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COMPARATIVE OUTCOMES FOLLOWING PERCUTANEOUS CORONARY INTERVENTION AND CONSERVATIVE TREATMENT IN ELDERLY PATIENTS WITH ACUTE MYOCARDIAL INFARCTION: SINGLE CENTER RETROSPECTIVE COHORT ANALYSIS

Rapyan A.A.[1]*, Chopikyan A.S.[2], Sargsyan T.M.[1], Sisakian H.S.[1]

[1] Department of Cardiology, Yerevan State Medical University after M. Heratsi, Yerevan, Armenia
[2] Department of Public Health, Yerevan State Medical University after M. Heratsi, Yerevan, Armenia

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Abstract

Cardiovascular diseases remain the leading cause of morbidity and mortality among the elderly population, defined as individuals aged 65 years and older. As this demographic continues to expand globally, with projections indicating that by 2030, one in every five individuals will be over 65, the burden of cardiovascular diseases is anticipated to rise correspondingly. Among the various manifestations of cardiovascular diseases, coronary artery disease is particularly prevalent, often leading to acute coronary syndromes such as myocardial infarction and unstable angina. Elderly patients who present with acute myocardial infarction are at increased risk for adverse outcomes owing to higher comorbidity burden and complicated coronary anatomy. We evaluated the three-year outcomes following coronary revascularization compared to conservative management among elderly patients presenting with acute myocardial infarction.

Totally 155 patients over 75 years of age who were admitted for acute myocardial infarction underwent invasive treatment with coronary angioplasty (n=58) or only medical treatment (n=97). In the Invasive Treatment group cohort, 3-year survival probability was 74.1% as compared to 29.9% in the Conservative treatment group cohort (p<0.001). Mean survival time at 3 years of follow up was 31.50 (95% CI 29.35-33.65) months among the patients of Invasive treatment group versus 24.65 (95% CI 22.71-26.59) months among the patients of Conservative treatment group (p<0.001). Mean time to rehospitalization at 3 years was 34.05 (95% CI 32.37-35.72) in the Invasive treatment group cohort compared to 30.03 (95% CI 28.13-31.93) in the Conservative treatment group cohort (p=0.004).

Coronary revascularization in elderly patients with acute myocardial infarction significantly reduces all-cause mortality and cardiovascular events over a three-year follow-up period. However, rehospitalization rates remain comparable between treatment groups. Given the need for a thorough clinical assessment before determining treatment, coronary revascularization should be strongly considered as a strategy to enhance overall survival probability.

Keywords: *elderly patients, acute myocardial infarction, coronary angioplasty, pharmacologic treatment, comorbid diseases, mortality, rehospitalization.*

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Address for Correspondence:

Ani A. Rapyan, MD
Department of Cardiology Yerevan State Medical University 2 Koryun Street, Yerevan 0025, Armenia
Tel.: +37493405369
E-mail: anirapyandoc@gmail.com

INTRODUCTION

Cardiovascular diseases remain the leading cause of morbidity and mortality among the elderly population, defined as individuals aged 65 years and older. As this demographic continues to expand globally, with projections indicating that by 2030, one in every five individuals will be over 65, the burden of Cardiovascular diseases is anticipated to rise correspondingly. Among the various manifestations of Cardiovascular diseases, coronary artery disease is particularly prevalent, often leading to acute coronary syndromes such as myocardial infarction and unstable angina. Percutaneous coronary intervention, a minimally invasive procedure aimed at revascularizing occluded coronary arteries, has become a cornerstone in the management of coronary artery disease. However, its application in the elderly presents unique challenges and considerations [*Mehta R et al.,2005; Bossi I et al., 2006; Shan L et al., 2014*]. The elderly population often presents with a higher prevalence of comorbid conditions, including hypertension, diabetes mellitus, chronic kidney disease, and cerebrovascular disease. These comorbidities not only increase the complexity of clinical management but also elevate the risks associated with interventional procedures like Percutaneous coronary intervention. Anatomical factors, such as increased vascular calcification and tortuosity, further complicate the procedure, potentially leading to lower success rates and higher complication rates. Despite these challenges, several studies have demonstrated that Percutaneous coronary intervention can significantly improve health-related quality of life in elderly patients [*Feldman D et al., 2006; Devlin G et al., 2008; Johnman C et al., 2011; Tegn N et al., 2016*]. However, increasing age poses a higher risk for periprocedural complications secondary to age-related physiological changes, frailty, and comorbidities [*Moscucci M et al., 2003; Guagliumi G et al., 2004; Ciszewski A et al., 2008*]. The decision-making process for Percutaneous coronary intervention in elderly patients is further complicated by the underrepresentation of this age group in clinical trials. Historically, elderly patients have been excluded from many randomized controlled trials evaluating Percutaneous coronary intervention, leading to a paucity of high-quality evidence to guide therapy in this population. This exclusion has contributed to a "treatment-risk" paradox, where elderly patients, despite being at higher risk for adverse outcomes from acute coronary syndromes, are less likely to receive invasive treatments like Percutaneous coronary intervention. Community studies have shown that elderly patients are less likely to undergo revascularization, perhaps due to this paradox. Recent studies have sought to address this gap by specifically examining the outcomes of Percutaneous coronary intervention in elderly cohorts. For instance, a study analyzing data from the Thai Percutaneous Coronary Intervention Registry found that while elderly patients (≥75 years) had higher rates of comorbidities and in-hospital mortality compared to younger patients, age itself was not an independent predictor of increased mortality after Percutaneous coronary intervention. Instead, factors such as acute coronary syndrome and heart failure were more strongly associated with adverse outcomes. The complexity of coronary artery disease in the elderly often involves multivessel disease, necessitating decisions between complete revascularization versus culprit-only Percutaneous coronary intervention [*Gnanenthiran S et al., 2017*]. Common comorbid conditions among the elderly population including cancer, peptic ulcer disease, gastritis, chronic obstructive pulmonary disease, diabetes mellitus, chronic kidney disease, and congestive heart failure are considered independent risk factors for coronary angiography and may provoke periprocedural complications [*Graham M et al., 2002; Avezum A et al., 2005; Capodanno D, Angiolillo D, 2010; Chhatriwalla A et al., 2013; Bogomolov A et al., 2013*]. Moreover, data obtained from several investigations have shown that age ≥ 75 years is a negative predictor of undergoing percutaneous coronary intervention [*Gnanenthiran S et al., 2017*]. Thus, the clinical decision on whether to proceed with invasive therapy continues to be controversial and requires an individualized approach in contemporary practice [*Vlaar P et al., 2008; Shan L et al., 2014; Gnanenthiran S et al., 2017*].

The aim of this study was to compare the invasive and conservative strategies in elderly patients admitted with acute myocardial infarction and to analyze the overall survival and rehospitalization rates by Kaplan-Meier analysis.

Material and methods

Study design: We retrospectively investigated 155 patients ≥75 years old admitted with acute myocardial infarction to the Department of General and Invasive Cardiology at the University Hospital of Yerevan State Medical University between 2014 and 2018. Patients had either received invasive or conservative management. Medical treatment was comparable in both groups except of antithrombotic pre- and postprocedural treatment.

Patient demographics and treatment data were collected through chart reviews, while follow-up was conducted via telephone communication. The study protocol received approval from the Ethics Committee of Yerevan State Medical University.

Study Endpoints: The primary endpoint was the evaluation of all-cause mortality after 3 years of follow-up. Cardiac death was defined as death resulting from myocardial infarction, stroke, or sudden cardiac death.

Secondary endpoints included rehospitalization, the need for coronary revascularization, and bleeding complications.

Statistical analysis: Categorical variables are presented as number (percent) and continuous variables are presented as mean ± standard deviation. Mean survival times are displayed with standard error and 95% confidence intervals.

Categorical variables were compared between groups using the Chi-square (x^2) test. In cases where expected frequencies were below the threshold for validity, Yates' correction for continuity was applied. For continuous variables, we assessed normality using the Kolmogorov-Smirnov test. Based on normality, group comparisons were conducted using the Student's t-test for normally distributed variables and the Mann-Whitney U test for non-normally distributed variables.

Survival probability and rehospitalization rates were assessed using the Kaplan-Meier method, and comparisons between groups were performed using the log-rank test. Mean survival time was compared between groups using the Mantel-Cox method. To assess predictors of survival, we conducted a Cox proportional hazards regression analysis to adjust for confounding variables. All statistical analyses were performed using SPSS version 22 (IBM Corp., Armonk, NY, USA). A two-tailed p-value < 0.05 was considered statistically significant.

Table 1

Baseline characteristics

		Invasive treatment group N=58	Conservative treatment group N=97
Average Age		79±3.8	80±4.1
Sex	M n(%)	22 (37.9%)	48 (49.5%)
	F n(%)	36 (62%)	49 (50.5%)
Comorbidity	Chronic kidney disease [a] n(%)	20 (34%)	31 (32%)
	HFrEF n(%)	32 (55.2%)	58 (59.8%)
	Diabetes mellitus n(%)	12 (20.7%)	25 (25.8%)
	Hypertension n(%)	50 (86.2%)	87 (89.7%)
	Anemia [b] n(%)	11(19%)	11 (11.3%)
Smokers n(%)		6 (10.3%)	9 (9.3%)
STEMI n(%)		29 (50%)	24 (24.74%)
non-STEMI n(%)		29 (50%)	54 (55.67%)
Acute heart failure n(%)		21 (36.2%)	31 (32%)
In hospital bleeding n(%)		6 (10.3%)	3 (3.1%)
Multivessel disease n(%)		46 (79.3%)	71 (73.2%)

Notes: *M - Male, F - Female, [a] - patients with glomerular filtration rate <60, [b] - Patients with Hemoglobin <100 g/l) HFrEF - Heart Failure with reduced Ejection Fraction, STEMI - ST- elevation Myocardial Infarction , N - Total number of patients. n(%) - number (percent) of patients in a group.*

Results

Between 2014 and 2018, 155 patients aged over 75 years were admitted for acute myocardial infarction. Of these, 58 patients (22 male and 36 female) received invasive treatment involving coronary angioplasty, while 97 patients (48 male and 49 female) were managed conservatively. The average age was 79±3.8 years in the Invasive treatment group and 80±4.1 years in the Conservative treatment group. Among all patients, 53 (34.2%) had ST-elevation myocardial infarction, and 102 (65.8%) had non-ST-elevation myocardial infarction. Baseline patient characteristics are displayed in Table 1.

Medical treatment was comparable in both groups except of antithrombotic pre- and postprocedural treatment (Table 2).

The 3-year survival probability was significantly higher in the Invasive treatment group at 74.1% compared to 29.9% in the Conservative treatment group (p<0.001). In the Invasive treatment group, 26% of patients died, with 60% of these deaths at-

Table 2

Pharmacological treatment in two groups

	Invasive treatment group n(%)	Conservative treatment group n(%)
Aspirin	56 (96.6%)	90 (92.8%)
Clopidogrel	57 (98.3%)	71 (73.2%)
Angiotensin-converting enzyme inhibitor	39 (67.2%)	60 (61.9%)
Beta blocker	47 (81%)	78 (80%)
Unfractionated Heparin/ low molecular Heparin	54 (93.1%)	87 (89.7%)
Spironolactone	35 (60.3%)	59 (60.8%)

tributed to myocardial infarction. In the Conservative treatment group, 70% of patients died, with 54% of these deaths due to myocardial infarction. Kaplan-Meier curves were used to estimate survival from all-cause mortality, stratified by the type of intervention performed (invasive treatment vs. conservative management) and the age of patients at the time of myocardial infarction. The analysis revealed significant differences in survival probabilities between the two treatment groups. Patients who underwent invasive treatment (coronary angioplasty) demonstrated higher survival rates compared to those managed conservatively. Additionally, age at the time of myocardial infarction further influenced survival outcomes, with younger patients generally showing better survival probabilities than older patients within each treatment group. These findings highlight the impact of both intervention type and age on long-term survival following acute myocardial infarction (Fig. 1).

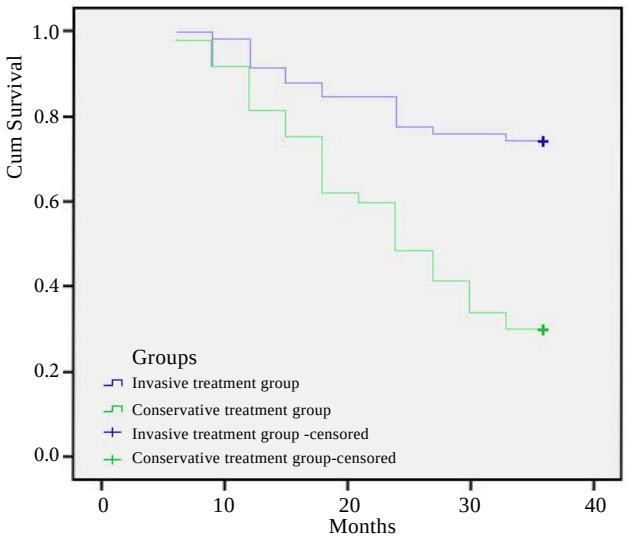

FIGURE 1. *Kaplan-Meyer curves for estimated survival from all-cause death stratified based on the interventon performed and age at the time of myocardial infarction*

The mean survival time was 31 months (95% CI 29.35-33.65) in the Invasive treatment group and 24.6 (95% CI 22.71-26.59) months in the Conservative treatment group ($p<0.001$) (Table 3).

Rehospitalization probability at 3 years was 51.7% in the Invasive treatment group compared to 33.2% in the Conservative treatment group ($p<0.01$). Of the 41% of patients that were rehospitalized in the Invasive treatment group, 42% were due to myocardial infarction and of the 44% of that were rehospitalized in the Conservative treatment group, 49% were due tomyocardial infarction. Stent thrombosis was reported in 1.7% of cases. Kaplan-Meier curves were generated to estimate rehospitalization rates, stratified by the type of intervention performed (invasive treatment vs. conservative management) and the age of patients at the time of myocardial infarction. The analysis revealed that patients who underwent invasive treatment (coronary angioplasty) had a higher probability of rehospitalization compared to those managed conservatively. Additionally, age at the time of myocardial infarction played a role, with younger patients generally experiencing lower rehospitalization rates than older patients within each treatment group. These findings underscore the influence of both intervention type and age on the likelihood of rehospitalization following acute myocardial infarction (Fig. 2).

Mean time to rehospitalization across the entire study population was 31.67 months (95% CI

TABLE 3

Means and Medians for Survival Time

Groups	Mean[a]			
	Estimate	Std. Error	95% CI LB	95% CI UB
Invasive treatment group	31.500	1.098	29.348	33.652
Conservative treatment group	24.649	0.988	22.713	26.586
Overall	27.213	0.789	25.667	28.759

Note: [a] *- Estimation is limited to the largest survival time if it is censored, CI* - Confidence Interval, LB - lower bound, UB - upper bound

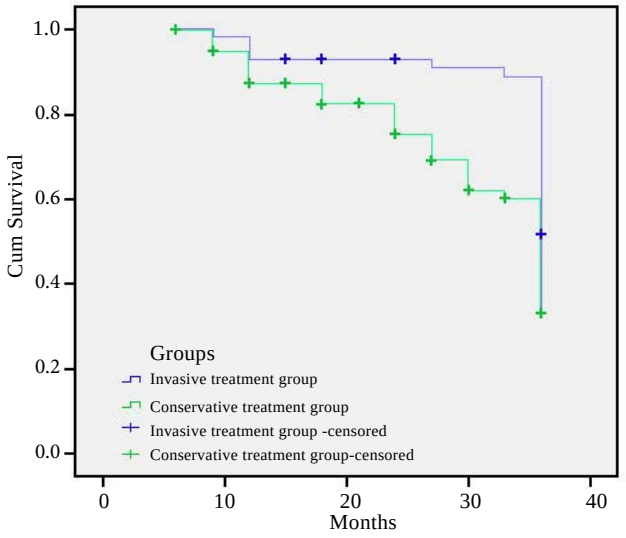

Figure 2. *Kaplan-Meier curves for estimated rehospitalizations based on the interventon performed and age at the time of myocardial infarction*

30.32-33.21). Mean time to rehospitalization in the Invasive treatment group was 34.05 (95% CI 32.34-35.72) compared to 30.03 (95% CI 28.13-31.93) in the Conservative treatment group (p=0.004) (Table 4).

Discussion

In this single-center retrospective cohort analysis of 155 patients aged over 75 years presenting with acute myocardial infarction, we aimed to evaluate the impact of an early invasive treatment approach on mortality and rehospitalization rates. Our findings indicate that invasive treatment with coronary angioplasty is associated with a significantly improved survival probability compared to conservative treatment in this elderly population. However, the Kaplan-Meier survival function for rehospitalizations showed statistically similar probabilities between the two groups. While invasive treatment demonstrated a reduced frequency of myocardial infarction-related rehospitalizations, comorbidities and the requirement for long-term dual antiplatelet therapy may partially explain the somewhat increased rehospitalization rates in the Invasive treatment group, leading to similar probabilities with the Conservative treatment group.

Table 4

Means for Survival Time for the Rehospitalization

Groups	Mean[a]			
	Estimate	Std. Error	95% CI	
			LB	UB
Invasive treatment group	34.045	.856	32.366	35.723
Conservative treatment group	30.029	.970	28.128	31.929
Overall	31.672	.691	30.317	33.027

Note: *[a] - Estimation is limited to the largest survival time if it is censored, CI* - Confidence Interval, LB - lower bound, UB - upper bound

The management of acute myocardial infarction in elderly patients poses unique challenges, as this population often presents with a higher burden of comorbidities. These factors likely contribute to an increased risk of mortality during acute myocardial infarction and peri-procedurally following coronary revascularization. Despite these challenges, our study highlights the potential survival benefits of an invasive treatment approach in this high-risk group [*Hasdai D et al., 2000; Achenbach S et al., 2008; Krishnaraj R, Charles K, 2013; Alfredsson J, Alexander K, 2016; Walker D et al., 2018; Damluji A et al., 2020*]. Moreover, a higher prevalence of frailty in the elderly population likely further worsens the poor prognosis following acute myocardial infarction and revascularization in older patients. Indeed, a general trend has been observed wherein an invasive treatment approach with either angioplasty or stenting becomes more frequently delayed or withheld with increasing age [*Alfredsson J, Alexander K, 2016; Walker D et al., 2018; Damluji A et al., 2020*]. Current recommendations from the US emphasize the need to individualize patient treatment, taking into account both the patient's clinical status along with their comorbidity burden [*Graham M et al., 2002; Bach R et al., 2004; Dangas G, Singh H, 2010*]. It is important to emphasize the lack of robust randomized-controlled clinical trial data examining invasive interventions in elderly patients presenting with acute myocardial infarction. This gap in evidence complicates clinicians' ability to weigh the benefits and risks of coronary revascularization in this population, particularly as age increases. The absence of high-quality data makes it challenging to establish clear, evidence-based guidelines for managing acute myocardial infarction in older adults, who often present with unique clinical complexities and comorbidities. Further research is urgently needed to provide stronger evidence and inform decision-making in this vulnerable pa-

tient group [*Lefèvre T et al., 1998; Fach A et al., 2010; Kolte D et al., 2013*].

The improved survival probability associated with coronary angioplasty observed in our study population occurred in the setting of statistically similar age and comorbidity burden between cohorts. Several studies have shown that coronary revascularization during acute myocardial infarction may be associated with increased mortality in the elderly population [*Dynina O et al., 2003; Wang T et al., 2011; Antonsen L et al., 2013*]. Reassuringly, our findings suggest that the mortality benefit achieved through improved coronary blood flow via invasive treatment likely outweighs the risks of periprocedural complications and death associated with coronary angioplasty, even in elderly patients with multiple comorbidities. This underscores the potential value of an invasive approach in this high-risk population, despite the challenges posed by advanced age and comorbid conditions. These results provide important insights for clinicians when considering the balance of risks and benefits in the management of acute myocardial infarction in older adults.

It should be mentioned that an invasive treatment approach in older patients with acute myocardial infarction is associated with an increase in both minor and major bleeding events, possible contributors to mortality at long term follow-up [*Graham M et al., 2002; Moscucci M et al., 2003; Spoon D et al., 2014; Shanmugam V et al., 2015*]. However, recently, the frequency of bleeding events has decreased, likely because of more selective approaches to antithrombotic treatment following angioplasty [*Bossi I et al., 2006; Capodanno D, Angiolillo DJ, 2010; Schulz S et al., 2010*]. For example, international guidelines recommend the use of glycoprotein IIb/IIIa only for bailout and emergency coronary interventions. More recently, the statement of American College of Cardiology, American Heart Association, European Respiratory Society on antithrombotic therapy for patients with permanent atrial fibrillation and acute myocardial infarction with subsequent angioplasty recommended short-term triple antithrombotic therapy followed by dual antiplatelet therapy, revised compared to previous recommendations [*January C et al., 2019*]. Accordingly, the adoption of these new recommendations may have played a role in reducing periprocedural bleeding complications. This improvement highlights the importance of updated guidelines and best practices in enhancing patient outcomes, particularly in high-risk populations such as elderly patients undergoing invasive procedures for acute myocardial infarction. By minimizing bleeding risks, these advancements further support the safety and feasibility of invasive treatments in this vulnerable group.

Limitations: *This study is a single-center, retrospective analysis with a relatively small sample size. As with any retrospective study, there is a potential for unmeasured confounders that could influence the results. While randomized controlled trials focusing on myocardial infarction outcomes in the elderly population are needed to provide more robust evidence, we believe the findings from this study hold clinical significance in guiding treatment approaches for this patient group. However, it is important to note that the data used in this study are from over six years ago and may not fully reflect advancements or changes in contemporary clinical practice. Future research incorporating more recent data and larger, multicenter studies is essential to validate and update these findings.*

CONCLUSION

Routine invasive intervention is associated with improved survival and a reduction in cardiovascular events in elderly patients with acute myocardial infarction at three-year follow-up. The findings of this study support the adoption of an interventional approach for managing acute myocardial infarction in this population. However, a thorough assessment of the patient's clinical status at presentation is crucial to guide the decision-making process and determine the most appropriate treatment pathway. This individualized approach ensures that the benefits of invasive intervention are balanced against the patient's overall health and risk factors.

REFERENCES

1. *Achenbach S, Ropers D, Kallert L, Turan N, Krähner R, Wolf T., et al (2008).* Transradial versus transfemoral approach for coronary angiography and intervention in patients above 75 years of age. Catheter Cardiovasc Interv. 72: 629-635 DOI: 10.1002/ccd.21696
2. *Alfredsson J, Alexander KP (2016).* Multiple chronic conditions in older adults with acute coronary syndromes. Clin Geriatr Med. 32(2): 291-303 DOI: 10.1016/j.cger.2016.01.009
3. *Antonsen L, Jensen LO, Terkelsen CJ, Tilsted HH, Junker A., et al (2013).* Outcomes after primary percutaneous coronary intervention in octogenarians and nonagenarians with ST-segment elevation myocardial infarction: From the Western Denmark heart registry. Catheter Cardiovasc Interv. 81: 912-919 DOI: 10.1002/ccd.24591
4. *Avezum A, Makdisse M, Spencer F, Gore JM, Fox KAA, Montalescot G., et al (2005).* Impact of age on management and outcome of acute coronary syndrome: observations from the global registry of acute coronary events (GRACE). Am Heart J. 149: 67-73 DOI: 0.1016/j.ahj.2004.06.003
5. *Bach RG, Cannon CP, Weintraub WS, DiBattiste PM, Demopoulos LA., et al (2004).* The effect of routine, early invasive management on outcome for elderly patients with non-ST-segment elevation acute coronary syndromes. Ann Intern Med. 141: 186-195 DOI: 10.7326/0003-4819-141-3-200408030-00007
6. *Bogomolov AN, Kozlov KL, Kurochkina ON, Olesiuk IB (2013).* Coronary stenting in elderly patients with acute myocardial infarction (review). Adv Gerontol. 26(1): 151-160
7. *Bossi I, Piccaluga E, Scatturin M, Corvaja N, Pasquetto G, Steffanon L., et al (2006).* Percutaneous coronary interventions in elderly patients: clinical indications and adjunctive medical treatment. The Italian Drug Evaluation in Angioplasty (IDEA). study. G Ital Cardiol (Rome). 7(2): 136-144
8. *Capodanno D, Angiolillo DJ (2010).* Antithrombotic therapy in the elderly. J Am Coll Cardiol. 56: 1683-1692 DOI: 10.1016/j.jacc.2010.04.063
9. *Chhatriwalla AK, Amin AP, Kennedy KF, House JA, Cohen DJ, Rao SV., et al (2013).* National Cardiovascular Data R. Association between bleeding events and in-hospital mortality after percutaneous coronary intervention. JAMA. 309: 1022-1029 DOI: 10.1001/jama.2013.1556
10. *Ciszewski A, Karcz M, Kepka C, Bekta P, Ksiezycka E, Przyłuski J., et al (2008).* Primary angioplasty in patients > or = 75 years old with ST-elevation myocardial infarction - one-year follow-up results. Kardiol Pol. 66(8): 828-833
11. *Damluji AA, Forman DE, Diepen S, Alexander KP, Page RL 2nd, Hummel SL., et al (2020).* Older adults in the cardiac intensive care unit: factoring geriatric syndromes in the management, prognosis, and process of care − a scientific statement from the American heart association. Circulation. 141(2): e6-e32 DOI: 10.1161/CIR.0000000000000741
12. *Dangas GD, Singh HS (2010).* Primary percutaneous coronary intervention in octogenarians: navigate with caution. Heart. 96: 813-814 DOI: 10.1136/hrt.2009.191916
13. *Devlin G, Gore JM, Elliott J, Wijesinghe N, Eagle KA, Avezum A, Huang W, Brieger D (2008).* Management and 6-month outcomes in elderly and very elderly patients with high-risk non-ST-elevation acute coronary syndromes: The global registry of acute coronary events. Eur Heart J. 29: 1275-1282 DOI: 10.1093/eurheartj/ehn124
14. *Dynina O, Vakili BA, Slater JN, Sherman W, Ravi KL, Green SJ, Sanborn TA, Brown DL (2003).* In-hospital outcomes of contemporary percutaneous coronary interventions in the very elderly. Catheter Cardiovasc Interv. 58: 351-357 DOI: 10.1002/ccd.10437
15. *Fach A, Bünger S, Zabrocki R, Schmucker J, Conradi P, Garstka D., et al (2015).* Compari-

son of Outcomes of Patients with ST-Segment Elevation Myocardial Infarction Treated by Primary Percutaneous Coronary Intervention Analyzed by Age Groups (<75, 75 to 85, and >85 Years); (Results from the Bremen STEMI Registry). Am J Cardiol. 116(12): 1802-1809 DOI: 10.1016/j.amjcard.2015.09.022

16. *Feldman DN, Gade CL, Slotwiner AJ, Parikh M, Bergman G, Wong SC, Minutello RM (2006).* Comparison of outcomes of percutaneous coronary interventions in patients of three age groups (< 60, 60–80, and > 80 years). Am J Cardiol .98: 1334-1339 DOI: 10.1016/j.amjcard.2006.06.026

17. *Gnanenthiran SR, Kritharides L, D'Souza M, Lowe HC, Brieger DB (2017).* Revascularisation compared with initial medical therapy for non-ST-elevation acute coronary syndromes in the elderly: a meta-analysis. Heart. 103(24): 1962-1969 DOI: 10.1136/heartjnl-2017-311233

18. *Graham MM, Ghali WA, Faris PD, Galbraith PD, Norris CM, Knudtson ML (2002).* Survival after coronary revascularization in the elderly. Circulation. 105: 2378-2384 DOI: 10.1161/01.cir.0000016640.99114.3d

19. *Guagliumi G, Stone GW, Cox DA, Stuckey T, Tcheng JE, Turco M., et al (2004).* Outcome in elderly patients undergoing primary coronary intervention for acute myocardial infarction: results from the Controlled Abciximab and Device Investigation to Lower Late Angioplasty Complications (CADILLAC) trial. Circulation. 110: 1598-1604 DOI: 10.1161/01.CIR.0000142862.98817.1F

20. *Hasdai D, Holmes DR Jr, Criger DA, Topol EJ, Califf RM, Harrington RA (2000).* Age and outcome after acute coronary syndromes without persistent ST-segment elevation. Am Heart J. 139: 858-866 DOI: 10.1016/s0002-8703(00)90018-8

21. *January CT, Wann LS, Calkins H, Chen LY, Cigarroa JE, Cleveland JC Jr., et al (2019).* 2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients with Atrial Fibrillation: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society in Collaboration with the Society of Thoracic Surgeons. Circulation. 140: e125-e151 DOI: 10.1161/CIR.0000000000000665

22. *Johnman C, Oldroyd KG, Pell JP (2011).* Elective percutaneous coronary intervention in the elderly patient. Aging Health. 7: 271-281 DOI: 10.2217/AHE.11.13

23. *Kolte D, Khera S, Palaniswamy C, Mujib M, Fonarow GC, Ahmed A., et al (2013).* Early invasive versus initial conservative treatment strategies in octagenarians with UA/STEMI. Am J Med. 126: 1076-1083 DOI: 10.1016/j.amjmed.2013.07.024

24. *Krishnaraj R, Charles K (2013).* Percutaneous coronary intervention in old age–effective or intrusive? Br J Cardiol. 20: 6-7 DOI: 10.1259/0007-1285-49-579-244

25. *Lefèvre T, Morice MC, Eltchaninoff H, Chabrillat Y, Amor M, Juliard JM., et al (1998).* One-month results of coronary stenting in patients >75 years of age. Am J Cardiol. 82: 17-21 DOI: 10.1016/s0002-9149(98)00236-7

26. *Mehta RH, Granger CB, Alexander KP, Bossone E, White HD, Sketch MH Jr (2005).* Reperfusion strategies for acute myocardial infarction in the elderly: benefits and risks. J Am Coll Cardiol. 45: 471-478 DOI: 10.1016/j.jacc.2004.10.065

27. *Moscucci M, Fox KAA, Cannon CP, Klein W, López-Sendón J, Montalescot G., et al (2003).* Predictors of major bleeding in acute coronary syndromes: The Global Registry of Acute Coronary Events (GRACE). Eur Heart J. 24: 1815-1823 DOI: 10.1016/s0195-668x(03)00485-8

28. *Schulz S, Angiolillo DJ, Antoniucci D, Bernlochner I, Hamm C, Jaitner J., et al (2010).* For the intracoronary stenting and antithrombotic regimen: rapid early action for coronary treatment (ISAR-REACT). 3A trial investigators. ISAR-REACT 3A: a study of reduced dose of unfractionated heparin in biomarker negative patients undergoing percutaneous coronary intervention. Eur Heart J. 31: 2482-2491 DOI:

10.1093/eurheartj/ehq330

29. *Shan L, Saxena A, McMahon R (2014).* A systematic review on the quality of life benefits after percutaneous coronary intervention in the elderly. Cardiology. 129: 46-54 DOI: 10.1159/000360603

30. *Shanmugam VB, Harper R, Meredith I, Malaiapan Y, Psaltis PJ (2015).* An overview of PCI in the very elderly. J Geriatr Cardiol. 12(2): 174-184 DOI: 10.11909/j.issn.1671-5411.2015.02.012

31. *Spoon DB, Psaltis PJ, Singh M, Holmes DR Jr, Gersh BJ, Rihal CS., et al (2014).* Trends in Cause of Death After Percutaneous Coronary Intervention. Circulation. 129(12): 1286-1294 DOI: 10.1161/CIRCULATIONAHA.113.006518

32. *Tegn N, Abdelnoor M, Aaberge L, Endresen K, Smith P, Aakhus S., et al (2016).* After Eighty study investigators. Invasive versus conservative strategy in patients aged 80 years or older with non-ST-elevation myocardial infarction or unstable angina pectoris (After Eighty study): an open-label randomised controlled trial. Lancet. 387: 1057-1065 DOI: 10.1016/S0140-6736(15)01166-6

33. *Vlaar PJ, Lennon RJ, Rihal CS, Singh M, Ting HH, Bresnahan JF, Holmes DR Jr (2008).* Drug-eluting stents in octogenarians: early and intermediate outcome. Am Heart J. 155: 680-686 DOI: 10.1016/j.ahj.2007.11.007

34. *Walker DM, Gale CP, Lip G, Martin-Sanchez FJ, McIntyre HF, Mueller C., et al (2018).* Frailty and the management of patients with acute cardiovascular disease: a position paper from the acute cardiovascular care association. Eur Heart J Acute Cardiovasc Care. 7(2): 176-193 DOI: 10.1177/2048872618758931

35. *Wang TY, Gutierrez A, Peterson ED (2011).* Percutaneous coronary intervention in the elderly. Nat Rev Cardiol. 8: 79-90 DOI: 10.1038/nrcardio.2010.184

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CONTENTS

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Armen A. Muradyan

Address for correspondence:

Yerevan State Medical University
2 Koryun Street, Yerevan 0025,
Republic of Armenia

Phones:

(+37410) 582532 YSMU
(+37493 588697 Editor-in-Chief
Fax: (+37410) 582532
E-mail:namj.ysmu@gmail.com, ysmiu@mail.ru
URL:http//www.ysmu.am

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Director: Armen Armenaakyan
Andraniks St., 96/8 Bulding
Yerevan, 0064, Armenia
Phone: (+37491) 40 25 86
E-mail: monoprint1@mail.ru