

Supplementary Table 1. Studies included in the qualitative synthesis

Study	Type	Sample size	Physical analysis	Histopathology	Biological analysis	Microbiology	Diagnostic
Abdel-Wahed et al. (2019) <i>Am J Med</i> ¹⁴	Case report	1	Yes	Yes	No	Yes	Atypical etiology; Underlying pathology
Ahn et al. (2016) <i>Int J Stroke</i> ⁵⁷	Cohort	36	No	Yes	No	No	TOAST
Almekhlafi et al. (2008) <i>Ann Neurol</i> ⁴³	Case series	5	Yes	Yes	No	No	None
Ambrosioni et al. (2018) <i>Clin Infect Dis</i> ¹³¹	Case series	6	No	No	No	Yes	Atypical etiology; Underlying pathology
Anuwatworn et al. (2015) <i>JACC Cardiovasc Interv</i> ²⁴	Case report	1	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Baek et al. (2018) <i>Ann Clin Transl Neurol</i> ¹¹²	Cohort	82	No	No	Yes	No	TOAST
Bain et al. (2011) <i>J Neuroimaging</i> ¹³²	Case report	1	No	Yes	No	Yes	Atypical etiology; Underlying pathology
Benson et al. (2020) <i>J NeuroIntervent Surg</i> ⁵⁸	Cohort	57	No	Yes	No	No	None
Berndt et al. (2018) <i>World Neurosurg</i> ¹²⁶	Cohort	137	No	Yes	No	No	TOAST
Berndt et al. (2018) <i>Stroke</i> ¹⁴⁶	Cohort	32	No	Yes	No	No	None
Berndt et al. (2021) <i>Clin Neuroradiol</i> ¹⁴⁵	Cohort	59	No	Yes	No	No	None
Bhaskar et al. (2019) <i>Eur J Neurol</i> ¹²⁷	Cohort	85	No	Yes	No	No	TOAST
Bhaskar et al. (2019) <i>Can J Neurol Sci</i> ¹⁰²	Case series	4	No	Yes	No	Yes	Atypical etiology; Underlying pathology
Biraschi et al. (2016) <i>J Stroke Cerebrovasc Dis</i> ¹⁵	Case report	1	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Boeckh-Behrens et al. (2016) <i>Clin Neuroradiol</i> ⁸⁹	Cohort	34	No	Yes	No	No	TOAST
Boeckh-Behrens et al. (2016) <i>Stroke</i> ¹²²	Cohort	137	No	Yes	No	No	TOAST
Bourcier et al. (2020) <i>J Stroke Cerebrovasc Dis</i> ³⁵	Cohort	139	Yes	No	No	No	None
Brinjikji et al. (2020) <i>Stroke</i> ⁵⁹	Cohort	1,022	No	Yes	No	No	TOAST
Chapot et al. (2006) <i>Am J Neuroradiol</i> ²⁵	Case report	1	Yes	Yes	No	No	Atypical etiology
Chen et al. (2021) <i>Front Pharmacol</i> ⁹⁹	Cohort	30	No	Yes	Yes	No	None
Choi et al. (2018) <i>Stroke</i> ³⁷	Cohort	52	Yes	Yes	No	No	None
Chueh et al. (2011) <i>Am J Neuroradiol</i> ⁴⁴	Cohort	4	Yes	Yes	No	No	None
Cline et al. (2013) <i>J NeuroIntervent Surg</i> ¹⁰⁶	Cohort	16	No	Yes	No	No	None
Darcourt et al. (2021) <i>Int J Stroke</i> ⁸⁷	Cohort	102	No	Yes	No	No	None
Dargazanli et al. (2016) <i>PLoS ONE</i> ⁹⁰	Cohort	54	No	Yes	No	No	TOAST
Dargazanli et al. (2020) <i>Front Neurol</i> ¹¹⁵	Cohort	60	No	No	Yes	No	TOAST
Deng et al. (2020) <i>Neurosci Lett</i> ⁹⁴	Cohort	46	No	Yes	No	No	Underlying pathology
Di Meglio et al. (2020) <i>Eur J Neurol</i> ¹¹⁹	Cohort	84	No	No	Yes	No	None
Di Meglio et al. (2020) <i>Stroke</i> ¹¹⁸	Cohort	250	No	No	Yes	No	TOAST
Di Meglio et al. (2019) <i>Neurology</i> ⁶³	Cohort	199	No	Yes	No	No	None
Distefano et al. (2019) <i>J Stroke Cerebrovasc Dis</i> ¹³³	Case report	1	No	Yes	No	Yes	Atypical etiology; Underlying pathology
Donnerstag et al. (2021) <i>Intervent Neuroradiol</i> ⁹¹	Cohort	302	No	Yes	No	No	None
Douglas et al. (2020) <i>J NeuroIntervent Surg</i> ⁶⁰	Cohort	91	No	Yes	No	No	None
Ducroux et al. (2018) <i>Stroke</i> ⁹⁵	Cohort	108	No	Yes	Yes	No	None
Duffy et al. (2019) <i>Stroke</i> ⁶¹	Cohort	106	No	Yes	No	No	None
Elijovich et al. (2018) <i>Stroke</i> ⁷⁵	Cohort	25	No	Yes	Yes	No	None
Elodie et al. (2019) <i>J Neurol Sci</i> ²⁶	Case report	1	Yes	No	No	Yes	Atypical etiology; Underlying pathology
Essig et al. (2020) <i>Int J Mol Sci</i> ⁷⁶	Cohort	37	No	Yes	No	No	TOAST
Fassa et al. (2014) <i>Circ Cardiovasc Interv</i> ²⁷	Case report	1	Yes	Yes	No	No	Atypical etiology

Supplementary Table 1. Continued

Study	Type	Sample size	Physical analysis	Histopathology	Biological analysis	Microbiology	Diagnostic
Fitzgerald et al. (2019) Stroke ⁵⁰	Cohort	105	No	Yes	No	No	TOAST
Fitzgerald et al. (2021) J Stroke Cerebrovasc Dis ⁴⁰	Cohort	550	Yes	No	No	No	TOAST
Fitzgerald et al. (2019) PLoS ONE ⁴⁸	Cohort	50	No	Yes	No	No	None
Fitzgerald et al. (2020) J NeuroIntervent Surg ³⁹	Cohort	612	Yes	Yes	No	No	TOAST
Fitzgerald et al. (2019) J NeuroIntervent Surg ⁴⁹	Cohort	85	No	Yes	No	No	None
Fitzpatrick et al. (2018) J NeuroIntervent Surg ²⁸	Case series	3	Yes	Yes	No	No	Atypical etiology
Fu et al. (2020) Stroke ³⁸	Cohort	152	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Funatsu et al. (2019) J NeuroIntervent Surg ¹⁰¹	Cohort	150	No	Yes	No	No	None
Garcia-Ptacek et al. (2014) J NeuroIntervent Surg ²⁹	Case report	2	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Genchi et al. (2020) J Neurol Sci ³⁰	Case report	1	Yes	Yes	No	No	Atypical etiology
Goebel et al. (2020) Am J Neuroradiol ⁶⁷	Cohort	85	No	Yes	No	No	TOAST
Gong et al. (2019) Cell Transplant ¹²⁵	Cohort	45	No	Yes	No	No	TOAST
Gurkas et al. (2019) Stroke ⁷⁷	Cohort	111	No	Yes	No	No	None
Hanning et al. (2021) J NeuroIntervent Surg ⁸⁸	Cohort	112	No	Yes	No	No	None
Hashimoto et al. (2016) Stroke ⁷⁸	Cohort	83	No	Yes	No	No	None
Hernández-Fernández et al. (2017) Cardiovasc Intervent Radiol ¹⁰⁹	Cohort	65	No	Yes	No	Yes	Atypical etiology; Underlying pathology
Hinman et al. (2013) Front Neurol ¹³⁰	Case report	1	No	Yes	Yes	No	Atypical etiology
Horie et al. (2019) World Neurosurg ⁴²	Cohort	65	No	Yes	No	No	None
Hund et al. (2019) J Cereb Blood Flow Metab ¹⁰⁴	Cohort	281	No	Yes	No	No	None
Itsekson Hayosh et al. (2020) J NeuroIntervent Surg ¹²¹	Cohort	68	No	No	Yes	No	TOAST
Juega et al. (2019) Stroke ¹²⁰	Cohort	40	No	No	Yes	No	TOAST
Kaesmacher et al. (2017) Am J Neuroradiol ⁹²	Cohort	85	No	Yes	No	No	None
Kan et al. (2012) World Neurosurg ³¹	Case report	1	Yes	No	No	Yes	Atypical etiology; Underlying pathology
Katano et al. (2020) Clin Neurol ¹³⁷	Case report	1	No	Yes	No	Yes	Atypical etiology; Underlying pathology
Khashim et al. (2019) Interv Neuroradiol ¹⁰⁸	Cohort	20	No	No	No	Yes	None
Khismatullin et al. (2020) BioNanoScience ⁶²	Case series	3	No	Yes	No	No	None
Kim et al. (2020) J Clin Neurosci ⁵¹	Cohort	52	No	Yes	No	No	TOAST
Kim et al. (2014) Neurointervention ³²	Case report	1	Yes	Yes	No	Yes	Atypical etiology; Underlying pathology
Kim et al. (2015) Am J Neuroradiol ⁷²	Cohort	37	No	Yes	No	No	TOAST
Koneru et al. (2021) J NeuroIntervent Surg ¹⁴¹	Case series	3	No	Yes	No	No	Atypical etiology; Underlying pathology
Krajičková et al. (2018) Circ J ⁹⁸	Cohort	80	No	Yes	No	No	None
Laridan et al. (2017) Ann Neurol ⁹³	Cohort	68	No	Yes	No	No	TOAST
Li et al. (2020) BMC Neurology ¹⁰⁷	Case report	2	No	Yes	No	No	None
Liao et al. (2020) Front Neurol ¹²³	Cohort	88	No	Yes	No	No	TOAST
Liebeskind et al. (2011) Stroke ⁷⁹	Cohort	50	No	Yes	No	No	None
Liu et al. (2020) J Neurosurg ⁴⁵	Cohort	16	Yes	Yes	No	No	None
Liu et al. (2020) Thromb Res ⁸⁰	Cohort	84	No	Yes	No	No	None
López-Cancio et al. (2013) Cerebrovasc Dis ⁷⁴	Cohort	15	No	Yes	No	No	None
Lopez-Pedrerá et al. (2020) Res Pract Thromb Haemost ¹¹⁶	Cohort	50	No	No	Yes	No	None

Supplementary Table 1. Continued

Study	Type	Sample size	Physical analysis	Histopathology	Biological analysis	Microbiology	Diagnostic
Maegerlein et al. (2018) <i>Intervent Neuroradiol</i> ⁸¹	Cohort	64	No	Yes	No	No	None
Maekawa et al. (2018) <i>Cerebrovasc Dis Extra</i> ⁸²	Cohort	43	No	Yes	No	No	TOAST
Marder et al. (2006) <i>Stroke</i> ⁷	Cohort	25	No	Yes	No	Yes	Atypical etiology; None; Underlying pathology
Matsumoto et al. (2016) <i>J Stroke Cerebrovasc Dis</i> ³³	Case report	2	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Matsumoto et al. (2020) <i>J Stroke Cerebrovasc Dis</i> ¹³⁹	Case report	1	No	Yes	No	No	Atypical etiology
Meher et al. (2018) <i>Int J Stroke</i> ⁴⁷	Cohort	19	Yes	Yes	No	No	None
Mehta et al. (2019) <i>J NeuroIntervent Surg</i> ¹⁰³	Cohort	92	No	Yes	No	No	None
Meng et al. (2020) <i>Oxid Med Cell Longev</i> ¹²⁸	Cohort	147	No	Yes	No	No	None
Mereuta et al. (2020) <i>Stroke</i> ¹⁰⁰	Cohort	79	No	Yes	No	No	TOAST
Mereuta et al. (2021) <i>J NeuroIntervent Surg</i> ⁵⁶	Cohort	10	No	Yes	No	No	None
Mönch et al. (2021) <i>Clin Neuroradiol</i> ¹⁴²	Cohort	69	No	Yes	No	No	None
Muñoz et al. (2018) <i>Int J Mol Sci</i> ¹¹⁴	Cohort	4	No	No	Yes	No	None
Nakanishi et al. (2018) <i>Clin Neurol</i> ¹³⁴	Case report	1	No	No	No	Yes	Atypical etiology; Underlying pathology
Nielsen et al. (2014) <i>PLoS ONE</i> ⁵⁴	Cohort	22	No	Yes	No	No	TOAST
Nouh et al. (2020) <i>BMC Neurology</i> ⁷³	Cohort	33	No	Yes	No	No	TOAST
Novotny et al. (2020) <i>Neurology</i> ⁶⁶	Cohort	71	No	Yes	No	No	TOAST
Park et al. (2019) <i>Ann Neurol</i> ⁶⁵	Cohort	48	No	Yes	No	No	Atypical etiology; Underlying pathology
Patel et al. (2021) <i>Am J Neuroradiol</i> ¹⁴⁴	Cohort	40	No	Yes	No	No	None
Patrakka et al. (2019) <i>J Am Heart Assoc</i> ¹¹⁰	Cohort	75	No	No	No	Yes	None
Peña-Martínez et al. (2019) <i>Stroke</i> ⁷¹	Cohort	10	No	Yes	Yes	No	None
Pisano et al. (2020) <i>J Stroke Cerebrovasc Dis</i> ³⁴	Case report	1	Yes	No	No	No	Atypical etiology; Underlying pathology
Prochazka et al. (2018) <i>Med Sci Monit</i> ⁹⁷	Cohort	90	No	Yes	No	No	None
Qureshi et al. (2016) <i>J Vasc Intervent Neuro</i> ⁸³	Cohort	18	No	Yes	No	No	None
Rao et al. (2017) <i>Front Neurol</i> ¹¹³	Cohort	20	No	No	Yes	No	None
Rossi et al. (2021) <i>J Thromb Thrombolysis</i> ⁴¹	Cohort	550	Yes	No	No	No	None
Salam et al. (2018) <i>J Stroke Cerebrovasc Dis</i> ¹⁶	Case report	1	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Salinas et al. (2013) <i>JACC Cardiovasc Interv</i> ¹⁷	Case report	1	Yes	No	No	No	Atypical etiology
Sallustio et al. (2015) <i>J Neurol Disord Stroke</i> ¹⁰⁵	Cohort	28	No	Yes	No	No	None
Scharf et al. (2017) <i>J NeuroIntervent Surg</i> ¹⁸	Case report	1	Yes	Yes	No	Yes	Atypical etiology; Underlying pathology
Scharf et al. (2016) <i>Neurocrit Care</i> ¹³⁸	Case report	1	No	No	No	Yes	Atypical etiology; Underlying pathology
Schuhmann et al. (2016) <i>Int J Mol Sci</i> ⁵²	Cohort	37	No	Yes	No	No	None
Semerano et al. (2019) <i>J Neurol</i> ¹⁹	Case report	1	Yes	Yes	No	No	TOAST
Sgreccia et al. (2020) <i>J Neuroradiol</i> ¹³⁶	Case report	1	No	No	No	Yes	Atypical etiology; Underlying pathology
Sgreccia et al. (2019) <i>J NeuroIntervent Surg</i> ³⁶	Cohort	255	Yes	No	No	No	Atypical etiology; Underlying pathology
Shin et al. (2018) <i>PLoS ONE</i> ⁸⁴	Cohort	93	No	Yes	No	No	TOAST
Simons et al. (2015) <i>J Neuroradiol</i> ⁸⁵	Cohort	40	No	Yes	No	No	None
Singh et al. (2013) <i>Stroke</i> ⁸⁶	Cohort	48	No	Yes	No	No	None

Supplementary Table 1. Continued

Study	Type	Sample size	Physical analysis	Histopathology	Biological analysis	Microbiology	Diagnostic
Sporns et al. (2021) J NeuroIntervent Surg ⁶⁸	Cohort	163	No	Yes	No	No	None
Sporns et al. (2017) Stroke ⁹⁶	Cohort	187	No	Yes	No	No	TOAST
Sporns et al. (2017) Cerebrovasc Dis ⁷⁰	Cohort	180	No	Yes	No	No	None
Sporns et al. (2019) Stroke ⁶⁹	Cohort	163	No	Yes	No	No	None
Staessens et al. (2020) Haematologica ⁵³	Cohort	177	No	Yes	No	No	None
Suissa et al. (2020) Metabolites ¹¹⁷	Cohort	41	No	No	Yes	No	None
Sukumaran et al. (2012) Neurol India ¹³⁵	Case report	1	No	Yes	No	Yes	Atypical etiology; Underlying pathology
Tejada et al. (2014) J NeuroIntervent Surg ²⁰	Case report	1	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Thomas et al. (2017) J NeuroIntervent Surg ²¹	Case report	1	Yes	Yes	No	No	Atypical etiology; Underlying pathology
Usui et al. (2019) Intern Med ¹⁴⁰	Case report	1	No	Yes	No	No	Atypical etiology
Vajpeyee et al. (2021) Neurointervention ¹¹¹	Cohort	4	No	No	No	Yes	TOAST
Valente et al. (2019) J Clin Neurosci ²²	Case report	1	Yes	Yes	No	Yes	Atypical etiology; Underlying pathology
Vidmar et al. (2019) Radiol Oncol ⁴⁶	Cohort	17	Yes	No	No	No	None
Wei et al. (2021) Radiology ¹⁴³	Cohort	77	No	Yes	No	No	None
Wollenweber et al. (2016) Neurology ²³	Case report	1	Yes	Yes	No	No	Atypical etiology
Wolpert et al. (2020) Eur J Neurol ¹²⁹	Cohort	32	No	Yes	No	No	Atypical etiology; Underlying pathology
Xue et al. (2018) Natl Med J China ¹²⁴	Cohort	58	No	Yes	No	No	TOAST
Ye et al. (2020) Interv Neuroradiol ⁵⁵	Cohort	52	No	Yes	No	No	Underlying pathology
Ye et al. (2020) Clin Neurol Neurosurg ⁵⁴	Cohort	54	No	Yes	No	No	None

TOAST, Trial of ORG 10172 in Acute Stroke Treatment.