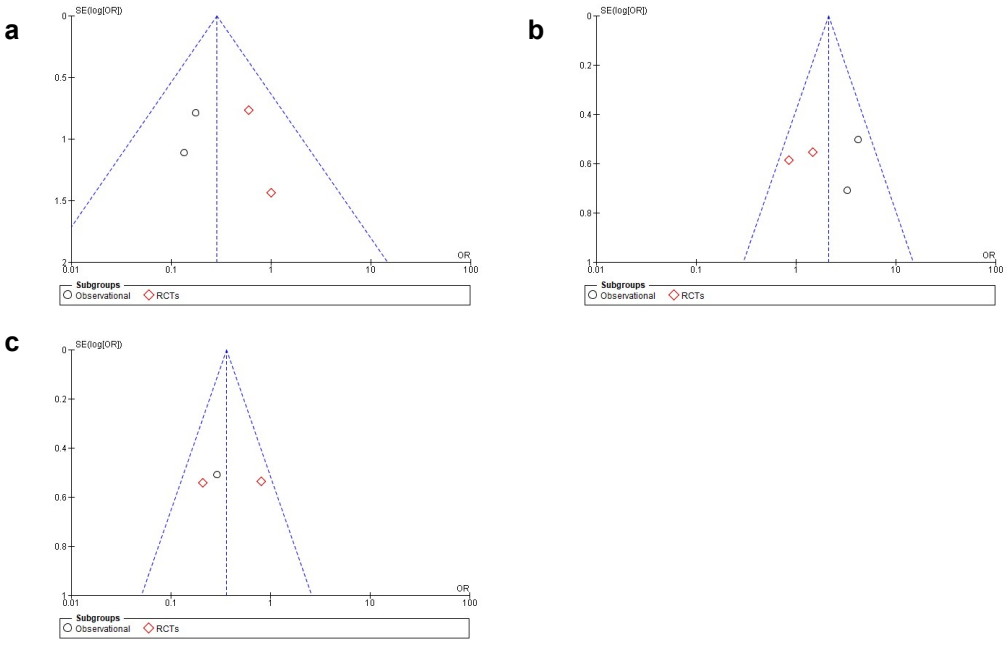
Funnel plots for (a) Mortality (b) Functional Outcome, (c) delayed cerebral ischemia and (d) cerebral vaso-spasm.

Figure S2: Funnel plots for fibrinolytic cisternal irrigation compared to conventional treatment.



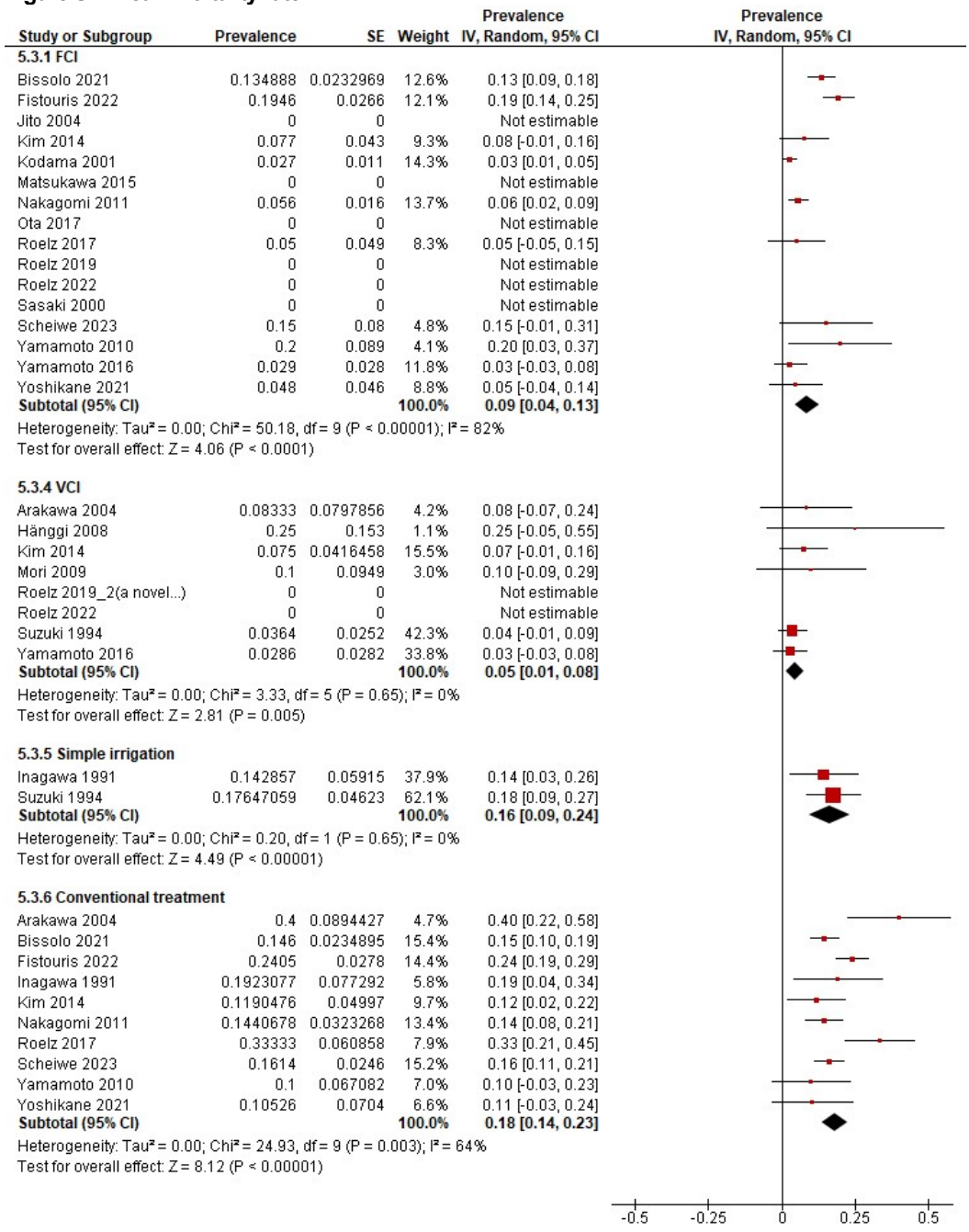
Funnel plots for (a) Mortality (b) Functional Outcome, (c) delayed cerebral ischemia and (d) cerebral vaso-spasm.

Figure S3: Funnel plots for vasodilatory cisternal irrigation compared to other treatments.



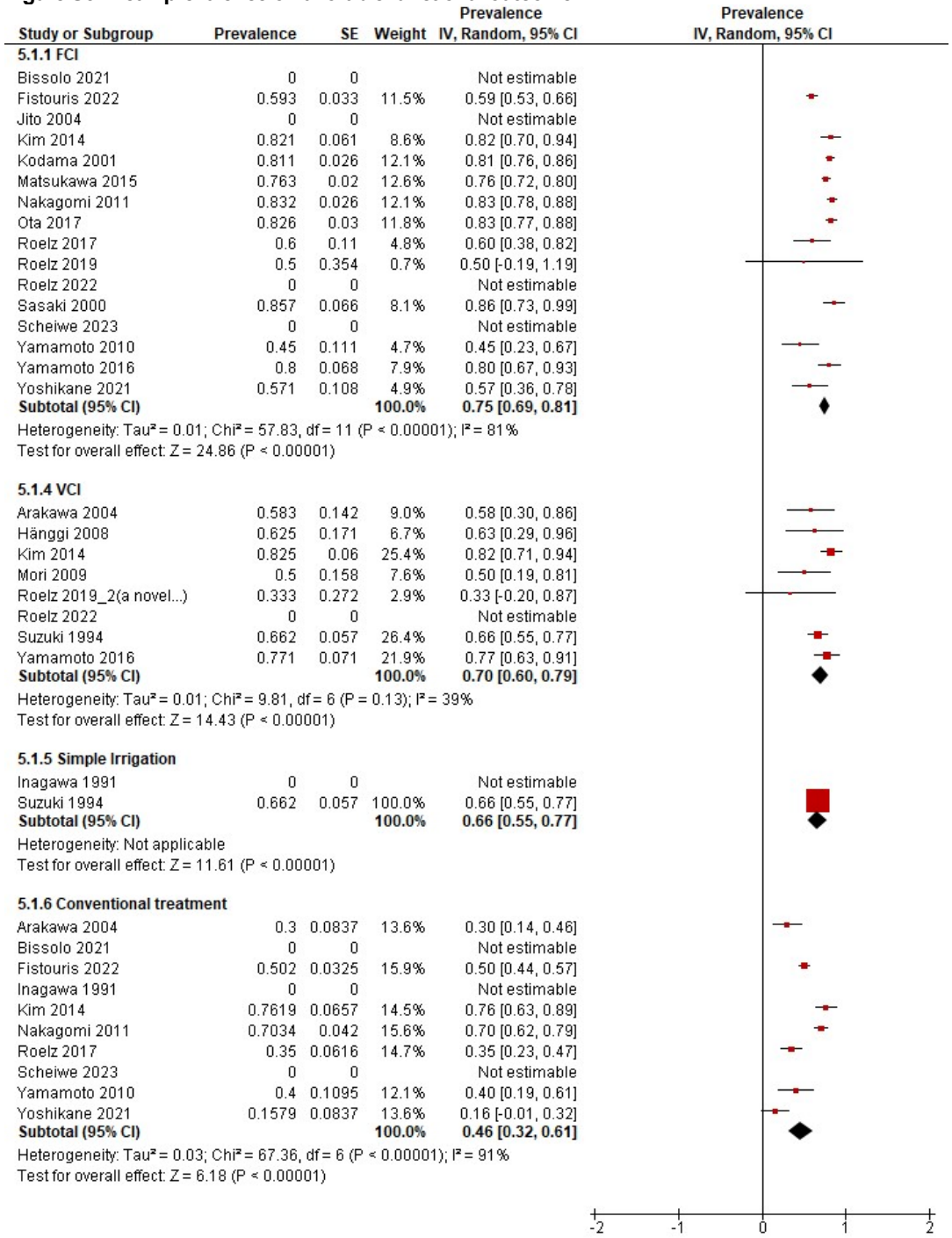
Funnel plots for (a) Mortality (b) Functional outcome, (c) cerebral vasospasm.

Figure S4: Mean mortality rate



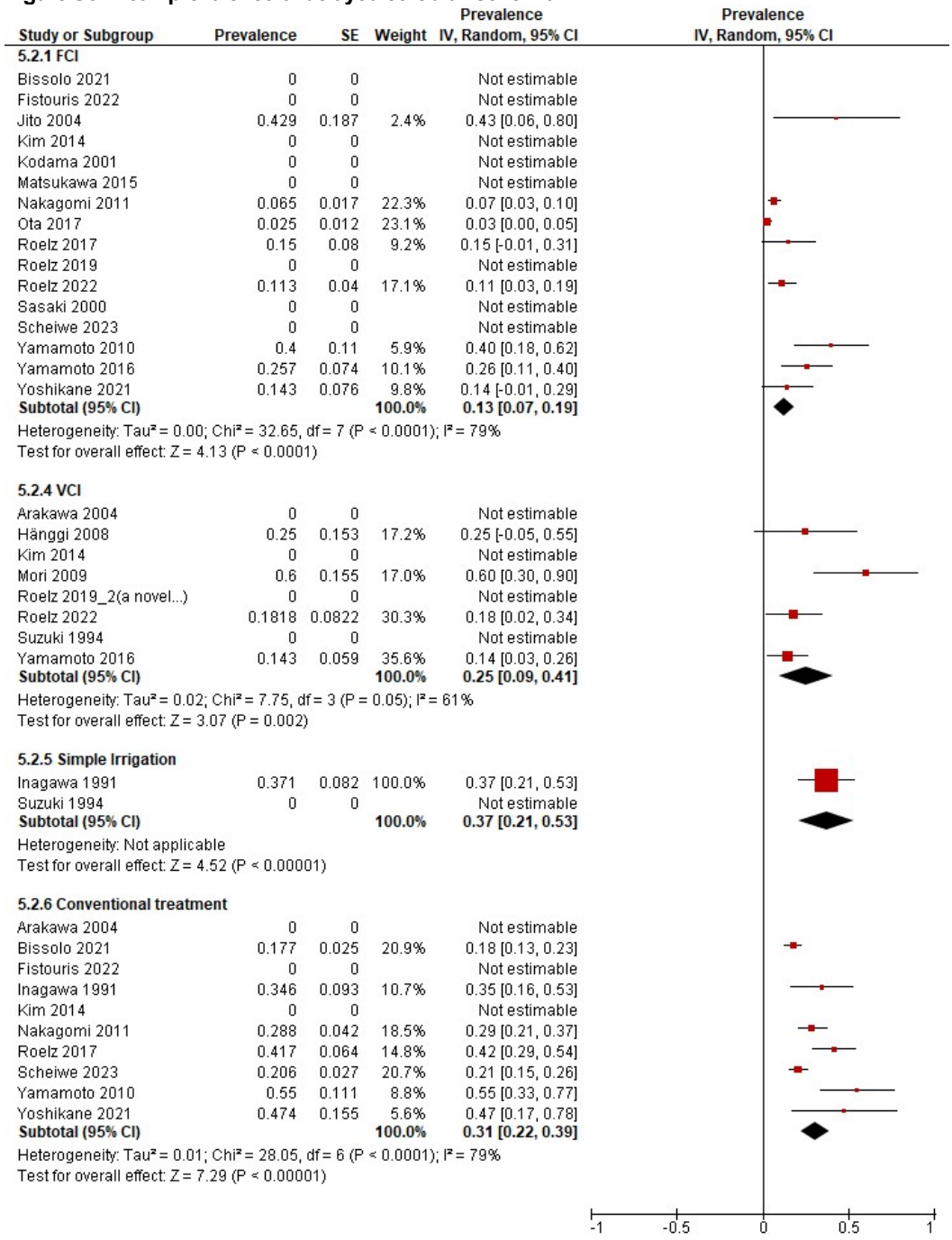
Mean mortality rate for each intervention. Assesment of mortality rate varied from time of discharge to 1 year between studies. FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation.

Figure S5: Mean prevalence of favorable functional outcome



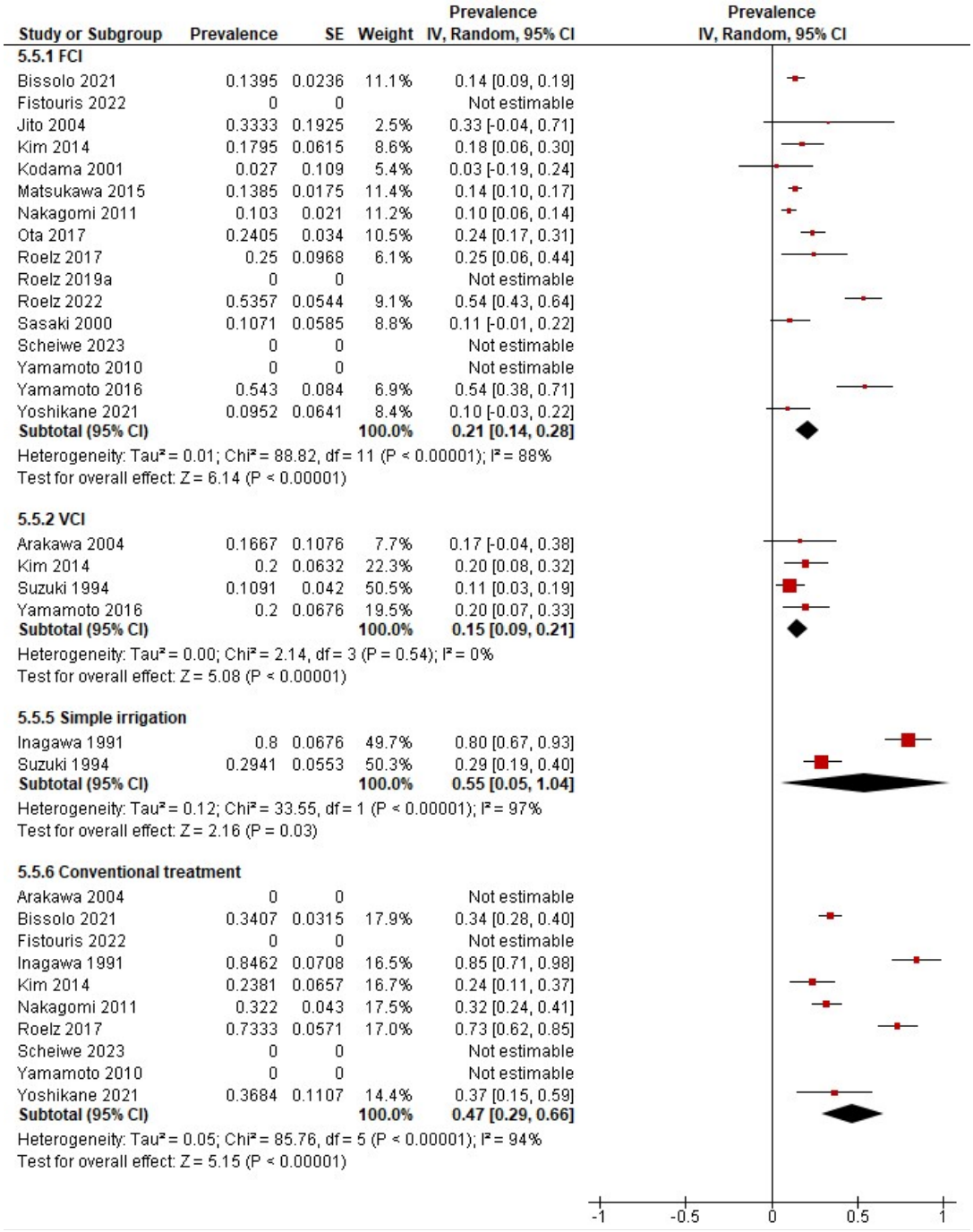
Mean rate of favorable functional outcome for each intervention. Assesment of functional outcome varied from time of discharge to 1 year between studies FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation.

Figure S6: Mean prevalence of delayed cerebral ischemia



Mean prevalence of DCI for each intervention. Assesment of DCI varied from 14 days to 1 month between studies. FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation

Figure S7: Mean prevalence of cerebral vasospasm



Mean prevalence of cerebral vasospasm for each intervention. Assesment of cerebral vasospasm varied from 6 days to 1 month between studies. FCI: fibrinolytic cisternal irrigation, VCI: vasodilatory cisternal irrigation.

Table S6: RoB 2 for randomized studies

Study ID	Randomization	Deviations from intervention	Missing data	Measurement	Reporting	Overall risk of bias
Ding 2020[3]	1.1: PN 1.2: NI 1.3: N	2.1: PN 2.2: NI 2.3: N 2.6: PY	3.1: Y	4.1: N 4.2: PN 4.3: NI 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some concerns
	Some concerns	Low risk	Low risk	Some concerns	Some concerns	
Haldrup 2023[5]	1.1: Y 1.2: Y 1.3: N	2.1: N 2.2: Y 2.3: N 2.6: Y	3.1: Y	4.1: N 4.2: N 4.3: Y 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some concerns
	Low risk	Low risk	Low risk	Some concerns	Some concerns	
Jito 2004[12]	1.1: NI 1.2: NI 1.3: NI	2.1: NI 2.2: NI 2.3: N 2.6: Y	3.1: Y	4.1: PN 4.2: N 4.3: NI 4.4: PN	5.1: NI 5.2: NI 5.3: NI	Some concerns
	Some concerns	Low risk	Low risk	Low risk	Some concerns	
Kim 2014[7]	1.1: PN 1.2: NI 1.3: N	2.1: NI 2.2: NI 2.3: PN 2.6: Y	3.1: Y	4.1: N 4.2: PN 4.3: NI 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some concerns
	Some concerns	Low risk	Low risk	Some concerns	Some concerns	
Sasaki 2000[18]	1.1: NI 1.2: NI 1.3: N	2.1: PN 2.2: Y 2.3: N 2.6: PY	3.1: Y	4.1: N 4.2: N 4.3: PY 4.4: PY 4.5: N	5.1: NI 5.2: NI 5.3: NI	Some concerns
	Some concerns	Low risk	Low risk	Some concerns	Some concerns	
Yamamoto 2010[10]	1.1: Y 1.2: PY 1.3: N	2.1: PN 2.2: N 2.6: Y	3.1: Y	4.1: N 4.2: N 4.3: N	5.1: NI 5.2: NI 5.3: NI	Low risk
	Low risk	Low risk	Low risk	Low risk	Some concerns	
Yamamoto 2016[21]	1.1: Y 1.2: PY 1.3: N	2.1: PN 2.2: N 2.6: Y	3.1: Y	4.1: N 4.2: N 4.3: N	5.1: NI 5.2: NI 5.3: NI	Low risk
	Low risk	Low risk	Low risk	Low risk	Some concerns	

Table S7: ROBINS-I assesment for observational studies

Study ID	Confounding	Selection	Classification	Deviations from intervention	Missing Data	Measurement	Reporting	Overall risk of bias
Arakawa 2004[1]	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: PY 5.2: N 5.3: N	6.1: PY 6.2: NI 6.3: PY 6.4: NI	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Moderate risk	
Bissolo 2021[2]	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: PY 5.2: N 5.3: N	6.1: PN 6.2: NI 6.3: Y 6.4: PN	7.1: PN 7.2: PN 7.3: PN	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Fistouris 2022[4]	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: NI 5.2: N 5.3: N	6.1: PN 6.2: PN 6.3: Y 6.4: PN	7.1: PN 7.2: PN 7.3: PN	Low risk
	Low risk	Low risk	Low risk	Low Risk	Low risk	Low risk	Low risk	
Hänggi 2008[22]	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PN 6.2: NI 6.3: Y 6.4: PN	7.1: N 7.2: N 7.3: N	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Inagawa 1991[6]	1.1: PY 1.2: N 1.4: PN 1.6: PY 1.7: NI	2.1: Y 2.2: N 2.4: Y	3.1: Y 3.2: N 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: Y 5.4: PY 5.5: NI	6.1: N 6.2: PN 6.3: Y 6.4: PN	7.1: NI 7.2: NI 7.3: NI	Serious risk
	Serious risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	NI	
Kodama 2001[13]	1.1: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PN 6.2: NI 6.3: Y 6.4: PN	7.1: N 7.2: N 7.3: N	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Matsukawa 2015[14]	1.1: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PN 6.2: PY	7.1: N 7.2: N 7.3: N	Low risk

Table S7: ROBINS-I assesment for observational studies

Study ID	Confounding	Selection	Classification	Deviations from intervention	Missing Data	Measurement	Reporting	Overall risk of bias
						6.3: Y 6.4: N		
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Mori 2009[24]	1.1: Y 1.2: N 1.4: NA 1.5: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PN	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PN 6.2: PY 6.3: Y 6.4: N	7.1: N 7.2: N 7.3: N	Moderate risk
	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Nakagomi 2011[8]	1.1: PY 1.2: N 1.4: PY 1.6: N 1.7: NA	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PN	4.1: N	5.1: Y 5.2 PN 5.3: N	6.1: Y 6.2: PY 6.3: Y 6.4: N	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Moderate risk	Low risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	
Ota 2017[15]	1.1: PN	2.1: N 2.4: Y	3.1: NI 3.2: NI 3.3: PN	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PY 6.2: N 6.3: Y 6.4. N	7.1: PN 7.2: PN 7.3: PN	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Roelz 2017[9]	1.1: PY 1.2: N 1.4: Y 1.5: Y 1.6: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PY 6.2: N 6.3: Y 6.4: N	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Moderate risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Roelz 2019a[16]	1.1: Y 1.2: N 1.4: PN 1.6: N	2.1: NI 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: NI 5.3: NI 5.5: N	6.1: PY 6.2: Y 6.3: Y 6.4: PN	7.1: N 7.2: PN 7.3: N	Critical risk
	Serious risk	Moderate risk	Low risk	Low risk	Critical risk	Moderate risk	Low risk	
Roelz 2019b[23]	1.1: Y 1.2: N 1.4: PN 1.6: N	2.1: NI 2.4: Y	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: NI 5.3: NI 5.5: N	6.1: PY 6.2: Y 6.3: Y 6.4: PN	7.1: N 7.2: PN 7.3: N	Critical risk
	Serious risk	Moderate risk	Low risk	Low risk	Critical risk	Moderate risk	Low risk	

Table S7: ROBINS-I assesment for observational studies

Study ID	Confounding	Selection	Classification	Deviations from intervention	Missing Data	Measurement	Reporting	Overall risk of bias
Roelz 2022[17]	1.1: Y 1.2: N 1.4: N 1.6: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PY	4.1: N	5.1: Y 5.2: N 5.3: PN	6.1: PN 6.2: Y 6.3: PN 6.4: N	7.1: N 7.2: N 7.3: N	Serious risk
	Serious risk	Low risk	Moderate risk	Low risk	Low risk	Moderate risk	Low risk	
Scheiwe 2023[19]	1.1: PY 1.2: N 1.4: N 1.6: N	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PY	4.1: N	5.1: Y 5.2: N 5.3: N	6.1: PN 6.2: PY 6.3: Y 6.4: N	7.1: N 7.2: N 7.3: N	Moderate risk
	Moderate risk	Low risk	Moderate risk	Low risk	Low risk	Low risk	Low risk	
Suzuki 1994[20]	1.1: PN	2.1: N 2.4: Y	3.1: Y 3.2: Y 3.3: PN	4.1: N	5.1: PY 5.2: N 5.3: N	6.1: PN 6.2: NI 6.3: Y 6.4: N	7.1: N 7.2: N 7.3: N	Low risk
	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Yoshikane 2021[11]	1.1: PN	2.1: N 2.4: N	3.1: Y 3.2: Y 3.3: N	4.1: N	5.1: Y 5.2: PY 5.3: PY	6.1: PY 6.2: N 6.3: Y 6.4: N	7.1: PN 7.2: PN 7.3: PN	Moderate risk
	Low risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	Low risk	

Y = yes, PY = probably yes, PN = probably no, N = no, NI = no information

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