Search strategies of literature databases

Search strings

1. PubMed (MEDLINE & PMC)

#1: "Myocardial Ischemia"[MeSH Terms:noexp] OR "myocardial isch*"[Title/Abstract] OR "myocardial infarction"[MeSH Terms:noexp] OR "myocardial infarction*"[Title/Abstract] OR "acute coronary syndrome*"[Title/Abstract] OR "ACS"[Title/Abstract] OR "ischemic syndrome*"[Title/Abstract] OR "coronary disease"[MeSH Terms] OR "coronary disease*"[Title/Abstract] OR "coronary artery disease*"[Title/Abstract] OR "acute coronary syndrome"[MeSH Terms] OR "non st elevated myocardial infarction"[MeSH Terms] OR "st elevation myocardial infarction"[MeSH Terms] OR "STEMI"[Title/Abstract] OR "STEACS"[Title/Abstract] OR "STE-ACS"[Title/Abstract] OR "Q-wave-MI"[Title/Abstract] OR "acute myocardial Infarction"[Title/Abstract] OR "chest pain"[Title/Abstract] OR "unstable angina*"[Title/Abstract] OR "angina, unstable"[MeSH Terms]

#2: "PCI"[Title/Abstract] OR "percutaneous coronary intervention"[MeSH Terms] OR "percutaneous coronary intervention*"[Title/Abstract] OR "percutaneous intervention*"[Title/Abstract] OR "PTCA"[Title/Abstract] OR "revascularization"[Title/Abstract] OR "Myocardial Revascularization"[MeSH Terms:noexp] OR "angioplast*"[Title/Abstract] OR "angioplasty"[MeSH Terms] OR "invasive management"[Title/Abstract] OR "invasive strateg*"[Title/Abstract] OR "primary percutaneous"[Title/Abstract] OR "primary invasive"[Title/Abstract] OR "primary revascularization"[Title/Abstract] OR "primary myocardial revascularization"[Title/Abstract] OR "primary PCI"[Title/Abstract] OR "primary PTCA"[Title/Abstract] OR "primary angioplasty"[Title/Abstract] OR "primary coronary angioplasty"[Title/Abstract] OR "reflow"[Title/Abstract]

#3: "Thrombolytic Therapy"[MeSH Terms] OR "Fibrinolytic Agents"[MeSH Terms] OR "thromboly*"[Title/Abstract] OR "fibrinoly*"[Title/Abstract] OR "Plasminogen Activators"[MeSH Terms] OR "plasminogen activator*"[Title/Abstract] OR "urokinase"[Title/Abstract] OR "t-pa"[Title/Abstract] OR "tpa"[Title/Abstract] OR "rt-pa"[Title/Abstract] OR "rtpa"[Title/Abstract] OR "Streptokinase"[Title/Abstract] OR "Alteplase"[Title/Abstract] OR "Monteplase"[Title/Abstract] OR "E6010"[Title/Abstract] OR "reteplase" [Supplementary Concept] OR "reteplase" [Title/Abstract] OR "Tenecteplase"[MeSH Terms] OR "Tenecteplase"[Title/Abstract] OR "pharmacoinvasive"[Title/Abstract]

#4: "late*"[Title/Abstract] OR "delay*"[Title/Abstract] OR "earl*"[Title/Abstract] OR urgent[Title/Abstract] OR immediate[Title/Abstract] OR rescue[Title/Abstract] OR timing[Title/Abstract] OR timel*[Title/Abstract] OR "Time-to-Treatment"[MeSH Terms] OR "Time Factors"[Mesh Terms]

#5: #1 AND #2 AND #3 AND #4

2. Web of Science (Science Citation Index Expanded(SCIE))

#1: TS="myocardial isch*" OR TS="myocardial infarction*" OR TS="acute coronary syndrome*" OR TS=ACS OR TS="ischemic syndrome*" OR TS="coronary disease*" OR TS="coronary artery disease*" OR TS="acute coronary syndrome"OR TS=STEMI OR TS=STEACS OR TS=STE-ACS OR TS=Q-wave-MI OR TS="chest pain" OR TS="unstable angina*"

#2: TS=PCI OR TS="percutaneous coronary intervention*" OR TS="percutaneous intervention*" OR TS=PTCA OR TS=revascularization OR TS=angioplast* OR TS="invasive management" OR TS="invasive strateg*" OR TS="primary percutaneous" OR TS="primary invasive" OR TS="primary revascularization" OR TS="primary myocardial

revascularization" OR TS="primary PCI" OR TS="primary PTCA" OR TS="primary angioplasty" OR TS="primary coronary angioplasty" OR TS=reflow
#3: TS=thromboly* OR TS=fibrinoly* OR TS="plasminogen activator*" OR TS=urokinase OR TS=t-pa OR TS=tpa OR TS=rt-pa OR TS=rtpa OR TS=Streptokinase OR TS=Alteplase OR TS=Monteplase OR TS=E6010 OR TS=reteplase OR TS=reteplase OR TS=Tenecteplase OR TS=Tenecteplase OR TS=pharmacoinvasive
#4: TS=late* OR TS=delay* OR TS=earl* OR TS=urgent OR TS=immediate OR TS=rescue OR TS=timing OR TS=timel*
#5 #1 AND #2 AND #3 AND #4

3. Cochrane Library (Cochrane Central Register of Controlled Trials(CENTRAL))
#1: [mh ^"Myocardial Ischemia"] OR ("myocardial" NEXT isch*):ti,ab,kw OR [mh ^"myocardial infarction"] OR ("myocardial" NEXT infarction*):ti,ab,kw OR ("acute coronary" NEXT syndrome*):ti,ab,kw OR ACS:ti,ab,kw OR ("ischemic" NEXT syndrome*):ti,ab,kw OR [mh "coronary disease"] OR ("coronary" NEXT disease*):ti,ab,kw OR ("coronary artery" NEXT disease*):ti,ab,kw OR [mh "acute coronary syndrome"] OR [mh "non st elevated myocardial infarction"] OR [mh "st elevation myocardial infarction"] OR STEMI:ti,ab,kw OR STEACS:ti,ab,kw OR STE-ACS:ti,ab,kw OR Q-wave-MI:ti,ab,kw OR "acute myocardial Infarction":ti,ab,kw OR "chest pain":ti,ab,kw OR ("unstable" NEXT angina*):ti,ab,kw OR [mh "angina, unstable"]
#2: PCI:ti,ab,kw OR [mh "percutaneous coronary intervention"] OR ("percutaneous coronary" NEXT intervention*):ti,ab,kw OR ("percutaneous" NEXT intervention*):ti,ab,kw OR PTCA:ti,ab,kw OR revascularization:ti,ab,kw OR [mh ^"Myocardial Revascularization"] OR angioplast*:ti,ab,kw OR [mh angioplasty] OR "invasive management":ti,ab,kw OR ("invasive" NEXT strateg*):ti,ab,kw OR "primary percutaneous":ti,ab,kw OR "primary invasive":ti,ab,kw OR "primary revascularization":ti,ab,kw OR "primary myocardial revascularization":ti,ab,kw OR "primary PCI":ti,ab,kw OR "primary PTCA":ti,ab,kw OR "primary angioplasty":ti,ab,kw OR "primary coronary angioplasty":ti,ab,kw OR reflow:ti,ab,kw
#3: [mh "Thrombolytic Therapy"] OR [mh "Fibrinolytic Agents"] OR thromboly*:ti,ab,kw OR fibrinoly*:ti,ab,kw OR [mh "Plasminogen Activators"] OR ("plasminogen" NEXT activator*):ti,ab,kw OR urokinase:ti,ab,kw OR t-pa:ti,ab,kw OR tpa:ti,ab,kw OR rt-pa:ti,ab,kw OR rtpa:ti,ab,kw OR Streptokinase:ti,ab,kw OR Alteplase:ti,ab,kw OR Monteplase:ti,ab,kw OR E6010:ti,ab,kw OR reteplase:kw OR reteplase:ti,ab,kw OR [mh Tenecteplase] OR Tenecteplase:ti,ab,kw OR pharmacoinvasive:ti,ab,kw
#4: late*:ti,ab,kw OR delay*:ti,ab,kw OR earl*:ti,ab,kw OR urgent:ti,ab,kw OR immediate:ti,ab,kw OR rescue:ti,ab,kw OR timing:ti,ab,kw OR timel*:ti,ab,kw OR [mh "Time-to-Treatment"] OR [mh "Time Factors"]
#5: #1 AND #2 AND #3 AND #4

Publication Type	Authors	Article Title	Source Title	Abstract	Publication Year	Volume	Issue	Start Page	End Page	Article Number	DOI	Pubmed Id	UT (Unique WOS ID)
J	Dou, J; Gao, J; Yang, HH; Guo, R; Jiang, C; Zhou, J; Yu, X; Guo, J; Zhang, J; Luo, D	Prognosis in Patients with ST-Segment Elevation Myocardial Infarction Reperfused by PHDP: 1-Year MACEs Follow-Up	CLINICAL AND APPLIED THROMBOSIS/HEMOSTASIS	This study explored 1-year follow-up of Parmaco-invasive strategy with half-dose recombinant human prourokinase (PHDP) in patients with acute ST-segment elevation myocardial infarction (STEMI). The follow-up endpoints were major adverse cardiovascular events (MACEs) occurring within 30 days and 1 year, as well as postoperative bleeding events. The study ultimately included 150 subjects, with 75 in the primary percutaneous coronary intervention (PPCI) group and 75 in the PHDP group. This study found that the PHDP group had a shorter FMC-reperfusion time (42.00 min vs 96.00 min, P < 0.001). During PCI, the PHDP group had a lower percutaneous transluminal coronary angioplasty (PTCA) (P = 0.021), intropin (P = 0.002) and tirofiban (P < 0.001) use. And the incidence of intraoperative arrhythmia, malignant arrhythmia, and slow flow/no-reflow was lower in the PHDP group (P < 0.001). At the 30-day follow-up, there was a significantly higher proportion of patients in the PPCI group who were readmitted due to unstable angina (P = 0.037). After 1 year of follow-up, there was no statistically significant difference in MACEs between the two groups (P = 0.500). The incidence of postoperative major bleeding, intracranial bleeding, and minor bleeding did not differ between the PHDP and PPCI	2024	30				10760296241271394	10.1177/10760296241271394	39140859	
J	Sultan, EM; Elberry, AA; Rabea, H; Mahmoud, HB	Safety and Efficacy of Pharmaco-invasive Approach Using Streptokinase Compared With Primary Percutaneous Coronary Angiography	CRITICAL PATHWAYS IN CARDIOLOGY	Background: Fibrin-specific fibrinolytics are preferred when they used in STEMI patients (pharmaco-invasive approach). However, streptokinase is still the most common used thrombolytic agent in Egypt because of its cheaper cost. Methods: 266 STEMI patients were randomly assigned to undergo PPCI or pharmacoinvasive (using streptokinase). Primary end point (death, shock, congestive heart failure, or reinfarction up to 30 d) and secondary end point (ischemic stroke, intracranial hemorrhage, or nonintracranial bleeding) were followed for 30 days after reperfusion. In pharmaco-invasive arm, urgent coronary angiography was performed in case of failed reperfusion. Based on the reperfusion time from symptoms onset, patients in both arms were divided into early (≤3 hrs) and late reperfusion (>3 hrs). Results: No statistical significant difference regarding left ventricular ejection fraction, end diastolic and end systolic diameter in both arms. Early PPCI (≤3 hrs) had highest ejection fraction values (56.9 ± 7.5). Myocardial wall preservation was best achieved in early pharmaco-invasive (≤3 hrs). There was no statistical significant difference in TIMI flow results between all subgroups (P = 0.750). Suction devices and IV Eptifibatide were less frequently used in the pharmaco-invasive compared with PPCI arm (P = 0.000 and P = 0.006). No statistical significant difference regarding complication incidence in both arms (P = 0.518). Radial access was more commonly used in the pharmaco-invasive arm (P = 0.015). Conclusion: Utilizing streptokinase in early re-perfused patients by PI approach (≤3 hrs) seems safe and efficient when PPCI delay (>120 min from symptom onset) is the other option.	2021	20	3	149	154		10.1097/HPC.0000000000000250	33337729	WOS:001623759900001
J	Van de Werf, F; Ristić, AD; Averkov, OV; Arias-Mendoza, A; Lambert, Y; Kerr Saraiva, JF; Sepulveda, P; Rosell-Ortiz, F; French, JK; Musić, LB; Vandenberghe, K; Bogaerts, K; Westerhout, CM; Pagès, A; Danays, T; Bainey, KR; Sinnaeve, P; Goldstein, P; Welsh, RC; Armstrong, PW; STREAM-2 Investigators	STREAM-2: Half-Dose Tenecteplase or Primary Percutaneous Coronary Intervention in Older Patients With ST-Segment-Elevation Myocardial Infarction: A Randomized, Open-Label Trial	CIRCULATION	Background: ST-segment-elevation myocardial infarction (STEMI) guidelines recommend pharmaco-invasive treatment if timely primary percutaneous coronary intervention (PCI) is unavailable. Full-dose tenecteplase is associated with an increased risk of intracranial hemorrhage in older patients. Whether pharmaco-invasive treatment with half-dose tenecteplase is effective and safe in older patients with STEMI is unknown. Methods: STREAM-2 was an investigator-initiated, open-label, randomized, multicenter study. Patients ≥60 years of age with ≥2 mm ST-segment elevation in 2 contiguous leads, unable to undergo primary PCI within 1 hour, were randomly assigned (2:1) to half-dose tenecteplase followed by coronary angiography and PCI (if indicated) 6 to 24 hours after randomization, or to primary PCI. Efficacy end points of primary interest were ST resolution and the 30-day composite of death, shock, heart failure, or reinfarction. Safety assessments included stroke and nonintracranial bleeding. Results: Patients were assigned to pharmaco-invasive treatment (n=401) or primary PCI (n=203). Median times from randomization to tenecteplase or sheath insertion were 10 and 81 minutes, respectively. After last angiography, 85.2% of patients undergoing pharmaco-invasive treatment and 78.4% of patients undergoing primary PCI had ≥ 50% resolution of ST-segment elevation. The composite clinical end point occurred in 12.8% and 13.3%, respectively (relative risk 0.96, 95% CI 0.62-1.48). Six intracranial hemorrhages occurred in the pharmaco-invasive arm (1.5%), including 3 protocol violations. No intracranial bleeding occurred in the primary PCI arm. Major nonintracranial bleeding was low in both groups (<1.5%). Conclusions: If timely PCI is unavailable, this pharmaco-invasive strategy is a reasonable alternative, but intracranial hemorrhage risk remained higher than with primary PCI.	2023	148	9	753	764		10.1161/CIRCULATIONAHA.123.064521	37439219	

Short citation	Design	Population	Intervention	Comparator	Primary/Key endpoints	Main results (JP)	Safety (JP)	CQへの含意 (JP)	Source URL
Dou et al., 2024	Randomized comparison / 1-year follow-up of PHDP vs PPCI	Acute STEMI; n=150 (PHDP 75, PPCI 75)	Pharmaco-invasive strategy with half-dose recombinant human prourokinase (PHDP)	Primary PCI (PPCI)	30-day and 1-year MACEs; postoperative bleeding	PHDP群はFMC-to-reperfusion時間が短く、術中不整脈やslow flow/no-reflowが少なかった。1年MACEsはPPCI群と有意差なし。	大出血・頭蓋内出血・小出血はいずれも群間差なし。	timely PCIが困難な場面でPHDPは代替戦略となり得るが、1年予後の優越性は示されていない。	https://pubmed.ncbi.nlm.nih.gov/39140859/
Sultan et al., 2021	Randomized controlled trial	STEMI; n=266	Pharmaco-invasive approach using streptokinase	Primary PCI / primary coronary angiography strategy	30-day composite of death, shock, CHF, reinfarction; bleeding/stroke	全体として有効性・合併症に有意差なし。早期再灌流（≤3時間）ではpharmaco-invasive群で心筋壁保護が良好とされた。	合併症発生率に有意差なし。	PPCI遅延（症状発現から120分超）が見込まれる場合、streptokinaseを用いたpharmaco-invasive戦略は選択肢となり得る。	https://pubmed.ncbi.nlm.nih.gov/33337729/
Van de Werf et al., 2023 (STREAM-2)	Randomized, open-label, multicenter trial	Older STEMI patients ≥ 60 years; n=604 (401 vs 203)	Half-dose tenecteplase followed by angiography/PCI 6-24 h later	Primary PCI	ST resolution; 30-day composite of death, shock, heart failure, or reinfarction; bleeding/stroke	ST改善および30日複合臨床エンドポイントはprimary PCIと概ね同等。	頭蓋内出血はpharmaco-invasive群1.5%、primary PCI群0%。非頭蓋内大出血は両群とも低率。	迅速なPCIが不可能な高齢STEMI患者では合理的代替となるが、頭蓋内出血リスクに注意が必要。	https://pubmed.ncbi.nlm.nih.gov/37439219/