Influence of manual thrombus aspiration on left ventricular diastolic function in patients with ST-segment elevation myocardial infarction treated with primary percutaneous coronary intervention

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SUMMARY

Introduction Data on effects of thrombus aspiration on left ventricular diastolic function in ST-elevation myocardial infarction (STEMI) population are scarce.

Objective We sought to compare echocardiographic indices of the diastolic function and outcomes in STEMI patients treated with and without manual thrombus aspiration, in an academic, high-volume percutaneous coronary intervention (PCI) center.

Methods A total of 433 consecutive patients who underwent primary PCI in 2011–2012 were enrolled in the study. Patients were not eligible for the study if they already suffered a myocardial infarction, had been previously revascularized, received thrombolytics, presented with cardiogenic shock, had significant valvular disease, atrial fibrillation or had previously implanted pacemaker. Comprehensive echocardiogram was performed within 48 hours. During follow-up patients' status was assessed by an office visit or telephone interview.

Results Patients treated with thrombus aspiration (TA+, n=216) had similar baseline characteristics as those without thrombus aspiration (TA-, n=217). Groups had similar total ischemic time (319±276 vs. 333±372 min; p=0.665), but TA+ group had higher maximum values of troponin I (39.5±30.5 vs. 27.6±26.9 ng/ml; p<0.001). The echocardiography revealed similar left ventricular volumes and systolic function, but TA+ group had significantly higher incidence of E/e'>15, as a marker of severe diastolic dysfunction (TA+ 23.1% vs. TA- 15.2%; p=0.050). During average follow-up of 14±5 months, major adverse cardiac/cerebral events occurred at the similar rate (log rank p=0.867).

Conclusion Thrombus aspiration is associated with a greater incidence of severe diastolic dysfunction in unselected STEMI patients treated with primary PCI, but it doesn't influence the incidence of major adverse cardiovascular events.

Keywords: myocardial infarction; thrombectomy; percutaneous coronary intervention; diastole

INTRODUCTION

Thrombus aspiration (TA) has not demonstrated consistent clinical benefit in patients with ST-elevation myocardial infarction (STEMI) [1, 2, 3]. Although a single large clinical study, designed to assess myocardial blush grade as primary outcome, has shown clinical benefit in terms of mortality reduction [4], a recent publication did not confirm this in patients who underwent manual thrombus aspiration [5]. Furthermore, meta-analyses revealed conflicting results [6, 7, 8]. The relationship between TA and diastolic function is not clear. Diastolic dysfunction in the setting of acute myocardial infarction (AMI) arises from profound regional asynchrony between ischemic and normal myocardium, resulting in disturbed ventricular relaxation and increased myocardial stiffness [9]. These changes have long term clinical implications that have been studied extensively [10, 11, 12]. Data on effects of thrombus aspiration on left ventricular diastolic function in unselected STEMI population are scarce. The single randomized trial has not shown beneficial effects of TA on diastolic function [13].

OBJECTIVE

We investigated the impact of TA on indices of diastolic function and clinical outcomes in unselected patients with acute STEMI treated with primary percutaneous coronary intervention (PCI).

METHODS

After evaluating 639 consecutive patients for inclusion criteria, 433 patients presenting with first-ever STEMI treated with primary PCI in an academic, high-volume center were retrospectively analyzed. Patients were excluded

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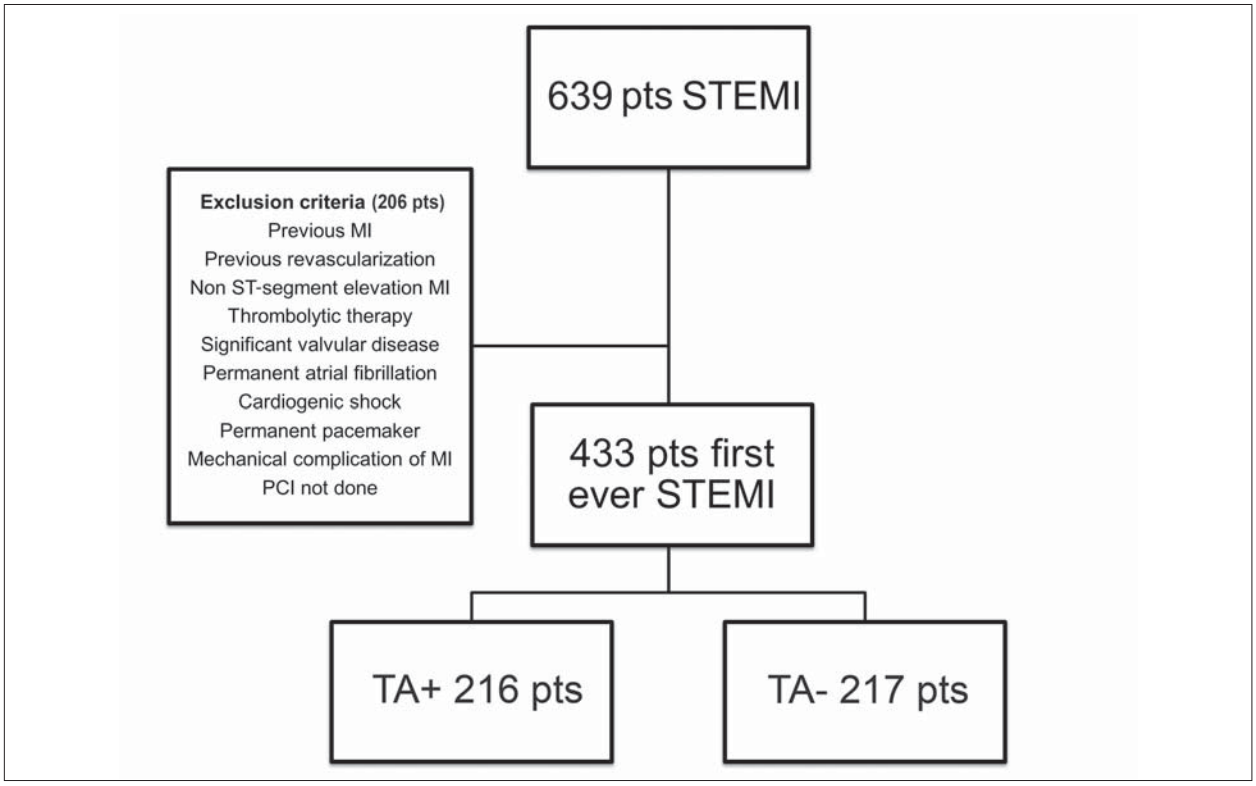
from the analysis if they suffered previous myocardial infarction (MI) or underwent coronary revascularization, received thrombolytic reperfusion, presented in cardiogenic shock, had significant valvular disease, had been in atrial fibrillation or had a previously implanted pacemaker. Furthermore, patients in whom PCI did not succeed in restoring coronary flow in the culprit artery were also not eligible for the study. Data on time delays from onset of pain to reperfusion were collected from the patient, the emergency medical service (EMS) staff members and the cath lab protocol sheets. In case of disagreement, data gathered from EMS and cath lab protocol were used. Troponin I assays (peak Troponin I) were collected serially at admission and 12, 24, 48 hours thereafter to assess enzymatic infarct size.

Comprehensive transthoracic echocardiogram was performed within 48 hours after primary PCI, using Vivid 7 scanner (General Electric, Horton, Norway) and a 2.5- to 5-MHz phased-array transducer. The echocardiographic examination was performed according to American Society of Echocardiography recommendations and included two-dimensional, color flow, continuous and pulse wave Doppler, and tissue Doppler imaging [14]. Detailed measurements were performed offline using dedicated software EchoPac version 11.0 (General Electric, Horton, Norway). Three measurements were made for each parameter and averaged. Left ventricular ejection fraction as a measurement of systolic function was obtained using the Simpson biplane method of discs. Mitral inflow Doppler and the tissue Doppler data were obtained according to guidelines [15]. The ratio of mitral peak velocity of early filling to early diastolic mitral annular velocity (E/e') was calculated by using the average of the septal and the lateral e' wave velocity. Diastolic function was graded 0–3 according to guidelines [15]. Left atrial (LA) volume was obtained using the Simpson biplane method of discs from apical four- and two-chamber views, optimized for LA examination, at three time points during heart cycle: 1. Maximum volume (LAmax) at the end of systole, right before mitral valve opening; 2. Minimal volume (LAmin) at the end of diastole, right before mitral valve closure; 3. Volume before atrial contraction (LApreA) acquired at the point of P wave on surface ECG. All volumes are indexed to body surface area. Mechanical function of LA was calculated based on the following formulas: Total ejection fraction LAEF = (LAmax – LAmin/LAmax) × 100; Active ejection fraction as an index of active contraction LAEFa = [(LApreA – LAmin)/LA preA × 100]; Passive ejection fraction as an index of conduit function LAEFp = [(LAmax – LApreA/LA max) × 100]; LA expansion index expressing LA reservoir function [(LAmax – LAmin/LAmin) × 100] [16]. Echocardiograms were analyzed by an investigator blinded to clinical and angiographic data. The reproducibility of the echocardiographic parameters and indices (ESV, EDV, EF, E-wave velocity, average e' wave, maximum, minimum and before A-wave LA volume index) were measured by two experienced observers and twice by each observer in 20 randomly selected patients. Interobserver coefficients of variation for measuring ESV, EDV, E-wave velocity, average e' wave, maximum, minimum and before A-wave LA volume index were 3%, 5%, 8%, 9%, 9%, 5%, and 3%, respectively. Intraobserver coefficients of variation for repeated same measurements were 3%, 5%, 6%, 5%, 7%, 4%, and 3%, respectively. All patients underwent coronary angiography and primary PCI on Axiom Artis dFA (Siemens, Erlangen, Germany) angiography scanner. Patients were pretreated with loading dose of aspirin (300 mg) and clopidogrel (600 mg), while heparin (80–100 IU/kg), was given before insertion of coronary guidewire. Glycoprotein IIb/IIIa inhibitors were given periprocedurally according to indication by the operator. After PCI, 100 mg per day of aspirin was given indefinitely, with 75 mg per day of clopidogrel. Recommended duration of clopidogrel treatment was 12 months. Vascular access, PCI technique, use of guiding catheters, coronary guidewires, thrombus aspiration, predilation and stent implantation were used according to operators' preference. Manual thrombus aspiration was performed using 6 and 7F Export XT catheters (Medtronic, Minneapolis, MN, USA). The operator decided to use thrombus aspiration according to current guidelines for primary PCI in STEMI and to his personal preference [17].

A culprit artery was defined as an artery with an identifiable thrombus and/or significant lesion on angiogram corresponding to ECG changes. Intracoronary thrombus was identified on angiogram and graded in five grades according to classification proposed by Sianos et al. [18]. Coronary artery stenosis was defined as narrowing of the lumen of more than 70%. Coronary artery blood flow was examined and graded 0–3 according to Thrombolysis in Myocardial Infarction (TIMI) scale, and myocardial blush was examined at the end of primary PCI procedure and graded 0–3 [19, 20]. No reflow was defined as inadequate myocardial perfusion after temporary occlusion of an epicardial coronary artery without evidence of persistent mechanical obstruction, thus implying ongoing myocardial ischemia [21]. Data regarding the patients' vital status, recurrence of angina, new myocardial infarction, hospitalization for heart failure, repeated revascularization procedures (PCI or CABG), and cerebrovascular accidents were collected by telephone interview with the patients or patients' relatives by an investigator unaware of any clinical data. Major adverse cardio-cerebrovascular events (MACCE) were defined as composite end point consisting of any death, repeated myocardial infarction, clinically driven target vessel revascularization (TVR) and any cerebrovascular event.

Statistical analysis

Continuous variables are presented as mean values ± standard deviation (SD). Categorical variables are presented as percentages. Depending on the distribution of the data, Students t-test or Mann–Whitney U-test were used to compare continuous variables, whereas chi-square and Fisher's test were used for categorical variables. Correlation between continuous variables was tested using



Scheme 1. Diagram representing the number of patients evaluated, excluded, and analysed in the study

Pearson's correlation method. Univariate and multivariate logistic regression analyses were performed to identify variables associated with E/e'>15. Only variables with a value of P<0.05 in the univariate analysis were tested in the multivariate model. P value of <0.05 was considered significant. Statistical analysis was performed using commercially available software (PASW Statistics, version 18, SPSS Inc. Chicago, IL, USA).

RESULTS

After accounting for the exclusion criteria in 639 consecutive patients with STEMI, 433 patients were analyzed. Patient flow through the study is shown in Scheme 1. Patients had similar clinical characteristics except that patients in the TA- group had more often history of hypertension. The patient groups had similar time delays between onset of pain and both prehospital and in hospital reperfusion and clinical characteristics of the study groups are shown in Table 1.

On initial angiogram, patients in the TA- group more often had multivessel coronary artery disease and Cx as a culprit artery. In thrombus aspiration group, TIMI 0 was most frequent initial coronary flow and glycoprotein IIb/IIIa antagonists were used more frequently. Balloon angioplasty was used at similar rate in study groups. No reflow phenomenon occurred more frequently in the TA+ group (Table 2, Graph 1). Patients in the TA+ group had larger MI measured as the maximum value of troponin I (39.5±30.5 vs. 27.6±26.9 ng/ml; p<0.001) (Graph 2).

Table 1. Clinical characteristics of the study groups

Clinical characteristics	TA+ (n=216)	TA- (n=217)	p
Age (years)	58.5	58.1	0.677
Male gender	159 (73.1)	158 (71.4)	0.748
Heredity	97 (44.9)	102 (47.5)	0.634
Smoking	142 (65.7)	127 (58.5)	0.137
Hypertension	131 (60.6)	154 (70.9)	0.026
Dyslipidemia	86 (39.8)	82 (37.8)	0.694
Diabetes mellitus	34 (15.7)	42 (19.4)	0.377
PAD	5 (2.3)	2 (0.9)	0.284
Previous CVA	1 (0.5)	3 (1.4)	0.623
BMI (kg/m^2)	29.68	28.54	0.598
Anterior MI	114 (52.7)	95 (43.8)	0.551
"Door to balloon" time (min)	55±50	55±34	0.943
Total ischemic time (min)	319±276	333±372	0.665

Data are presented as mean value, number of patients (with percentage), or mean ± SD.

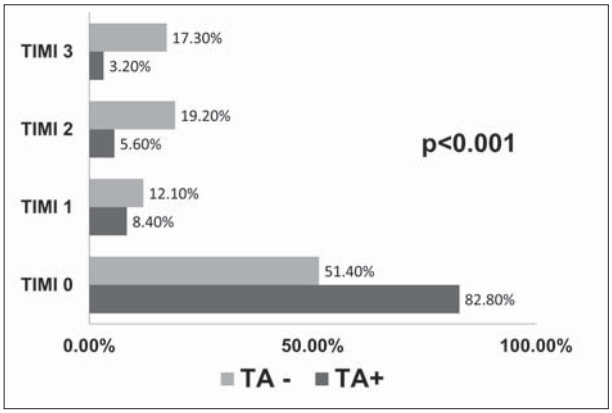
TA – thrombus aspiration; n – number of patients; PAD – peripheral arterial disease; CVA – cerebrovascular accident; BMI – body mass index; MI – myocardial infarction

The comprehensive echocardiogram was performed after similar time interval in both groups (1.5±1.5 vs.1.3±1.5 days; p=0.380). The groups had similar left ventricular wall thickness, left ventricular ejection fraction (LVEF), and left atrial volume and systolic function. The distribution of degrees of diastolic dysfunction was similar in the study groups (Table 3).The patients with anterior MI had higher values of E/e' compared to those with inferior MI (12±4 vs. 11±4; p=0.001), but thrombus aspiration did not affect the degree of diastolic dysfunction in these patient groups [anterior MI (TA+ 11±4 vs. TA- 11±4; p=0.124) inferior

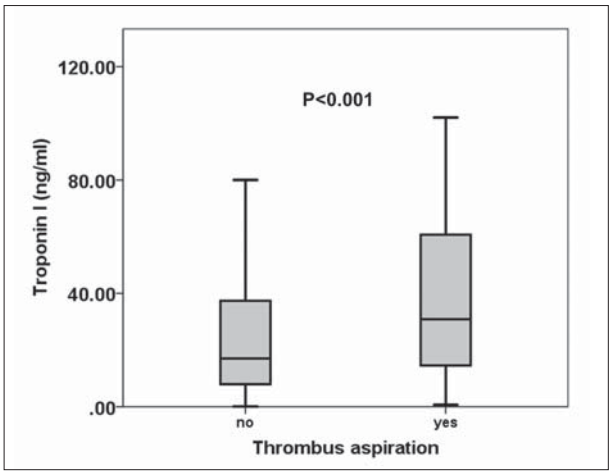
Table 2. Angiographic and procedural characteristics of the study groups

Procedural characteristics		Number of patients (%)		p
		TA+ (n=216)	TA- (n=217)	
Culprit artery	LAD	97 (44.9)	86 (39.6)	<0.001
	RCA	98 (45.4)	83 (38.2)	
	Cx	20 (9.2)	47 (21.7)	
	LM	1 (0.5)	1 (0.5)	
Multivessel disease		121 (56.0)	148 (68.2)	0.010
TIMI before PCI	0	179 (82.9)	112 (51.6)	<0.001
	I	18 (8.3)	26 (12.0)	
	II	12 (5.6)	42 (19.3)	
	III	7 (3.2)	37 (17.1)	
Thrombus grade on initial angiogram	0	1 (0.5)	4 (1.8)	<0.001
	1	5 (2.3)	16 (7.4)	
	2	9 (4.2)	22 (10.1)	
	3	15 (6.9)	31 (14.3)	
	4	22 (10.2)	23 (10.6)	
	5	164 (75.9)	121 (55.8)	
Balloon angioplasty		80 (37.0)	94 (43.3)	0.203
GP IIb/IIIa antagonist		60 (27.8)	22 (10.1)	<0.001
"No reflow" during procedure		10 (4.6)	2 (0.9)	0.021
DES penetration		59 (27.3)	57 (26.3)	0.534
TIMI III after PCI		204 (94.4)	211 (97.2)	0.268
Final MBG	0	3 (1.4)	4 (1.8)	0.255
	1	11 (5.1)	5 (2.3)	
	2	54 (25.0)	43 (19.8)	
	3	148 (68.5)	165 (76.1)	

LAD – left anterior descending; RCA – right coronary artery; Cx – circumflex; LM – left main; TIMI – thrombolysis in myocardial infarction; PCI – percutaneous coronary intervention; GP – glycoprotein; DES – drug-eluting stent; MBG – myocardial blush grade



Graph 1. Initial thrombolysis in myocardial infarction (TIMI) flow in the study groups. The diagram displays percentages of patients with initial coronary flow TIMI 0–3 in the study groups.



Graph 2. Maximum troponin I release in patients in the TA+ vs. TA- group. The box-plot diagram displays significant difference in troponin I release as a surrogate of infarct size comparing patients who underwent thrombus aspiration (TA+) with those who did not (TA-).

MI (TA+ 10±4 vs. TA- 11±4; p=0.108)]. However, it was found that patients in the TA+ group had higher incidence of severe degree of diastolic dysfunction, as indicated by E/e'>15 (Table 3). In a logistic regression model that included known predictors of E/e' (age, smoking, diabetes, hypertension, left ventricular and atrial ejection fraction, left atrial volume, maximum troponin I value, initial TIMI 0 coronary flow and total ischemic time, thrombus grade, use of glycoprotein IIb/IIIa inhibitors and no reflow phenomenon), only thrombus aspiration, maximum LA volume index (LAVI) and left atrial EF (LAEF) remained independent predictors of E/e'>15 (Table 4).

The follow-up was completed for 429 (99%) patients, who were followed for a period of 431±154 days. Nine patients died in each study group. Major adverse cardiocerebrovascular events occurred at similar rates in the study groups (Table 5; Graph 3).

DISCUSSION

We found that thrombus aspiration, besides maximum LAVI and LAEF, is an independent predictor of E/e'>15 and that more severe degree of diastolic dysfunction occurred more frequently in patients who underwent thrombus aspiration during primary PCI. Manual throm-

Table 3. Echocardiographic characteristics of the study groups

Echocardiographic characteristics	TA+ (n=216)	TA- (n=217)	p value
Septal thickness (mm)	11.5±1.3	11.±2.4	0.394
Posterior wall thickness (mm)	9.5±1.2	9.8±5.2	0.337
Biplane LVEF (%)	46±9	47±9	0.126
Mitral inflow E-wave (m/s)	0.74±0.17	0.71±0.18	0.192
Mitral inflow A-wave (m/s)	0.75±0.20	0.76±0.18	0.736
Mitral inflow E/A	1.1±0.4	1.0±0.4	0.291
Deceleration time (ms)	179±41	182±43	0.474
Average septal/lateral e' (m/s)	0.07±0.02	0.07±0.02	0.241
E-wave/average e'	11±4	12±4	0.128
E-wave/average e'>15 (%)	23.1	15.2	0.050
Normal filling	41 (18.9)	39 (18.0)	0.808
DD Grade I	63 (29.2)	80 (36.9)	0.101
DD Grade II	100 (46.3)	86 (39.6)	0.173
DD Grade III	12 (5.6)	12 (5.5)	1.000
Maximum LAVI (ml/m^2)	24±7	24±7	0.769
Minimum LAVI (ml/m^2)	10±4	10±4	0.972
LAVI before A-wave (ml/m^2)	14±5	13±5	0.769
LA EF (%)	60±8	60±8	0.968

Data are presented as mean ± SD, mean value, or number of patients (with percentage).

LVEF – left ventricular ejection fraction; DD – diastolic dysfunction; LAVI – left atrial volume index; LA – left atrium; EF – ejection fraction

Table 4. Univariate and multivariate regression analyses to identify predictors of E/e'>15

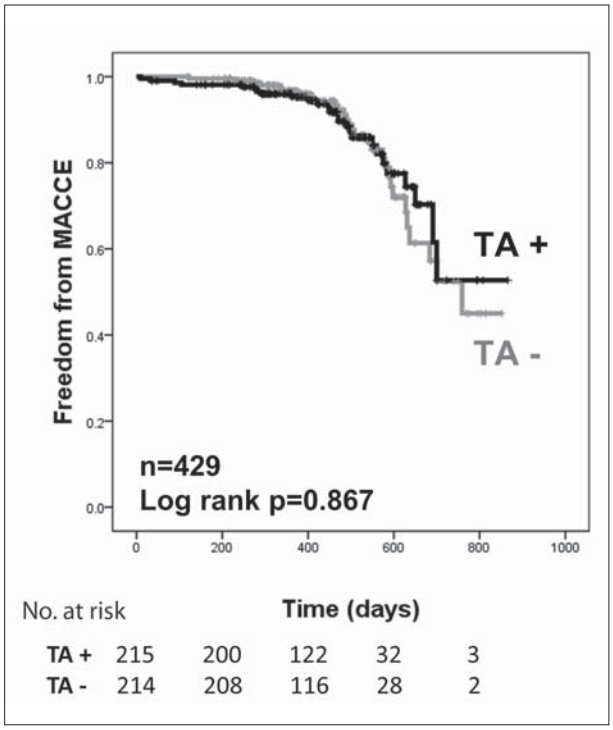
Patients' characteristics	Univariate		Multivariate	
	OR [95% CI]	p-value	OR [95% CI]	p-value
Age	1.029 [1.007–1.052]	0.009	1.010 [0.985–1.035]	0.444
Smoking	0.804 [0.494–1.309]	0.308	---	---
Diabetes mellitus	1.292 [0.707–2.362]	0.405	---	---
Hypertension	1.029 [0.621–1.707]	0.911	---	---
LV ejection fraction	0.979 [0.953–1.006]	0.120	---	---
TIMI 0 before PCI	1.058 [0.632–1.774]	0.830	---	---
Thrombus grade 4	0.616 [0.295–1.286]	0.197	---	---
Thrombus grade 5	0.655 [0.390–1.100]	0.110	---	---
Thrombus aspiration	1.670 [1.026–2.719]	0.039	1.905 [1.087–3.337]	0.024
Use of GP IIb/IIIa inhibitors	1.039 [0.566–1.910]	0.901	---	---
"No reflow" phenomenon	0.706 [0.187–2.667]	0.608	---	---
Total ischemic time	1.000 [1.000–1.001]	0.362	---	---
Maximum LAVI	1.186 [1.136–1.238]	<0.001	1.179 [1.127–1.232]	<0.001
LA ejection fraction	0.003 [0.000–0.063]	<0.001	0.031 [0.001–0.997]	0.050
Maximum Troponin I	1.004 [0.997–1.012]	0.274	---	---

OR – odds ratio; CI – confidence interval; LV – left ventricle; TIMI – thrombolysis in myocardial infarction; PCI – percutaneous coronary intervention; GP – glycoprotein; LAVI – left atrial volume index; LA – left atrium

Table 5. Major adverse cardio-cerebral events in the study groups

Outcome	Number of patients (%)		p
	TA+ (n=215)	TA- (n=214)	
Death	9 (4.2)	9 (4.2)	1.000
Myocardial infarction	4 (1.9)	3 (1.4)	0.683
Clinically driven TVR	9 (4.2)	11 (5.1)	0.769
CVI/TIA	0 (0.0)	3 (1.4)	0.248
MACCE	22 (10.2)	26 (12.1)	0.600

TVR – target vessel revascularization; CVI – cerebrovascular insult; TIA – transitory ischemic attack; MACCE – major adverse cardio-cerebral event



Graph 3. Kaplan–Meier survival analysis of those who underwent thrombus aspiration (TA+) with those who did not (TA-). The diagram displays survival curves of freedom from MACCE for patients in the TA+ and TA- groups of patients.

bus aspiration was associated with larger myocardial infarctions measured as maximum level of troponin I and more distal embolization and no reflow phenomenon, but it did not affect long-term clinical outcomes. Patients in the TA- group were more often hypertensive, which might be explained by the tortuosity of coronary arteries impeding the passage of thrombus aspiration catheter beyond a point of occlusion [22]. Several studies demonstrated that systemic hypertension is one of clinical predictors of tortuosity of systemic and coronary arteries [23, 24]. The multivessel disease was more often found in non-thrombus aspirated patients, a finding consistent with large registry of STEMI patients [22]. On the other hand, balloon angioplasty was used at similar rates in our study groups. There are two possible reasons for this – either thrombus aspiration failed to restore any coronary flow in the culprit artery, or thrombus aspiration revealed significant atherosclerotic lesion at the point of occlusion or distal to it.

The patients who underwent TA had more often initial absence of coronary flow beyond point of occlusion (TIMI 0) and similar to previous studies, initial total occlusion of the infarct-related coronary artery lead to greater troponin I release as a surrogate of infarct size in this group [1, 25, 26]. Large thrombus burden has been associated with greater frequency of microvascular obstruction (MVO) in STEMI [27]. Although randomized trials have shown favorable angiographic reperfusion results in TA+ patients [2, 3], their results may not be extrapolated to the non-randomized registry [28], since visible large thrombus burden can be the reason to undergo this procedure.

Andersen et al. [13] investigated, in a randomized fashion, effects of manual thrombectomy on echocardiographic indices of systolic and diastolic function. The echocardiogram was performed within 24 hours after intervention and at 30 days and did not reveal significant differences between the study groups [13]. In contrast, we found that advanced diastolic dysfunction, as indicated by E/e'>15,

was more often present in patients who underwent TA and that TA was an independent predictor of occurrence of E/e'>15. This can be attributed to differences in selection of study patients: Andersen et al. [13] also included patients with previous MI, which were excluded from our study, frequency of hypertension was lower compared to our cohort, and the patients in their study were randomized to aspiration thrombectomy vs. no thrombectomy. Furthermore, in our study we used 6 and 7F aspiration catheters, while in the Andersen's study 4 and 5F aspiration catheters were used. The aspiration catheter used in our study was larger, more bulky and potentially causing more distal embolization and microvascular obstruction. Also, in our study an echocardiogram was done after a longer period of time, which may allow for of significant changes in diastolic function to occur [9].

The significant association between TA and severe diastolic dysfunction can also be attributed to larger myocardial infarctions in the TA+ group that caused more severe degree of diastolic dysfunction [9, 29]. This could be caused by preferential use of TA in patients with initial TIMI 0 coronary flow, which may be associated with larger thrombus burden and consequently greater troponin I release. Nonetheless, it has been demonstrated that MVO adversely impacts MI size and left ventricular remodeling and thus can influence diastolic function [30, 31]. Patients in the TA+ group had more MVO, which might have contributed to the degree of diastolic dysfunction.

Thrombus aspiration, in our study, did not affect clinical outcomes. Although randomized trials and meta-analyses reported conflicting results regarding clinical benefits of thrombus aspiration [1-8], patients with shorter ischemic times who underwent thrombus aspiration had an improved survival in a large registry of more than 2,500 patients [32].

Study limitations

The patients were retrospectively evaluated and did not have previous echocardiographic evaluation, which could help identify those with diastolic dysfunction prior to a coronary event. Thrombus aspiration was used at operators' discretion and not according to a predefined protocol. The effect of standard pharmacological therapy known to influence patients' outcomes (beta-blockers, ACE inhibitors) was not accounted for, although the guideline-proposed treatment for STEMI, if not contraindicated or poorly tolerated, was given to all patients.

CONCLUSION

In this retrospective analysis of consecutive STEMI patients treated with primary PCI, thrombus aspiration was associated with greater incidence of severe diastolic dysfunction, but not with higher incidence of MACCE.

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Утицај мануелне аспирације тромба на дијастолну функцију леве коморе срца код болесника с инфарктом миокарда и елевацијом *ST*-сегмента који су лечени примарном перкутаном коронарном интервенцијом

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КРАТАК САДРЖАЈ

Увод Подаци о ефектима аспирације тромба на дијастолну функцију леве коморе у неселектованој популацији с инфарктом миокарда и елевацијом СТ-сегмента (СТЕМИ) су оскудни.

Циљ рада Упоредили смо ехокардиографске одлике дијастолне функције и исходе код болесника са СТЕМИ који су лечени мануелном аспирацијом тромба и без ње у академском центру за интервентну кардиологију.

Методе рада У студију су укључена 433 узастопна болесника којима је рађена примарна перкутана коронарна интервенција (ППКИ) у периоду 2011–2012. године. У студију нису укључени болесници који су преболели инфаркт миокарда, били претходно реваскуларизовани, примали тромболитичку терапију, били у кардиогеном шоку, имали значајну валвуларнуману, атријалну фибрилацију или уграђен стални водич срчаног ритма. Ехокардиограм је урађен током 48 часова од ППКИ. Стање болесника је клинички праћено амбулантно или се о њему обавештавало телефонским путем.

Резултати Испитаници лечени аспирацијом тромба (ТА+, 216 болесника) имали су сличне основне карактеристике као испитаници лечени без аспирације тромба (ТА-, 217 болесника) и слично укупно исхемијско време (319±276 према 333±372 минута; p=0,665), волумене и систолну функцију леве коморе, али је ТА+ група имала веће максималне вредности тропонина *I* (39,5±30,5 према 27,6±26,9 *ng/ml*; p<0,001) и знатно већу учесталост E/e'>15 (23,1% према 15,2%; p=0,050). Током периода надгледања, које је трајало 14±5 месеци, учесталост великих нежељених срчаних, односно можданих догађаја била је слична у обе групе испитаника (p=0,867).

Закључак Аспирација тромба је повезана с већом учесталошћу тешке дијастолне дисфункције леве коморе код болесника са СТЕМИ који су лечени применом ППКИ, али нема утицаја на учесталост великих нежељених кардиоцереброваскуларних догађаја.

Кључне речи: инфаркт миокарда; тромбектомија; перкутана коронарна интервенција; дијастола

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