Outcomes of diabetic patients with acute coronary syndromes treated with aspirin in primary prevention

H. Costa[1], M. Espirito Santo[1], R. Fernandes[1], D. Carvalho[1], J. Bispo[1], J. Guedes[1], P. Azevedo[1], H. Vinhas[1], J. Mimoso[1], I. Jesus[1]

[1]Algarve University Hospital Center, Faro, Portugal
On behalf of The investigators of the Portuguese Registry of Acute Coronary Syndromes national (ProACS)
Funding Acknowledgements: None.

Introduction: The use of aspirin in primary prevention (PP) remains a matter of international debate. In type 2 diabetes mellitus (DM2) patients with high/very high cardiovascular (CV) risk, low dose aspirin may be considered for PP (class IIb, evidence level A) in european guidelines in the absence of hemorrhagic contraindication.

Objectives: Our aim was to analyze in-hospital and one year follow-up (FU) outcomes of acute coronary syndrome (ACS) DM2 patients without previous atherosclerotic CV disease (ASCVD) treated with vs without aspirin in primary prevention.

Methods: A retrospective analysis was carried out of DM2 patients without established ASCVD admitted with ACS included in the Portuguese Registry of ACS between 2010-2021. Patients were divided in two groups regarding the use of aspirin in primary prevention (with-AG and without-NAG). Composite primary outcome (re-infarction, heart failure, shock, death – in-hospital) and secondary outcomes (one-year all-cause mortality and mortality/rehospitalization) were compared in both groups. Independent predictors of primary outcome were assessed by multivariate logistic regression. Survival analysis and cox regression were used to compare and identify predictors of secondary outcomes. P value < 0.05 indicates statistical significance.

Results: A total of 4517 patients were analyzed, mean age 68±12 years, 64.8% male. AG showed higher rates of hypertension (89.9%, $p<0.001$), dyslipidemia (74.1%, $p<0.001$), history of heart failure (9.2%, $p<0.001$), valvular disease (3.9%, $p=0.002$) and chronic renal disease (12.3%, $p<0.001$). STEMI presentation was more frequent in NAG (48%, $p<0.001$). Multivessel disease (mainly three vessels disease) was more frequent in AG (32.7%, $p<0.001$), but anterior descendent (AD) as culprit artery was more common in NAG (40.3%, $p=0.013$). Both groups had no difference in major hemorrhage occurrence. Primary outcome was more frequent in AG (18.6%, $p=0.034$). One-year all-cause mortality and mortality/rehospitalization were higher in AG (9.90%, $p=0.004$ and 32.9%, $p=0.017$, survival analysis). Independent predictors of primary outcome were aspirin in primary prevention (OR 1.38, $p=0.026$), age (OR 1.59, $p<0.001$), valvular disease (OR 4.46, $p<0.001$), STEMI at presentation (OR 2.20, $p<0.001$), LVEF <40% (OR 4.40, $p<0.001$) and Killip-Kimball class > I (OR 12.9, $p<0.001$). Aspirin in primary prevention (HR 1.84, $p=0.004$), chronic lung disease (HR 5.68, $p<0.001$), and Killip-Kimball class > I (HR 3.27, $p<0.001$) were predictors of one-year all-cause mortality.

Conclusion: DM2 patients with ACS treated with aspirin in primary prevention had worst in-hospital and one-year FU outcomes. Although with higher rates of three vessels disease, PP with aspirin showed less AD disease and STEMI presentation, with similar major clinical hemorrhage.

Table 1 - Clinical characteristics and outcomes of diabetic patients with Vs without aspirin in primary prevention

			Aspirin in primary prevention			
			No (n=3495, 77,4%)	Yes (n=1022, 22,6%)	Total (n=4517)	p value
Gender	***Male***	n (%)	2283 (65,3)	643 (62,9)	2926 (64,8)	
	Female	n (%)	1212 (34,7)	379 (37,1)	1591 (35,2)	
						0,157
Age	***Mean±SD - years***		66,7±11,7	70,6±10,4	67,6±11,6	**<0,001**
BMI	***Mean±SD - years***		28,6±4,60	28,6±4,50	28,6±4,60	
						0,862
Hypertention		n (%)	2718 (78,3)	917 (89,9)	3635 (80,9)	
						<0,001
Dyslipidemia		n (%)	2121 (63,0)	732 (74,1)	2853 (65,5)	
						<0,001
Smoker		n (%)	733 (21,0)	121 (11,8)	854 (18,9)	
						<0,001
Heart failure history		n (%)	101 (2,90)	94,0 (9,20)	195 (4,30)	
						<0,001
Valvular disease		n (%)	75,0 (2,20)	40,0 (3,90)	115 (2,60)	
						0,002
Pacemaker		n (%)	51,0 (1,50)	19,0 (1,90)	70,0 (1,60)	
						0,355
Chronic renal disease		n (%)	195 (5,90)	118 (12,3)	313 (7,30)	
						<0,001
Chronic lung disease		n (%)	151 (4,40)	51,0 (5,10)	202 (4,50)	
						0,342
Clinical indication	***STEMI***	n (%)	1677 (48,0)	343 (33,6)	2020 (44,7)	**<0,001**
	NSTEMI	n (%)	1524 (43,6)	530 (51,9)	2054 (45,5)	**<0,001**
	Unstable angina	n (%)	184 (5,30)	108 (10,6)	292 (6,50)	**<0,001**
	ACS indeterminated	n (%)	110 (3,10)	41,0 (4,00)	151 (3,30)	0,176
Location of MI	***Anterior***	n (%)	779 (48,8)	141 (47,0)	920 (48,5)	0,572
	Inferior	n (%)	801 (50,2)	149 (49,7)	950 (50,1)	0,876
	LBBB	n (%)	17,0 (1,10)	10,0 (3,30)	27,0 (1,40)	**<0,001**
Class KK (admission)	***I***	n (%)	2849 (83,6)	742 (77,3)	3591 (82,2)	**<0,001**
	>I (II, III, IV)	n (%)	560 (16,4)	218 (22,7)	778 (17,8)	**<0,001**
LVEF at baseline	***Mean±SD - %***		52,0±12,0	50,0±13,0	51,0±12,0	
						0,018
Hemoglobin*	***Mean±SD - g/dl***		12,3±2,00	11,7±2,00	12,2±2,00	
						<0,001
Creatinine**	***Mean±SD - mg/dl***		1,30±1,20	1,60±1,50	1,40±1,30	
						<0,001
Nº of vessel with disease	***1 vessel***	n (%)	903 (34,4)	169 (23,3)	1072 (32,0)	**<0,001**
	3 vessels	n (%)	674 (25,7)	237 (32,7)	911 (27,2)	**<0,001**
	Multivessel disease (>1)	n (%)	1541 (55,7)	450 (59,2)	1991 (56,4)	0,080
Culprit artery	***LMCA***	n (%)	35,0 (1,50)	15,0 (2,60)	50,0 (1,70)	0,073
	Anterior Descendent	n (%)	929 (40,3)	199 (34,6)	1128 (39,1)	**0,013**
Major hemorrhage		n(%)	18,0 (0,50)	9,00 (1,00)	27,0 (0,60)	0,151
Primary outcome (composite):		n (%)	552 (15,8)	190 (18,6)	742 (16,4)	
-> Re-MY, HF, Shock, Death	***In-hospital***					
						0,034
Components of primary outcome						
	-> Re-MI	n (%)	7,00 (7,14)	9,00 (11,4)	30,0 (0,70)	0,526
	-> HF	n (%)	439 (14,6)	174 (18,4)	667 (15,4)	**0,005**
	-> Shock	n (%)	120 (24,0)	30 (16,9)	150 (22,1)	0,054
	-> Death	n (%)	107 (3,10)	29,0 (3,00)	136 (3,10)	0,814
Secondary outcome						
-> All cause mortality	***FU 1 year***	n (%)	83,0 (5,80)	32,0 (9,90)	115 (6,60)	**0,008**
-> All cause nortality and rehospitalization	***FU 1 year***	n (%)	338 (25,2)	100 (32,9)	438 (26,6)	**0,006**

ACS, Acute coronary syndrome; BMI, Body mass index; FU, Follow-up; HF, Heart failure; KK, Killip and Kimball class; LBBB, Left bundle brunch block; LMCA, Left main coronary artery; LVEF, Left ventricular ejection fraction; MI, Myocardial infarction; NSTEMI, Non-ST elevation myocardial infarction; SD, Standard deviation; STEMI, ST elevation myocardial infarction, * minimum, ** maximum