ACC.20 TOGETHER WITH WORLD CONGRESS OF CARDIOLOGY

1786
JACC March 24, 2020
Volume 75, Issue 11

Non Invasive Imaging (Echocardiography, Nuclear, PET, MR and CT)

FEASIBILITY OF A NEW NON INVASIVE METHOD FOR THE EVALUATION OF CORONARY BLOOD FLOW IN CORONARIES: TRANSTHORACIC CONVERGENT COLOR DOPPLER MODE ALONG WITH PHARMACOLOGICALLY INDUCED HEART RATE LOWERING

Poster Contributions
Posters Hall_Hall A
Monday, March 30, 2020, 9:45 a.m.-10:30 a.m.

Session Title: Non Invasive Imaging: Echo 7
Abstract Category: 28. Non Invasive Imaging: Echo
Presentation Number: 1417-193

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Background: We tested the hypothesis that transthoracic coronary blood flow Doppler recording with a sensitive Doppler mode such as convergent color mode (CC-Doppler TTE) can be further improved by lowering the heart rate (HR) down to <60 b/m, since low HR <60 b/m causes a disproportional lengthening of diastole that enormously facilitates coronary scanning because during a prolonged diastole, when the coronaries are not moving, coronary blood flow signal is not cluttered by tissue movement.

Methods: A group of 26 patients underwent CC-Doppler-TTE in 4 branches of the coronary tree (see table) before and after HR lowering. Coronary flow was judged by 2 expert observers as undetectable (SCORE 1), weak or with clutter artifacts (SCORE 2), and well delineated (SCORE 3). Pulsed wave (PW) Doppler spectral trace was judged as absent (SCORE 1), suboptimal owing to the scarce delineation of the curves outline (SCORE 2), and optimal with clear delineation of the diastolic wave (SCORE 3).

Results: Beta-blockers significantly decreased the mean HR from 76±5 to 57±6 bpm (p<0.001); HR lowering significantly increased the quality and the length of blood flow (BF) Doppler recording in coronaries. PW Doppler results paralleled those of color flow (See table).

Conclusion: This approach greatly improved the success rate of BF Doppler recording in coronaries, making CC-Doppler TTE suitable for accelerated stenotic flow and flow reserve assessment not only in the left anterior descending but also in the circumflex branch.

	COLOR DOPPLER			PW DOPPLER			CF length
	Score 1	Score 2	Score 3	Score 1	Score 2	Score 3	mm
	# (%)	# (%)	# (%)	# (%)	# (%)	# (%)	
LMC b, 26 seg	24(92)	1(4)	1(4)	24 (92)	1(4)	1(4)	-
LMC a ,26 seg	0 (0)	12 (46)	14(54)*	0(0)	15(58)	10 (38)*	-
LAD b, 78seg	55(72)	18(24)	5(6)	55(70)	10(13)	13(17)	15±15.76
LAD a, 78seg	1(1)	4(5)	73(94)*	1(1)	6(8)	73(91)*	79±14.14**
LCx b, 26 seg	19(73)	7(27)	0	26(100)	0	0	0
LCx a, 26 seg	0	9(35)	17(65)*	0	6(23)	20(77)*	23±9.07 **
OM b, 26 seg	23(88)	3(11)	0	24(92)	1(4)	1(4)	2.3±7.10
OM a, 26 segm	1(4)	12(46)	13(50)*	1(4)	15(58)	10(38)*	26.8±10.98**

b=before HR lowering; a= after HR lowering; seg = coronary segments; # = number of coronary segments; (%) = percentage; CF= color flow; LMC= left main coronary artery, LAD= left anterior descending; LCx= proximal circumflex; OM= obtuse marginal; * = p<0.001 versus score before HR lowering; **= p<0.001 versus color flow length before HR lowering.