Second versus First Generation Drug-Eluting Stent in real world population: A single center experience

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Background

- Drug-eluting stents (DES) have demonstrated their superiority over bare-metal stents (BMS) with respect to in-stent restenosis and the need for repeat revascularisation.

Background

- Second generation DES (SG-DES) have been designed with aim to improve safety and efficacy versus currently available first generation DES (FG-DES). Although promising results have been demonstrated with SG-DES in comparison with FG-DES in selected subset of patients and lesions, few data is available regarding their safety and efficacy in real world clinical practice at all comer base.

Objective

- The aim of this study was to compare the safety and efficacy of the FG-DES and SG-DES, in unselected patients in real-life practice.

Methods

- A total 1050 consecutive patients underwent PCI with DES between January 2007 to June 2011 were enrolled.
- The long-term clinical outcomes were compared between the patients treated with FG-DES (n=466, sirolimus and paclitaxel eluting stents) versus SG-DES (n=554, zotarolimus and everolimus eluting stents).

Methods

- We assessed the cumulative incidence of major adverse cardiac events (death from cardiac causes, acute myocardial infarction, and target-vessel revascularization).

Results

	ΣΥΝΟΛΟ ΑΣΘΕΝΩΝ n=1050*				1st Generation n=466				2nd Generation n=555				p value
Baseline characteristics of the study population.	n	SD or %	Min	Max	n	SD or %	Min	Max	n	SD or %	Min	Max	
Age (+SD)	63,9	11	29	92	63,4	10,8	29	88	64,2	11,1	35	92	0,2458
Men (number,%)	845	80			378	81			443	80			0,7473
BMI ((+SD)	29	5,5			28,7	3,9			29,1	6,5			0,2447
Smoker (number,%)	320				146	31,33%			166	29,91%			0,6702
Hypertension (number,%)	632				261	56,01%			354	63,78%			0,0138
Hyperlipidemia (number,%)	484				206	44,21%			256	46,13%			0,5818
Diabetes Melitus (number,%)	287				127	27,25%			153	27,57%			0,9651
Chronic renal insufficiency (number,%)	36				16	3,43%			19	3,42%			0,8697
Previous MI (number,%)	206				91	19,53%			110	19,82%			0,9704
Previous PCI (number,%)	195				81	17,38%			108	19,46%			0,4404
Unstable angina pectoris (number,%)	434				177	37,98%			247	44,50%			0,0411

*29 patients mixed stent

- **Baseline characteristics were similar between the two groups except hypertension, which was higher in SGDES (63.8% vs 56.01% p=0.01)**

Results

	ΣΥΝΟΛΟ ΑΣΘΕΝΩΝ n=1050*				1st Generation n=466				2nd Generation n=555				p value
Baseline characteristics of the study population.	n	SD or %	Min	Max	n	SD or %	Min	Max	n	SD or %	Min	Max	
History of Peripheral Artery Disease (number,%)	31				16	3,43%			14	2,52%			0,5016
History of Stroke (number,%)	40				15	3,22%			25	4,50%			0,3744
COPD (number,%)	78				33	7,08%			41	7,39%			0,9449
ST Elevation MI (number,%)	275				125	26,82%			144	25,95%			0,808

Results

PCI Data

	ΣΥΝΟΛΟ ΑΣΘΕΝΩΝ n=1050*				1st Generation n=466				2nd Generation n=555				p value
Baseline characteristics of the study population.	n	SD or %	Min	Max	n	SD or %	Min	Max	n	SD or %	Min	Max	
Total number of vessels(+- SD, range	1504				662				784				
mean number of vessels treated per patient ((+- SD range)	1,43	0,6	1	4	1,42	0,6	1	4	1,41	0,6	1	4	0,7909
Total number of Lesions(+- SD range	1686				725				891				
mean number of lesion treated per patient ((+- SD, range)	1,61	0,8	1	6	1,56	0,77	1	6	1,61	0,81	1	5	0,3152
total number of stents(+- SD range	2127				926				1114				
mean number of stents per vessel treated (+- SD (range)	1,41				1,4				1,42				
mean number of stents per lesion treated ((+- SD range)	1,28	0,51	1	5	1,3	0,54	1	5	1,27	0,48	1	4	0,3477
mean stent length per patient ((+- SD range)	43,76	26,2	8	167	44,53	26,14	12	167	42,12	25,67	8	140	0,1387
mean stent length per lesion treated ((+- SD range)	30,55		8	121	31,34		8	121	29,82		8	104	
mean stent diameter (+- SD (range)	2,92	0,41	2	4,5	2,9	0,43	2	4,5	2,93	0,4	2,25	4	0,249
mean period FU(+- SD, range)(months) ((+- SD range)	23,81	14,14	1	63	27,54	14,4	1	62	20,47	13,07	1	63	<0,0001
Pro-Dilatations	896	53,1%			383	52,8%			481	54%			0,6196
Post-Dilatations	2001	94,1%			889	96%			1036	93%			0,0047

Results

Follow up

- Clinical follow-up was completed in all patients at both groups.
- During a period of 23.81± 14.14 months (range: 7 to 63 months)

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Baseline characteristics of the study population.	n	SD or %	Min	Max	n	SD or %	Min	Max	n	SD or %	Min	Max	
Follow up													
Ολοκλήρωση FU	1050	100%			466	100,00%			555	100,00%			
Death	40				21	4,51%			17	3,06%			0,2923
Cardiac Death	10				4	0,86%			6	1,08%			0,9708
Non-cardiac Death	30				17	3,65%			11	1,98%			0,1747
MI													
TVR	68				38	8,15%			27	4,86%			0,0437
RePCI	64				35	7,51%			26	4,68%			0,077
CABG	4				3	0,64%			1	0,18%			0,5025
RePCI (another vessel)	11				6	1,29%			4	0,72%			0,5472
Total MACE	108				59	12,66%			44	7,93%			0,0166

Conclusions

- In our study, patients treated with percutaneous coronary intervention (PCI) with second-generation drug-eluting stents (DES) had a lower risk of clinically driven TVR and MACE at long-term follow-up, compared with those treated with first-generation DES.

Conclusions

The second generation DES, with better stent design and greater biocompatibility with release kinetics, have shown promising results, but larger RCTs are needed in patients with ACS and real-world situations of patients with long lesions, calcifications or bifurcations.

- Ευχαριστώ για την προσοχή σας !!!