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Left Dominant Coronary Circulation is Associated with Poorer Left Ventricular Function but Not Long-Term Mortality After ST Elevation Myocardial Infarction

Sol Dominant Koroner Dolaşım, ST Elevasyonlu Miyokard Enfarktüsü Sonrası Azalmış Sol Ventrikül Fonksiyonu ile İlişkilidir, Ancak Uzun Dönem Mortalitede Farklılık Göstermemektedir

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ABSTRACT

Objective: To evaluate the effect of coronary dominance (CD) on the left ventricular systolic function in patients with first ST-elevational myocardial infarction (STEMI), and to evaluate the relationship between CD and long-term mortality.

Methods: We included 471 patients with first STEMI. The patients were categorized as right-dominant and left-dominant according to their CD pattern. The left ventricular Wall Motion Score Index (WMSI) and left ventricular ejection fraction (LVEF) were used to evaluate the extent of left ventricular systolic dysfunction. The COX regression regression analysis was used to assess the relationship between CD and long-term mortality.

Results: Left CD was present in 41 (8.7%) of the 471 patients. WMSI was significantly higher in the left dominant group than in the right dominant group (1.74±0.38 vs. 1.56±0.35, p=0.002). The frequency of LVEF <40% was significantly higher in patients with the left CD group than in the right CD group (39% vs. 15.8%, p<0.001). The patients with left CD had higher peak creatine kinase (CK) and CK-myocardial band levels (3269±2988 U/L vs. 2355±1511 U/L, p=0.007; 390±303 U/L vs. 241±172 U/L, p<0.001, respectively). Nevertheless, mortality was similar between the left and right dominance groups [13 (40.1%) vs. 85 (30.7%), p=0.201]. In COX regression analysis, CD was not related to long-term mortality.

Conclusion: Patients with left dominance had significantly lower left ventricular systolic function early after STEMI. However, long-term mortality was similar in patients with left and right dominant circulation.

Keywords: Coronary, angiography, circulation, myocardial infarction

ÖZ

Amaç: Bu çalışmada, ilk kez ST elevasyonlu miyokard enfarktüsü (STEMI) geçiren hastalarda koroner dominans (KD) tipinin sol ventrikül sistolik fonksiyonları üzerine etkisi ve uzun dönem mortalite ile ilişkisi değerlendirildi.

Gereç ve Yöntem: Çalışmaya ilk STEMI geçiren toplam 471 hasta dahil edildi. Hastalar koroner dominans tipine göre sağ dominant ve sol dominant olarak iki gruba ayrıldı. Sol ventrikül sistolik fonksiyonlarının değerlendirilmesinde sol ventrikül duvar hareket skor indeksi (WMSI) ve sol ventrikül ejeksiyon fraksiyonu (LVEF) kullanıldı. Uzun dönem mortalite ile koroner dominans arasındaki ilişki COX regresyon analizi ile araştırıldı.

Bulgular: Bulgular: Hastaların 41'inde (%8,7) sol dominant sirkülasyon mevcuttu. Sol dominant grupta WMSI değeri sağ dominant gruba göre anlamlı şekilde daha yüksekti (1,74±0,38 vs. 1,56±0,35, p=0,002). LVEF <%40 olan hasta oranı da sol dominant grupta belirgin şekilde daha fazlaydı (%39 vs. %15.8, p<0,001). Ayrıca, bu grupta pik kreatin kinaz (CK) ve CK-miyokardiyal bant seviyeleri anlamlı olarak daha yüksekti. Ancak, uzun dönem mortalite oranları iki grup arasında anlamlı fark göstermedi (%40,1 vs. %30,7, p=0,201). COX regresyon analizinde, koroner dominansın uzun dönem mortalite ile ilişkili olmadığı gösterildi.

Sonuç: Sol dominant koroner sirkülasyona sahip hastalarda STEMI sonrası sol ventrikül sistolik fonksiyonları daha belirgin bozulmuştur. Ancak, uzun dönem mortalite açısından sağ ve sol dominant gruplar arasında anlamlı fark bulunmamıştır.

Anahtar Sözcükler: Koroner, anjiyografi, dolaşım, miyokard enfarktüsü

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INTRODUCTION

The morbidity and mortality associated with acute myocardial infarction (MI) are strongly related to the amount of tissue necrosed during infarction (1,2). Global left ventricular function is related to the size of infarcted myocardium, and left ventricular ejection fraction (LVEF) is the most important predictor of mortality after acute MI (3,4). The extent of the myocardial necrosis was influenced by several angiographic features such as the presence of stenoses in other coronary arteries, the presence of collateral vessels, ischemic preconditioning, and the location of the culprit lesion in the involved artery (5,6). In addition, the quantity of myocardium supplied by the obstructed vessel is one of the principal determinants of infarct size (6,7).

There is considerable variation between patients with ischemic heart disease with respect to the pattern of coronary arterial distribution [so-called "coronary dominance" (CD)]. Previous coronary angiographic data have shown that approximately seventy-five percent of subjects undergoing coronary angiography had a right dominance pattern, 10% had left CD, and 15% of patients had a co-dominant (balanced) circulation (8). Although the left coronary artery supplies the majority of the left ventricular myocardium in patients with a right CD, all of the left ventricular myocardium was supplied by the left coronary artery in patients with left dominant circulation. Therefore, patients with a dominant left coronary arterial system may be at greater risk after a MI. However, previous studies demonstrated conflicting results about the effect of CD on mortality after MI. While some studies demonstrated a poor prognosis after MI in left dominant circulation, others revealed no effect of CD on prognosis after MI (9,10). Therefore, we aimed to evaluate the effect of CD on the left ventricular systolic function in patients with first ST-elevational myocardial infarction (STEMI), and the relationship between CD and long-term mortality.

MATERIALS AND METHODS

Patients with STEMI were prospectively included in the study. STEMI was defined by a typical chest pain at least 30 min, the presence of ST-segment elevation of ≥2 mm (1 mm =0.1 mV) in at least two contiguous leads, and by increased cardiac biomarkers concentrations above twice the upper normal values. Patients were excluded if they had non-ST elevation AMI, heart disease other than coronary artery disease, a history of revascularization procedures, or a poor acoustic window for performing transthoracic echocardiography. Patients who died at the index hospitalization were also excluded from the study. The study was approved by the Gazi University Faculty of Medicine Local Ethics Committee (approval number: 275, date: 21.11.2005) of our institution, and all patients gave written informed consent. Cardiovascular risk factors, time from pain onset to hospital admission, time from pain onset to revascularization, baseline complete blood count, creatinine levels, blood lipids, peak creatine kinase (CK), and CK-myocardial band (MB) levels were recorded. Revascularization methods (primary percutaneous coronary intervention (PCI), fibrinolytic treatment) were also recorded.

Echocardiography

Patients included in the study underwent complete echocardiographic examinations at a median of 2 days (25^{th} and 75^{th} percentiles 1-3 days) after admission. Echocardiographic studies were performed using a Vingmed CFM System Five (GE Medical, Horten, Norway) with a 2.5-MHz transducer and were recorded on digital media. Standard parasternal long- and short-axis, apical 4- and 2-chamber views were recorded in the left lateral position at rest. The left ventricle was analyzed according to the 16-segment model as proposed by the American Society of Echocardiography (11). Regional wall motion in each segment was graded visually, using a four-point scoring system: 1= normal, normal wall motion; 2= hypokinesia, marked decrease in endocardial motion; 3= akinesia, absence of inward wall motion; 4= dyskinesia, paradoxical wall motion away from the left ventricular lumen in systole. If more than two segments in the infarct zone or 4 or more of all 16 segments were not visualized, the study was considered inadequate, and these patients were excluded. The left ventricular Wall Motion Score Index (WMSI) and LVEF were used to evaluate the extent of left ventricular systolic dysfunction. WMSI was calculated by dividing the sum of the segmental scores by the number of segments visualized. The modified biplane Simpson method was used to measure LVEF. Severe left ventricular dysfunction was defined as LVEF <40%. All echocardiograms were analyzed 2 experienced observers who were blinded to the clinical and angiographic data.

Coronary Angiography

Coronary angiography was performed at a median of 1 day (25^{th} and 75^{th} percentiles 0-3 days) after admission. Coronary artery stenoses were estimated visually by two independent observers while blinded to the identity and clinical information of the patients. Single vessel disease was defined as greater than 50% diameter stenosis in only one coronary artery. Two- and three-vessel disease is defined according to the same criteria. Left main disease is regarded as two-vessel disease.

Patients were classified into 2 categories according to the type of coronary circulation: right dominance and left dominance. Right dominance was defined if the right coronary artery (RCA) gave off both a posterior descending artery and a branch that continued beyond the crux along the distal portion of the posterior atrioventricular groove, providing at least one posterolateral branch that supply the diaphragmatic surface of the left ventricle (12). Left dominance was defined as the RCA being very small, terminating before reaching the crux cordis, and off any branches to the left ventricle. In these cases, the posterior descending artery and all the posterolateral branches are provided by the distal circumflex (Cx) artery. Co-dominance or balanced circulation was defined as when the RCA gives rise to the posterior descending artery, with the Cx artery providing all the posterolateral branches. Patients with balanced circulation were included in the right dominant group. The location of the culprit lesion was determined from the coronary angiography.

Mortality Information

Survival data were extracted by searching the governmental electronic death notification system and hospital electronic health records. Survival data was extracted in May 2020. The follow-up time was calculated by subtracting the admission date from May 2020 or the time of death. The follow-up duration was expressed in months.

Statistical Analysis

SPSS 22.0 software for Windows was used to analyze the data. For continuous variables, the normality of distribution was tested using

the Kolmogorov-Smirnov test. The results were presented as mean ± standard deviation for variables with normal distribution and as median (interquartile range 25-75) for variables with abnormal distribution. For the comparison of the continuous variables between left CD and non-left CD patients, independent samples t-test or Mann-Whitney U test were used where appropriate. Categorical variables were analyzed using the chi-square test, or Fisher's exact test. The log rank test was used to detect univariate effects of the particular study variables on mortality. The Kaplan–Meier survival estimates were calculated. The cyclooxygenase (COX) regression analysis was used to assess the relationship between CD and long-term mortality. A p-value <0.05 was considered statistically significant.

RESULTS

Between November 2004 and February 2006, 471 patients with first STEMI were included in the study. The location of acute MI was anterior in 248 (52.7%) patients; inferior or lateral in 223 (47.3%) patients. Primary PCI was performed in 175 of the patients, and thrombolytic therapy was administered to 193 of them. Elective angiography was performed on 103 patients who either presented 12 hours after the onset of symptoms and had no pain. The infarct-related artery was the non-dominant RCA in 2 patients who presented with ST elevation in inferior leads. The clinical characteristics of patients with right and left dominance were summarized in Table 1.

Significant differences between groups were not found in age, gender, prevalence of cardiovascular risk factors, the use of reperfusion therapy, or time to reperfusion therapy. There were no significant differences in time to coronary angiography and time to echocardiography between the two groups.

Angiographic Findings

The angiographic findings are presented in Table 2. The left dominant circulation was present in 41 (8.7%) patients. The dominance of the RCA was present in 430 (91.3%) patients, and 70 (16.3%) of these patients had co-dominant (balanced) circulation. As expected, the patients with left dominance had a higher prevalence of left anterior descending (LAD) artery culprit location than the patients with right dominant circulation. The number of diseased vessels and culprit lesion location in the infarct artery was similar between patients with left and right dominant circulation. The prevalence of collaterals to the infarct artery was also similar among groups.

Laboratory and Echocardiographic Findings

The peak CK, CK-MB, LVEF, and WMSI are presented in Table 3. The WMSI was significantly higher in the left dominant group than in the right dominant group. The LVEF was significantly lower in the left dominant group than in the right dominant group. In addition, the frequency of LVEF <40% was significantly higher in patients with left dominant circulation than in right dominant circulation. Patients with left dominant circulation had significantly higher values of peak serum CK and CK-MB than patients with right dominant circulation. When the patients with right dominant circulation were sub-grouped as co-dominant (70 patients) and true right dominant circulation (360 patients), the LVEF and WMSI in patients with co-dominant circulation were similar to those of true right dominant circulation (LVEF, 48.4±8.2 vs. 49.1±9.5 p=0.586; WMSI, 1.56±0.36 vs. 1.56±0.35, p=0.986) and higher than those with left dominant circulation (LVEF, 48.4±8.2 vs. 45.1±11.1, p=0.080; WMSI, 1.56±0.36 vs. 1.74±0.38, p=0.017).

Table 1. Demographic and clinical characteristics of the study population

		Right dominant group	Left dominant group	p
Patients	n (%)	430 (91.3)	41 (8.7)	
Age (years)	n(%)	56.2±11.0	59.2±11	**0.095**
Gender (male)	n (%)	357 (83)	36 (87.8)	**0.431**
Family History	n (%)	103 (24.0)	7 (17.1)	**0.302**
Smoker	n(%)	278 (64.7)	23 (56.1)	**0.276**
Hypertension	n(%)	131 (30.5)	16 (39)	**0.258**
Diabetes	n (%)	78 (18.1)	6 (14.6)	**0.575**
Total cholesterol (mg/dL)		192±42	182±43	**0.142**
Creatinine (mg/dL)		1.07±0.50	1.04±0.22	**0.723**
Primary PCI or trombolytic therapy n (%)		339 (78.8)	29 (70.7)	**0.230**
Time from symptom onset (minutes)				
To hospital admission		149 (75-257)	195 (90-330)	**0.108**
To reperfusion therapy		165 (110-270)	210 (130-250)	**0.382**
Time to angiography (days) (median, 25^{th}-75^{th} percentile)		1 (0-3)	0 (0-4)	**0.449**
Time to echocardiography (days) (median, 25^{th}-75^{th} percentile)		2 (1-3)	2 (1-3)	**0.876**

Values are expressed as mean ± SD or number of patients (the percent value).
IHD: Ischemic heart disease, PCI: Percutaneous coronary intervention, TT: Thrombolytic therapy, CK: Creatine kinase, SD: Standard deviation

Table 2. Angiographic findings.

	Right dominant group n (%)	Left dominant group n (%)
	430 (91.3)	41 (8.7)
Vessel disease		
1	257 (59.8)	23 (56.1)
2	117 (27.2)	15 (36.6)
3	56 (13)	3 (7.3)
IRA		
LAD	219 (50.9)	31 (75.6)* p<0.001
RCA	175 (40.7)	
Cx	36 (8.4)	2 (4.9)
		8 (19.5)
TIMI 2/3 flow	361 (84)	34 (82.9)
Location of culprit lesion		
Proximal	112 (26)	10 (24.4)
Distal	318 (74)	31 (75.6)
Presence of collaterals to IRA	58 (13.5)	3 (7.3)

*p<0.001. Values are expressed as numbers of patients (percent value).
CAD: Coronary artery disease IRA: Infarct related artery, LAD: Left anterior descending, RCA: Right coronary artery, Cx: Circumflex

Table 3. Echocardiographic left ventricular systolic indexes and peak CK/CKMB values

	Right dominant group	Left dominant group	p
WMSI	1.56±0.35	1.74±0.38*	<0.05
LVEF, %	49±9.3	45.1±11.1*	<0.05
LVEF <40%	68 (15.8)	16 (39)**	<0.001
Peak CK (U/L)	2355±1511	3269±2988*	<0.05
Pik CK-MB (U/L)	241±172	390±303**	<0.001

*p<0.05, **p<0.001. Values are expressed as mean ± SD or numbers of patients (percent).
WMSI: Wall motion score index, LVEF: Left ventricular ejection fraction, CK: Creatine kinase, CK-MB: Creatine kinase-myocardial band, SD: Standard deviation

All-cause Mortality Findings

Survival information was available for 308 patients, but the mortality information for the remaining 163 patients was not available. Baseline demographic features, LVEF, WMSI, number of patients with LVEF <40%, peak CK, CK-MB levels, initial reperfusion strategy, and angiographic features of the followed-up patients were similar to patients lost to follow-up (Supplementary Table 1). Eighty-five deaths (30.7%) occurred in the right dominant group and 13 deaths (40.1%) occurred in the left dominant group. The COX regression model, including age, gender, hypertension, diabetes, receiving emergent reperfusion therapy, infarct-related artery, Gensini score, presence of depressed LV systolic functions, and CD variables, demonstrated that age and presence of depressed LV systolic functions were independently related to all-cause mortality. CD was not related to long-term all-cause mortality (Table 4).

Table 4. COX regression analysis for the very long-term mortality

	Exp(B)	95.0% CI for Exp. (B)		
		Lower	Upper	p
Age	1.055	1.034	1.076	<0.001
Gender (male)	0.655	0.386	1.113	0.118
Diabetes mellitus	1.051	0.590	1.874	0.866
Hypertension	0.959	0.612	1.501	0.854
Coronary dominance (left)	1.536	0.795	1.342	0.201
Receiving emergent reperfusion	0.848	0.535	1.118	0.481
IRA				0.425
RCA vs LAD	1.183	0.754	1.857	0.465
CX vs. LAD	0.676	0.295	1.546	0.353
EF <40%	1.800	1.069	3.031	0.027

CX: Circumflex artery, EF: Ejection fraction, IRA: Infarct related artery, LAD: Left anterior descending artery, RCA: Right coronary artery, CI: Confidence interval

DISCUSSION

The present study demonstrates that the pattern of coronary circulation is related to the left ventricular dysfunction after STEMI. Patients with left dominant coronary circulation had significantly decreased systolic function after STEMI, as evidenced by higher WMSI and lower LVEF. In addition, peak CK and CK-MB levels were increased in patients with left dominant circulation consistent with larger infarct sizes. Nevertheless, there was no impact of CD on long-term mortality. To the best of our knowledge, this study evaluates the effect of CD on mortality in patients with ST elevation MI.

The variability of the coronary artery distribution can be accepted as the most frequent variation of coronary circulation, and the determinants of the CD are thought to be multifactorial (13,14). The blood supply of the left ventricle myocardium is provided only by the left coronary artery in the left dominant circulation pattern. Therefore, the effect of ischemic insult on left ventricular functions and mortality after MI is thought to be different depending on coronary circulation patterns. In 741 patients with acute MI who presented with acute MI and underwent revascularization with primary PCI, Veltman et al. (15) found that LVEF was significantly lower in the early period (48 hours) in the group with left CD. At the 12-month follow-up, no difference was found between the coronary dominant circulation groups in terms of systolic functions. Unlike our results, early period WMSI was found to be similar between groups in this study. In the study of Hanboly et al. (16) which included 300 patients who underwent primary PCI after acute MI, significantly higher WMSI and lower LVEF values were found in the left dominant group in the early period. At the end of 3 months, there was no difference between the groups in terms of systolic functions (16). In our study, LVEF value was significantly lower in the left dominant group, and the number of patients with LVEF <40% was significantly higher. The infarct related artery was non-dominant RCA in 2 patients who were presented with ST elevation in inferior leads. These patients had right ventricular infarction and their left ventricular function was normal. We thought that these patients ought to be included in the study. If we excluded these patients from

the left dominant group, the difference between the groups' left ventricular systolic functions were more prominent.

Why do patients with left dominant circulation have more extensive necrosis after an AMI? The most reasonable explanation is that the entire left ventricular myocardium is supplied by two vessels instead of three vessels in patients with left dominant circulation. Therefore, the LAD or Cx coronary arteries supply blood to a larger mass of myocardium, and occlusion in the same site of the LAD or Cx coronary artery, results in a greater size of the myocardial necrosis in patients with left dominant circulation. In addition, coronary collaterals may also play a role. Coronary collaterals are protective in the presence of coronary artery stenosis and can reduce the extent of myocardial necrosis and contractile dysfunction following acute coronary occlusion. A wide variety of collateral pathways exist in patients with coronary artery disease. One of the major pathways of coronary collaterals is between the LAD and the RCA via septal branches; and another is between the Cx and the RCA via posterolateral branches. In the presence of the LAD or Cx occlusion, collateralization to the LAD or Cx artery from the RCA could be reduced in patients with left dominance than those patients with right dominance (17). This may, in part, contribute to more extensive necrosis in patients with left dominance circulation. In our study, the number of cases is very low for the assessment of the collateral vessel to an infarct-related artery. However, although not statistically significant, the patients with left dominant circulation had a lower prevalence of collaterals to the infarct-related artery.

Previous studies and our study consistently showed the association between CD and left ventricle systolic functions after MI, but the same conclusion cannot be made for mortality. The results of the short- and long-term cardiovascular outcomes demonstrate some discrepancies. Abu Assi et al. (18) examined the relationship between CD and prognosis in 767 patients who underwent primary PCI for STEMI. In the mean follow-up of 40 months, more deaths and reinfarctions occurred in the group with left dominant circulation (18). In the study conducted by Hanboly et al. (16) higher cardiac mortality, heart failure, non-fatal MI, revascularization, and stroke were observed in the group with left dominant coronary circulation in the hospital and in the 3-month period. Veltman et al. (10) published the longest follow-up study in 1131 patients presenting with acute MI. There was no difference between the two groups in terms of long-term mortality in a 5-year follow-up. The same study revealed an increased risk of all-cause death, cardiac death, and reinfarction in the left dominant group in the first month of the infarction. In our study, median follow-up duration was nearly 15 years, and we found that very long-term mortality was not associated with CD. In this study, we did not include STEMI patients who were dead at the index hospitalization, therefore we cannot draw conclusions regarding the effect of CD on early mortality. The aforementioned studies (15,16) demonstrated that although left ventricular systolic function was more depressed in the left dominant groups during the early phase of the infarction, this depression disappeared at the long-term follow-up. Both of the studies demonstrated that the significant difference in the left ventricle systolic functions between the right and left dominant groups disappeared during the follow-up. This can be an explanation for early increased mortality, but similar mortality at later stages, in the left dominant group.

Study Limitations

Compared to studies in the literature, our study had a relatively small sample size. The number of patients with available mortality data decreased further due to the lack of follow-up information for some patients. However, our follow-up period was extensive. In our study, only general mortality could be evaluated. Cardiac adverse events such as cardiovascular death and reinfarction were not known to occur. Our study sample was collected from cases of acute MI that underwent coronary angiography, and a selection bias might therefore exist because the CD pattern may be different in patients who did not undergo coronary angiography. We included only the patients with STEMI because the culprit lesion and infarct-related artery often are easily identified with coronary angiography after infarction. Therefore, our findings may not be generalizable to other presentations of coronary artery disease.

Conclusion

In conclusion, the pattern of coronary circulation is related to left ventricular dysfunction after STEMI. As a result, patients with left dominance had significantly lower left ventricular systolic function. However, long-term mortality was similar in patients left and right dominant circulation.

Ethics

Ethics Committee Approval: The study was approved by the Gazi University Faculty of Medicine Local Ethics Committee (approval number: 275, date: 21.11.2005) of our institution.

Informed Consent: All patients gave written informed consent.

Footnotes

Authorship Contributions

Surgical and Medical Practices: Concept: A.A., Design: A.A., Supervision: E.K., Material: Y.B.Ş., Data Collection or Processing: Y.B.Ş., Analysis or Interpretation: E.K., Literature Search: S.T., Writing: Y.B.Ş., Critical Review: E.K.

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REFERENCES

1. Braunwald E, Antman EM, Beasley JW, Califf RM, Cheitlin MD, Hochman JS, et al. ACC/AHA guidelines for the hanbmanagement of patients with unstable angina and non-ST-segment elevation myocardial infarction. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on the Management of Patients with Unstable Angina). J Am Coll Cardiol. 2000; 36: 970-1062.
2. Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC); Steg PG, James SK, Atar D, Badano LP, Blömstrom-Lundqvist C, et al. ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. Eur Heart J. 2012; 33: 2569-619.
3. Elsaesser A, Hamm CW. Acute Coronary Syndrome. Circulation. 2004; 109: 565-7.
4. Andreotti F, Marchese N. Women and coronary disease. Heart. 2008; 94: 108-16.

5. Ibanez B, James S, Agewall S, Antunes MJ, Bucciarelli-Ducci C, Bueno H, et al. 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC). Eur Heart J. 2018; 39: 119-77.
6. Miller TD, Christian TF, Hopfenspirger MR, Hodge DO, Gersh BJ, Gibbons RJ. Infarct size after acute myocardial infarction measured by quantitative tomographic 99mTc sestamibi imaging predicts subsequent mortality. Circulation. 1995; 92: 334-41.
7. Meine TJ, Roe MT, Chen AY, Patel MR, Washam JB, Ohman EM, et al. Association of intravenous morphine use and outcomes in acute coronary syndromes: results from the CRUSADE Quality Improvement Initiative. Am Heart J. 2005; 149: 1043-9.
8. Karha J, Murphy SA, Kirtane AJ, de Lemos JA, Aroesty JM, Cannon CP, et al. Evaluation of the association of proximal coronary culprit artery lesion location with clinical outcomes in acute myocardial infarction. Am J Cardiol. 2003; 92: 913-8.
9. Khan MS, Usman MS, Akhtar T, Raza S, Deo S, Kalra A, et al. Meta-analysis evaluating the effect of left coronary dominance on outcomes after percutaneous coronary intervention.
10. Veltman CE, van der Hoeven BL, Hoogslag GE, Boden H, Kharbanda RK, de Graaf MA, et al. Influence of coronary vessel dominance on short- and long-term outcome in patients after ST-segment elevation myocardial infarction. Eur Heart J. 2015; 36: 1023-30.
11. Schiller NB, Shah PM, Crawford M, DeMaria A, Devereux R, Feigenbaum H, et al. Recommendations for quantitation of the left ventricle by two-dimensional echocardiography. American Society of echocardiography committee on standards, subcommittee on quantitation of two-dimensional echocardiograms.
12. Nissen S. Coronary angiography and intravascular ultrasound. Am J Cardiol. 2001; 87: 15A-20A.
13. Fischer M, Broeckel U, Holmer S, Baessler A, Hengstenberg C, Mayer B, et al. Distinct heritable patterns of angiographic coronary artery disease in families with myocardial infarction. Circulation. 2005; 111: 855-62.
14. Frings AM, Mayer B, Böcker W, Hengstenberg C, Willemsen D, Riegger GA, et al. Comparative coronary anatomy in six twin pairs with coronary artery disease. Heart. 2000; 83: 47-50.
15. Veltman CE, Hoogslag GE, Kharbanda RK, de Graaf MA, van Zwet EW, van der Hoeven BL, et al. Relation between coronary arterial dominance and left ventricular ejection fraction after ST-segment elevation acute myocardial infarction in patients having percutaneous coronary intervention. Am J Cardiol. 2014; 114: 1646-50.
16. Hanboly NH, Baghdady YM, Diab RH, Lawend SR, Kenawy AA. Value of three-dimensional echocardiography study of left ventricle function correlated to coronary arterial dominance in predicting the outcome of primary percutaneous coronary intervention. J Saudi Heart Assoc. 2018; 30: 211-21.
17. Ajayi NO, Vanker EA, Satyapal KS. Coronary artery dominance dependent collateral development in the human heart. Folia Morphol (Warsz). 2017; 76: 191-6.
18. Abu-Assi E, Castiñeira-Busto M, González-Salvado V, Raposeiras-Roubin S, Riziq-Yousef Abumuaileq R, Peña-Gil C, et al. Coronary artery dominance and long-term prognosis in patients with st-segment elevation myocardial infarction treated with primary angioplasty. Rev Esp Cardiol (Engl Ed). 2016; 69: 19-27.

Supplementary Table 1. Comparison of angiographic and clinical parameters between followed-up and lost to follow-up patients

	Total n (%) 471 (100)	**Lost follow up n (%) 163 (34,6)**	**Follow up n (%) 308(65,4)**	**p**
Vessel disease				
1	280 (59.4)	95 (58.3)	185 (60.1)	0.573
2	132 (28)	44 (27.0)	88 (28.6)	
3	59 (12.5)	24 (14.7)	35 (11.4)	
IRA				
LAD	250 (53.1)	75 (46.0)	175 (56.8)	0.077
RCA	177 (37.6)	72 (44.2)	105 (34.1)	
Cx	44 (9.3)	16 (9.8)	28 (9.1)	
TIMI 2/3 flow in IRA	395 (83.9)	133 (81.6)	262 (94.8)	0.429
Location of culprit lesion on IRA				
Proximal	122 (25.9)	42 (25.8)	80 (26.0)	0.961
Distal	349 (74.1)	121 (74.2)	228 (74.0)	
Presence of collaterals to IRA	61 (12.9)	25 (15.3)	36 (11.7)	0.227
Right dominancy	430 (91.3)	153 (93.3)	277 (89.9)	0.150
WMSI	1.58±0.36	1.58±0.38	1.57±0.34	0.918
LVEF, %	48.6±9.5	47.4±9.5	49.2±9.5	0.052
LVEF <40%	84 (17.8)	34 (20.9)	50 (16.2)	0.212
Peak CK (U/L)	2083 (1325-3235)	1975 (1201-3281)	2161 (1329-3269)	0.901
Peak CKMB (U/L)	222 (130-318)	232(120-306)	209 (131-307)	0.813

IRA: Infarct related artery, LAD: Left anterior descending, RCA: Right coronary artery, Cx: Circumflex, TIMI: Thrombolysis In Myocardial Infarction, WMSI: Wall Motion Score Index, LVEF: Left ventricular ejection fraction CK: Creatine kinase