METHODS

Statistical analysis

Continuous variables were not normally distributed as assessed by Shapiro–Wilk test and are presented as median (interquartile range). Differences between continuous variables were analyzed using the Mann–Whitney U test. Categorical variables were compared using the χ^2 test or Fisher's exact test and are presented as the number of patients (percentages). To manage differences in the baseline clinical and angiographic characteristics between patients in aspiration thrombectomy (AT) and non-AT groups, propensity score matching (nearest neighbor algorithm) was used. Before matching, missing data were imputed using the k-nearest neighbor algorithm. The AT and non-AT groups were matched 1:2 for clinically relevant variables that might influence the decision of performing AT, i.e., sex, age, systolic and diastolic blood pressure on admission, Killip class, cardiac arrest before hospital admission, presence of STEMI, pain-to-admission time, door-to-catheter time, thrombolysis in myocardial infarction (TIMI) flow in the culprit vessel before the intervention, type of coronary bypass graft, diabetes, chronic kidney disease, previous myocardial infarction, previous percutaneous coronary intervention, previous stroke, and glycoprotein IIb/IIIa inhibitors administration. The comparison of baseline clinical and angiographic characteristics, in-hospital treatment, and outcomes (TIMI 3 flow in the culprit vessel after intervention, duration of index hospitalization, death, stroke, and major bleeding) was performed for both unmatched and matched populations. The Kaplan–Meier one-year survival rates analysis was performed for the matched groups and assessed by the log-rank test. The level of statistical significance was $P < 0.05$ (two-tailed). Statistica version 13.3 (TIBCO Software, CA, US) was applied for all computational analyses.

Follow-up

Follow-up data for all-cause mortality, including vital status and exact death dates, were obtained from the National Health Fund database. Follow-up time was censored at 365 days or at the end of follow-up time, on the 1st June 2020 (whichever came first).

Definitions

Pain-to-admission time was defined as the time interval from symptom onset to admission to a PCI-capable center. Door-to-catheter time refers to the interval from admission to PCI-capable hospital to coronary catheterization.

Table S1. Baseline characteristics, treatment and in-hospital outcomes of unmatched cohorts

		AT n = 51	Non-AT n = 579	*P*-value
Demographics	Age, years	69.2 (66.5–77.1)	71.5 (66.5–79.1)	0.23
	Sex, male	48 (94.1)	464 (80.1)	0.01
	BMI, kg/m^2	26.9 (24.1–31.6)	27.8 (25.4–30.8)	0.41
Clinical variables	HT	44 (91.7)	487 (88.4)	0.49
	DM	20 (41.7)	239 (43.8)	0.29
	IGT	3 (6.3)	10 (1.8)	
	IFG	0 (0)	9 (1.6)	
	Hyperlipidemia	29 (67.4)	341 (67.3)	0.98
	AF	8 (16.3)	106 (19.4)	0.60
	CHA$_2$DS$_2$-VASc (score)	4 (3–5)	4 (3–5)	0.15
	Previous stroke	5 (10.2)	53 (9.7)	0.90
	CKD	5 (10.2)	109 (19.9)	0.10
	Smoker	Current	4 (9.3)	75 (15.5)	0.55
		Previous	23 (53.5)	238 (49.3)	
	Previous MI	36 (73.5)	411 (72.9)	0.93
	Previous PCI	29 (59.2)	341 (60.9)	0.81
Clinical presentation on admission	STEMI	14 (27.5)	91 (15.7)	0.03
	NSTEMI	37 (72.5)	488 (84.3)	
	Killip	I	36 (70.6)	461 (80.2)	0.07

	class	II	13 (25.5)	82 (14.3)	
		III	0 (0)	21 (3.7)	
		IV	2 (3.9)	11 (1.9)	
	Systolic BP, mm Hg		125 (110–150)	138 (120–150)	0.01
	Diastolic BP, mm Hg		72 (61–90)	80 (70–90)	0.01
	SCA before admission		3 (5.9)	15 (2.6)	0.18
	Pain-to-admission time, hours		3.7 (2.4–12.5)	6.2 (2.9–22.3)	0.06
	Door-to-catheter time, hours		1.2 (0.3–7.5)	4.7 (1.0–18.5)	0.001
Laboratory and echocardiographic findings on admission	Creatinine, μmol/l		87.5 (72.0–110.5)	95.0 (78.0–117.0)	0.26
	LDL-C, mmol/l		2.6 (2.1–3.7)	2.2 (1.7–2.9)	0.10
	HDL-C, mmol/l		1.1 (1.0–1.5)	1.1 (0.9–1.3)	0.10
	LVEF	<35%	8 (16.7)	105 (23.3)	0.38
		35–50%	25 (52.1)	190 (42.2)	
		>50%	15 (31.3)	155 (34.4)	
Coronary angiography	Type of culprit coronary bypass graft	LAD	5 (9.8)	97 (16.8)	0.30
		D	2 (3.9)	55 (9.5)	
		Cx	6 (11.8)	52 (9.0)	
		OM	14 (27.5)	166 (28.7)	
		IM	1 (2.0)	21 (3.6)	
		RCA	23 (45.1)	188 (32.5)	
	TIMI flow in culprit vessel	0	18 (36.0)	54 (10.2)	<0.001
		1	2 (4.0)	67 (12.6)	
		2	2 (4.0)	43 (8.1)	
		3	28 (56.0)	368 (69.2)	
	In-stent thrombosis		0 (0)	3 (5.6)	0.60
Drugs during hospitalization	ASA		47 (94.0)	537 (94.2)	0.95
	Clopidogrel		36 (72.0)	391 (69.1)	0.67
	Ticagrelor		13 (26.0)	113 (20.0)	0.30

		AT	Non-AT	P-value
	Prasugrel	0 (0)	5 (0.9)	0.50
	GP IIb/IIIa inhibitors	25 (50.0)	119 (21.0)	<0.001
	Thrombolysis	0 (0)	0 (0)	1.0
	Inotropic agents	5 (10.0)	31 (5.5)	0.19
Primary PCI	Balloon	35 (68.7)	345 (60.3)	0.24
	DEB	0 (0)	14 (2.9)	0.27
	Number of stents — 0	10 (19.6)	76 (13.2)	0.17
	Number of stents — 1	25 (49.0)	378 (65.5)	
	Number of stents — 2	13 (25.5)	100 (17.3)	
	Number of stents — 3	3 (5.9)	19 (3.3)	
	Number of stents — 4	0 (0)	4 (0.6)	
	IABP	1 (2.0)	2 (0.3)	0.11
	TIMI 3 flow after PCI	35 (68.6)	521 (90.0)	<0.001
In-hospital outcomes	Duration of hospitalization, days	5.8 (3.7–7.8)	4.9 (3.7–7.0)	0.35
	Death	3 (5.9)	21 (3.6)	0.42
	Stroke	1 (2.0)	2 (0.35)	0.1
	Major bleeding	0 (0)	4 (0.7)	0.55

Categorical variables are shown as number of patients (%). Continuous data are presented as median (IQR)

Abbreviations: AF, atrial fibrillation; ASA, acetylsalicylic acid; AT, aspiration thrombectomy; BMI, body mass index; BP, blood pressure; CKD, chronic kidney disease; Cx, circumflex artery; D, diagonal branch; DEB, drug-eluting balloon; DM, diabetes mellitus; GP, glycoprotein; HT, hypertension; IABP, intra-aortic balloon pump; IFG, impaired fasting glucose; IGT, impaired glucose tolerance; IM; intermediate artery; LAD, left anterior descending artery; LVEF, left ventricular ejection fraction; MI, myocardial infarction; NSTEMI, non-ST-elevation myocardial infarction; PCI, percutaneous coronary intervention; RCA, right coronary artery; TIMI, Thrombolysis in Myocardial Infarction; SCA, sudden cardiac arrest; STEMI, ST-elevation myocardial infarction

Table S2. Baseline characteristics, treatment and in-hospital outcomes of propensity-score matched patients

		AT n = 51	Non-AT n = 102	P-value
Demographics	Age, years	69.2 (66.5–77)	71.2 (66.6–78.2)	0.50
	Sex, male	48 (94.1)	91 (89.2)	0.32

	BMI, kg/m^2		26.9 (24.1–31.6)	27.7 (25.7–29.3)	0.40
Clinical variables	HT		44 (91.7)	85 (87.6)	0.47
	DM		23 (45.1)	45 (44.1)	0.95
	IGT		3 (5.9)	5 (4.9)	
	IFG		0 (0)	0 (0)	
	Hyperlipidemia		29 (67.4)	67 (72.0)	0.58
	AF		8 (16.3)	8 (8.42)	0.15
	CHA$_2$DS$_2$-VASc (score)		4 (3–5)	4 (3–5)	0.30
	Previous stroke		5 (9.8)	12 (11.8)	0.72
	CKD		5 (9.8)	9 (8.8)	0.84
	Smoker	Current	4 (9.3)	12 (14.6)	0.70
		Previous	23 (53.5)	41 (50)	
	Previous MI		38 (74.5)	76 (74.5)	1.0
	Previous PCI		31 (60.8)	65 (63.7)	0.72
Clinical presentation on admission	STEMI		14 (27.5)	32 (31.4)	0.62
	NSTEMI		37 (72.5)	70 (68.6)	
	Killip class	I	36 (70.6)	75 (73.5)	0.76
		II	13 (25.5)	25 (24.5)	
		III	0 (0)	0 (0)	
		IV	2 (3.9)	2 (2.0)	
	Systolic BP, mm Hg		125 (110–150)	130 (120–140)	0.41
	Diastolic BP, mm Hg		72 (61–90)	77.5 (70–80)	0.71
	SCA before admission		3 (5.9)	5 (4.9)	0.80
	Pain-to-admission time, hours		4.4 (2.4–19.5)	6.3 (2.8–14.6)	0.86
	Door-to-catheter time, hours		1.3 (0.3–8.5)	2.1 (0.5–13.6)	0.29
Laboratory and echocardiographic findings on admission	Creatinine, μmol/l		87.5 (72–110.5)	91 (77–111)	0.82
	LDL-C, mmol/l		2.6 (2.1–3.7)	2.3 (1.7–3.0)	0.33
	HDL-C, mmol/l		1.1 (1.0–1.5)	1.1 (0.9–1.3)	0.43
	LVEF	<35%	8 (16.7)	21 (28.0)	0.17

		35–50%	25 (52.1)	27 (36.0)	
		>50%	15 (31.3)	27 (36.0)	
Coronary angiography	Type of culprit coronary bypass graft	LAD	5 (9.8)	11 (10.8)	0.93
		D	2 (3.9)	2 (2.0)	
		Cx	6 (11.8)	8 (7.8)	
		OM	14 (27.5)	31 (30.4)	
		IM	1 (2.0)	3 (2.9)	
		RCA	23 (45.1)	47 (46.1)	
	TIMI flow in culprit vessel	0	19 (37.3)	30 (29.4)	0.76
		1	2 (3.9)	3 (2.9)	
		2	2 (3.9)	4 (3.9)	
		3	28 (54.9)	65 (63.7)	
	In-stent thrombosis		0 (0)	1 (1.1)	0.45
Drugs during hospitalization	ASA		47 (94.0)	97 (96.0)	0.57
	Clopidogrel		36 (72.0)	65 (64.4)	0.35
	Ticagrelor		13 (26.0)	27 (26.7)	0.92
	Prasugrel		0 (0)	1 (1.0)	0.48
	GP IIb/IIIa inhibitors		25 (49.0)	40 (39.2)	0.25
	Thrombolysis		0 (0)	0 (0)	1.0
	Inotropic agents		5 (10.0)	5 (5.0)	0.25
Primary PCI	Balloon		35 (68.6)	64 (62.7)	0.47
	DEB		0 (0)	5 (6.1)	0.11
	Number of stents	0	10 (19.6)	20 (19.6)	0.92
		1	25 (49.0)	53 (52.0)	
		2	13 (25.5)	24 (23.5)	
		3	3 (5.9)	4 (3.9)	
		4	0 (0)	1 (1)	
	IABP		1 (2.0)	0 (0)	0.16
	TIMI 3 flow after PCI		35 (68.6)	82 (80.4)	0.11
In-hospital outcomes	Duration of hospitalization (days)		5.8 (3.7–7.8)	4.6 (3.7–6.1)	0.13
	Death		3 (5.9)	5 (4.9)	0.79

	Stroke	1 (2.0)	1 (1.0)	0.61
	Major bleeding	0 (0)	0 (0)	1.0

Categorical variables are shown as number of patients (%). Continuous data are presented as median (IQR)

Abbreviations: AF, atrial fibrillation; ASA, acetylsalicylic acid; AT, aspiration thrombectomy; BMI, body mass index; BP, blood pressure; CKD, chronic kidney disease; Cx, circumflex artery; D, diagonal branch; DEB, drug-eluting balloon; DM, diabetes mellitus; GP, glycoprotein; HT, hypertension; IABP, intra-aortic balloon pump; IFG, impaired fasting glucose; IGT, impaired glucose tolerance; IM; intermediate artery; LAD, left anterior descending artery; LVEF, left ventricular ejection fraction; MI, myocardial infarction; NSTEMI, non-ST-elevation myocardial infarction; PCI, percutaneous coronary intervention; RCA, right coronary artery; TIMI, Thrombolysis in Myocardial Infarction; SCA, sudden cardiac arrest; STEMI, ST-elevation myocardial infarction