

LIST OF FIGURES

Figure		page
(1)	Composite graph estimating the probability of severe coronary artery disease on the basis of a 5 point risk score that awards 1 point for each of the following variables	5
(2)	Survival of medical treated patients with coronary artery disease according to ejection fraction (EF) and number of diseased vessels	6
(3)	Five year survival rate in patients according to severity and proximity of coronary artery lesions and adjusted hazard ration for coronary artery bypass grafting (CABG) vs medical treatment. 95% = 95% coronary artery stenosis	9
(4)	Motion and velocities are analyzed by calculating frame-to-frame changes using “natural acoustic tagging.” New features (orange circles) keep coming into the image as old ones (yellow circles) fade away	10
(5)	Representative example of the measurement of segmental and global peak systolic longitudinal strain (PSLS) shown on bull's eye display from a patient with three- vessel CAD	11
(6)	Display of negative staintrend curves from 3 chamber view of a healthy person	12
(7)	Comparison between the three studied groups according to age	23
(8)	Comparison between the three studied groups according to gender	23
(9)	Comparison between the three studied groups according to risk factors	25
(10)	Comparison between the three studied groups according to final clinical diagnosis	27
(11)	Comparison between high-risk group and low-risk group according to coronary angiographic data	30
(12)	Comparison between high-risk group and low-risk group according to number of high stenotic lesions	30
(13)	Comparison of 2D STE measurement of longitudinal systolic strain in apical 3-ch view between case A from the high risk group and case B from the normal group. AVC: aortic valve closer, GS: global strain	33
(14)	Comparison between the three studied groups according to G peak SL (APLAX)	34
(15)	Comparison between the three studied groups according to G peak SL (A4C).	34
(16)	Comparison of 2D STE measurement of longitudinal systolic strain in apical 4-ch view between case A from the high risk group and case B from	35

Figure		page
	the normal group. AVC	
(17)	Comparison between the three studied groups according to G peak SL (A2C).	36
(18)	Comparison between the three studied groups according to global peak systolic longitudinal strain	38
(19)	Comparison between the three studied groups according to basal peak systolic longitudinal strain	38
(20)	Comparison between the three studied groups according to mid peak systolic longitudinal strain	39
(21)	Comparison between the three studied groups according to apical peak systolic longitudinal strain	39
(22)	Comparison between the three studied groups according to basal and mid peak systolic longitudinal strain	40
(23)	Comparison of the strain curves and bull's eye derived from all three apical views in a quad format between case A from the high risk group and case B from the normal group this allows the user to correlate the strain curves with the bull's eye	41
(24)	Comparison of 2D STE measurement of segmental and global peak systolic longitudinal strain (PSLS) in bull's eye display between case A from the high risk group and case B from the normal group	42
(25)	ROC curve for G peak SL (AVG) to diagnose high risk patients	43
(26)	ROC curve for Basal PLS to diagnose high risk patients	44
(27)	ROC curve for Mid PLS to diagnose high risk patients	44
(28)	ROC curve for Apical PLS to diagnose high risk patients	45
(29)	ROC curve for Basal and Mid PLS to diagnose high risk patients	45

LIST OF ABBREVIATION

2D	:	Two-dimensional
2DSE	:	Two dimensional strain echocardiography
2D-STE	:	Two dimensional Speckle-tracking echocardiography
3D	:	Three-dimensional
A2C	:	Apical two chamber
A3C	:	Apical three chamber
A4C	:	Apical four chamber
AFI	:	Automated function imaging
APLAX	:	Apical long axis
AUC	:	Area under the curve
AVC	:	Aortic valve closure
AVG	:	Average
BBB	:	Bundle branch block
CABG	:	Coronary artery bypass grafting
CAD	:	Coronary artery disease
CCS	:	Canadian Cardiovascular Society
CT	:	Computed tomography
EF	:	Ejection fraction
G	:	Global
GLPSS	:	Global longitudinal peak systolic strain
GPSS	:	Global peak systolic strain
GS	:	Global strain
HFNEF	:	Heart failure with normal ejection fraction
HSL	:	High grade stenotic lesions
LAD	:	Left anterior descending artery
LBBB	:	Left bundle branch block
LCX	:	Left circumflex artery
LM	:	Left main
LMCA	:	Left main coronary artery
LV	:	Left ventricular
LVEDV	:	Left ventricular end diastolic volume
LVESV	:	Left ventricular end systolic volume
MI	:	Myocardial infarction
MRI	:	Magnetic resonance imaging
PCI	:	Percutaneous coronary intervention
PET	:	Positron emission tomography
PSLS	:	Peak systolic longitudinal strain
RCA	:	Right coronary artery

ROC	:	Receiver operating characteristic
ROI	:	A region of interest
RV	:	Right ventricular
RWMA	:	Regional wall motion abnormalities
SL	:	Strain longitudinal
SPECT	:	Single photon emission computed tomography
STE	:	Speckle-tracking echocardiography
STEMI	:	ST-elevation myocardial infarction
TDI	:	Tissue Doppler imaging
TIMI	:	Thrombolysis in myocardial infarction
V.P.Cs	:	Ventricular premature contractions
VD	:	Number of diseased vessels