Dilated Cardiomyopathy Patients
The Beginning of Personalized Medicine

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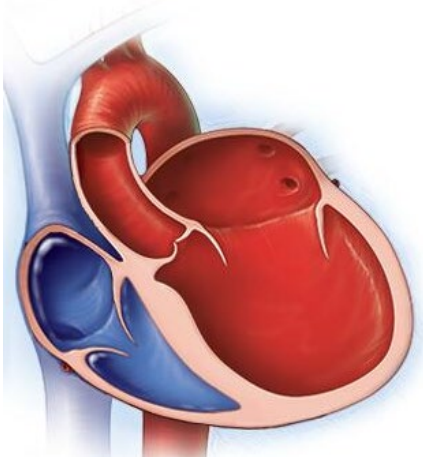
Dilated Cardiomyopathy

LVEDD > 5.8 cm men LVEDD > 5.2 cm women EF< 50%

Sudden Cardiac Death

End stage heart disease

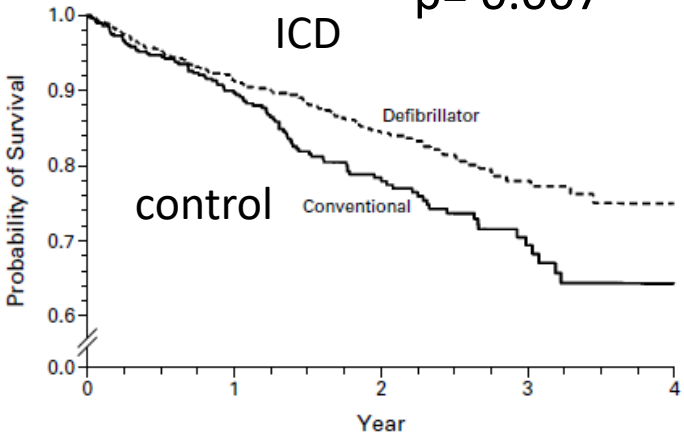


The challenge to prevent SCD in DCM

Post MI

EF< 30%

p= 0.007

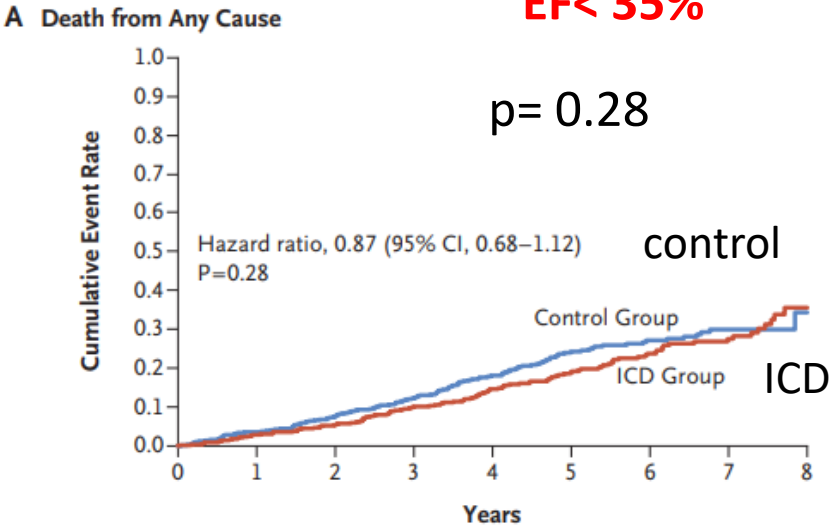


N Engl J Med, Vol. 346, March 21, 2002

DCM

EF< 35%

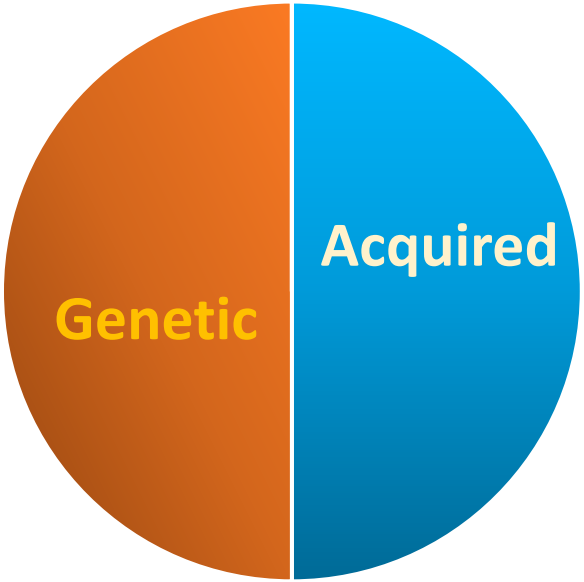
p= 0.28



N Engl J Med 375;13 September 29, 2016

Personalized Medicine in DCM

Causes of DCM



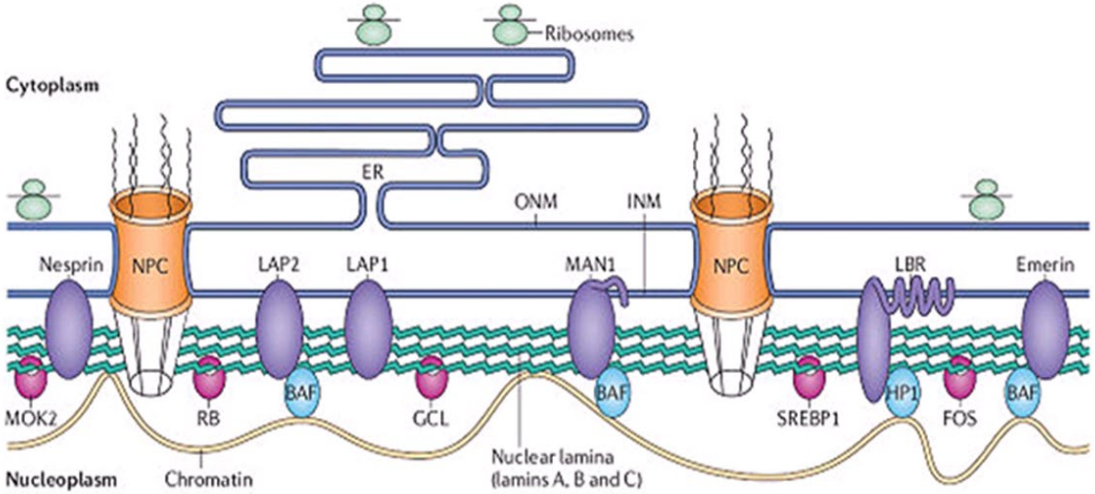
- Infection
- Toxic/Drugs
- Autoimmune disease
- Other

Personalized Medicine in Genetic DCM (Genes related to DCM) (146)

ACTC1, BAG3, DES, DMD, DSP, FLNC, HCN4, LMNA, MYBPC3, MYH7, PKP2, PLN, RBM20, TAZ, TNNC1, TNNI3, TNNT2, TPM1, TTN, *ABCC9, ACTA1, ACTN2, ALMS1, ALPK3, ANKRD1, ANO5, ASNA1, CAV3, CHRM2, COL741, CRYAB, CSRP3, DNAJC19, DOLK, DSC2, DSG2, DYSF, EMD, EYA4, FHL2, FHOD3, FKRP, FKTN, FOXD4, GAA, GATA4, GATA6, GATAD1, GLB1, GYG1, HFE, JPH2, JUP, KLF5, LAMA2, LAMA4, LAMP2, LDB3, MURC, MYBPHL, MYH6, MYL2, MYL3, MYOT, MYPN, MYZAP, NEBL, NEXN, NKX2-5, PCCA, PCCB, PLEKHM2, PPA2, PPCS, PRDM16, PSEN1, PSEN2, QRSL1, RAF1, RPL3L, RYR2, SCN5A, SDHA, SGCD, SGCG, SLC22A5, SPEG, TAZ, TBX5, TBX20, TCAP, SYNE1, SYNE2, TBX20, TCAP, TMEM43, TMEM70, TNNI3K, TRIM63, TMPO, TOR1AIP1, TTR, TXNRD2, VCL, XK, ZBTB17,AKT1, BRAF*, CASZ1, CAVIN4, CDC25B, CTF1, DNM1L*, DTNA, FBX032, FHL1, GATA5*, GLA*, GSK3B, HAND1, HAND2, IDH2*, ILK*, ISL1, KAT2B, KLHL24, KCNJ2*, KCNJ8*, JARID2, LEMD2, LMOD2, LRRC10, MEF2C, MIB1, MYLK3, NDUFB11, NNT, NONO, NKX2-5*, NRAP, NUBPL, OBSCN*, OPA3*, PDLIM3*, PDLIM5, PKD2, PPP1R13L, PRKAG2, PTPN11*, RAF1, RBM24, SGCA*, SGCB*, SURF1, TLL2, TMOD1, TUFM.*

Yield of Genetic Test 50%

גן LMNA מקודד לחלבון lamin A/C



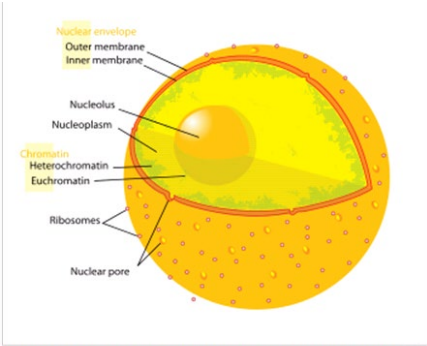


Diagram of human cell nucleus. Nuclear pore labeled at bottom left

Clinical characteristics of patients with LMNA mutation (n=299)

Age at presentation (years)	All patients n=299
Age (years)	31.2
Male/female/unknown sex	163/119/17
No of unaffected carriers	27
Dysrhythmias	181
Sinus bradycardia	14 (5%)
Atrioventricular block	135 (45%)
Atrial fibrillation	47 (16%)
Arrhythmia, unspecified	67
Pacemaker implanted	84 (28%)
Left ventricular end diastolic diameter (mm)	52
Fractional shortening	28%
Left ventricular dilation	77
Systolic dysfunction	93 (31%)
Heart failure	78

Van Berlo JH et al J Mol Med 2005

Mode of death of patients with LMNA mutation (n=299)

	All patients n=299
No of patients died	76 (25%)
Age at death (years)	46
Sudden death	35 (46%)
With pacemaker	16
Without pacemaker	19
Due to heart failure	9
With pacemaker	3
Without pacemaker	6
Unclassified death	32
With pacemaker	13
Without pacemaker	19

Van Berlo JH et al J Mol Med 2005

Implantable cardioverter-defibrillators in laminA/C mutation carriers with cardiac conduction disorders

47 patients , LMNA mutation carrier

ICD
- Bradycardia
- Pacemaker
- PR> 240 msec +CLBBB or NSVT

21 patients with ICD

11 (52%) appropriate shock
(9 with EF>45%)
0 SCD

26 patients without ICD

3 heart transplantation
1 stroke
1 cancer
1 SCD

Anselme F et al Heart Rhythm 2013; 10: 1492-98

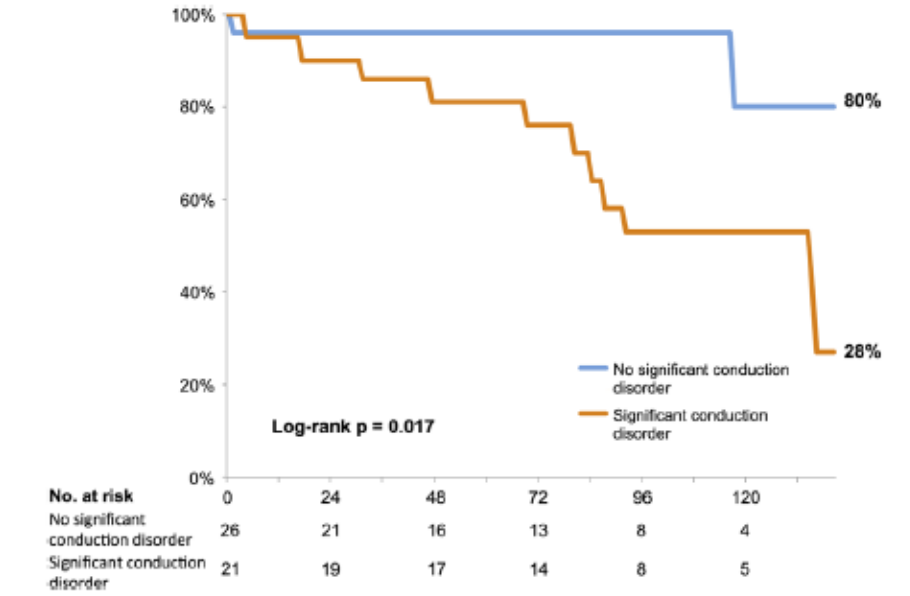
Univariate analysis for predictive factors of malignant ventricular arrhythmia

Variable	Hazard ratio (95% confidence interval)	p
Age	1.02 (0.96-1.09)	0.45
Sex: male	1.18 (0.38-3.65)	.78
Non-missense mutation	2.56 (0.56-11.63)	.22
Prior syncope	1.74 (0.58-5.23)	.32
Family history of sudden death	1.09 (0.32-3.75)	.89
Family history of syncope	1.04 (0.30-3.52)	.96
Atrial fibrillation or flutter	1.17 (0.38-3.63)	.79
Significant conductive disorders	5.20 (1.14-23.53)	.03
Nonsustained ventricular tachycardia	0.45 (0.15-1.42)	.17
Left ventricular ejection fraction	1.00 (0.95-1.05)	.87
Left ventricular ejection fraction <45%	0.64 (0.08-4.91)	.67
Left ventricular end-diastolic diameter	1.10 (0.99-1.21)	.06
Left ventricular end-diastolic diameter > 56 mm	1.33 (0.44-4.08)	.62
Beta-blockers	2.14 (0.65-7.01)	.21
ACE inhibitors/angiotensin receptor blockers	1.14 (0.35-3.71)	.83
Amiodarone	2.41 (0.78-6.42)	.19
Class 1 antiarrhythmic drugs	0.66 (0.09-5.17)	.70
Vitamin K antagonists	2.94 (0.90-8.80)	.09
Isolated skeletal muscular involvement	0.26 (0.06-1.20)	.08
Dilated cardiomyopathy phenotype	1.94 (0.65-5.78)	.24

Anselme F et al Heart Rhythm 2013; 10: 1492-98

Kaplan Meier estimate of the probability of survival free of malignant ventricular arrhythmia

1497



Anselme F et al Heart Rhythm 2013; 10: 1492-98

Table 2 Malignant Ventricular Arrhythmias and End-Stage Heart Failure (N = 269)

Malignant ventricular arrhythmias	
Cardiopulmonary resuscitation (n = 262)*	11 (4)
Appropriate ICD treatment (n = 117)*	28 (24)
Sudden cardiac death	14 (5)
End-stage heart failure	
Heart transplantation	36 (13)
Death during or after heart transplantation (n = 36)*	6 (17)
Death due to end-stage heart failure	21 (8)
Other causes of death	4 (1)

Values are n (%). *Number of persons for whom there were available data.
ICD = implantable cardioverter-defibrillator.

Van Rijsingen et al JACC 2012; 59: 493-500

Kaplan Meier event free survival all 4 risk factors

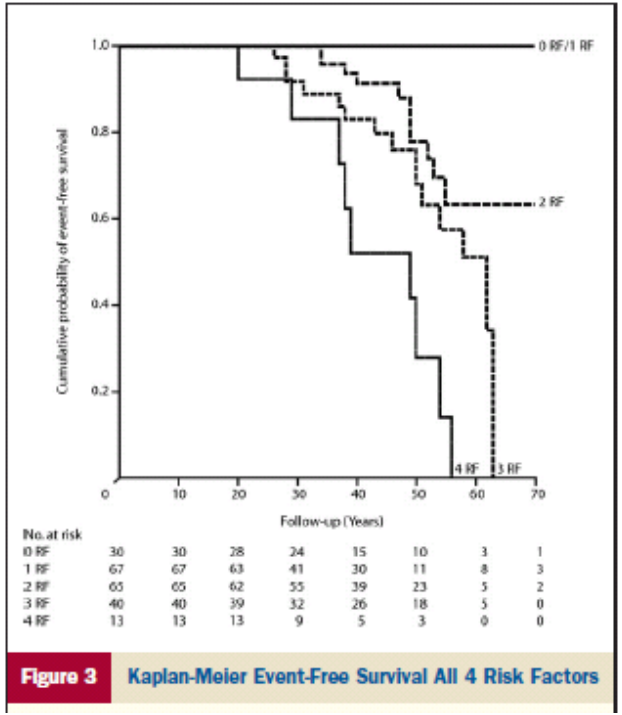


Figure 3 Kaplan-Meier Event-Free Survival All 4 Risk Factors

NSVT on holter
EF< 45%
Male
Non missense mutation

*Van Rijsingen et a*l JACC 2012; 59: 493-50

An ICD should be considered in patients with DCM and a confirmed disease-causing LMNA mutation and clinical risk factors	**IIa**	**B**	**71**

NSVT on holter
EF< 45%
Male
Non missense mutation

Priori S. European Heart Journal (2015) 36, 2793–2867

Development and Validation of a New Risk Prediction Score for Life-Threatening Ventricular Tachyarrhythmias in Laminopathies

Table 2. Associations Between Predictors and Survival in the Derivation Sample

Characteristics	Model			
	Full Multiple Variable	*P* Value	Final	*P* Value
Age at baseline, y	0.99 (0.97–1.01)	0.200		
Men	1.80 (1.1–2.95)	0.029	1.67 (1.1–2.55)	0.017
Nonmissense *LMNA* mutation	1.78 (1.12–2.85)	0.043	1.76 (1.16–2.65)	0.007
AV block				
First degree*	2.74 (1.34–5.61)	0.002	2.35 (1.34–4.12)	0.003
>First degree†	3.51 (1.5–8.19)	0.001	2.86 (1.54–5.31)	<0.001
Atrial arrhythmia	1.19 (0.71–1.99)	0.524		
Nonsustained VT	2.25 (1.34–3.79)	0.002	2.15 (1.36–3.41)	0.001
Left ventricular ejection fraction, %	0.98 (0.96–1.00)	<0.001	0.98 (0.97–1)	0.017

Values are hazard ratios (95% CIs). The hazard ratios were pooled over the 25 imputed data sets. Hazards ratios in the final model are shrunk by the calibration slope (0.894). AV indicates atrioventricular; and VT, ventricular tachycardia.

*First degree only vs no AV block.

†All degrees vs no AV block.

Wahbi K et al Circulation 2019;140: 293-302

רמב"ם
הקריה הרפואית לבריאות האדם

LMNA-risk VTA calculator

Risk Prediction Score for Life-Threatening Ventricular Tachyarrhythmias in Laminopathies

Sex	◉ Male ○ Female	
Non-missense LMNA mutation	◉ Yes ○ No	*Non-missense mutations include insertions, deletions, truncating mutations or mutations affecting splicing*
Atrio-ventricular block	○ Absent ◉ 1st degree ○ High degree	*Please select the highest degree. 1st degree AV block corresponds to ≥0.20 sec PR interval and high degree AV block to type II 2nd degree or 3rd degree (and not type I 2nd degree)*
Non-sustained ventricular tachycardia	◉ Yes ○ No	*NSVT corresponds to ≥3 consecutive ventricular complexes at a rate ≥120 bpm on 24-h ambulatory electrocardiographic monitoring*
Left ventricular ejection fraction	50 %	*Left ventricular ejection fraction measurement derived from echocardiogram*

Risk of Life-Threatening Ventricular Tachyarrhythmias at 5 years

48.6 %

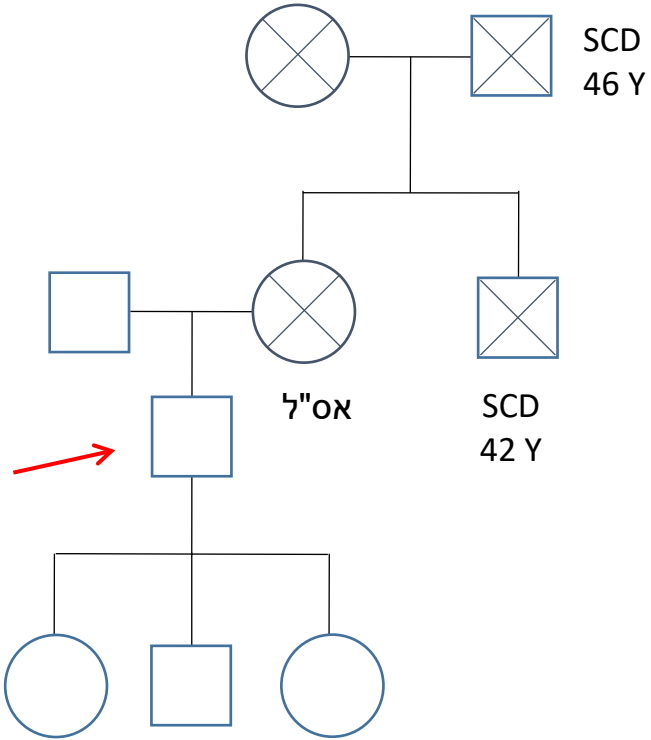
Reset

Life-Threatening Ventricular Tachyarrhythmias is defined as 1) sudden cardiac death, 2) appropriate ICD therapy, defined as a shock to terminate a VTA, or 3) other manifestations of hemodynamically unstable VTA

ICD implantation should be considered in DCMI / HNDCM patients with a pathogenic mutation in *LMNA* gene, if the estimated 5-year risk of life-threatening VA is ≥ 10%[c] and in the presence of NSVT or LVEF < 50% or AV conduction delay. 80.652.653	**IIa**	**B**

European Heart Journal (2022) 00, 1-130

הצגת מקרה - עץ משפחה



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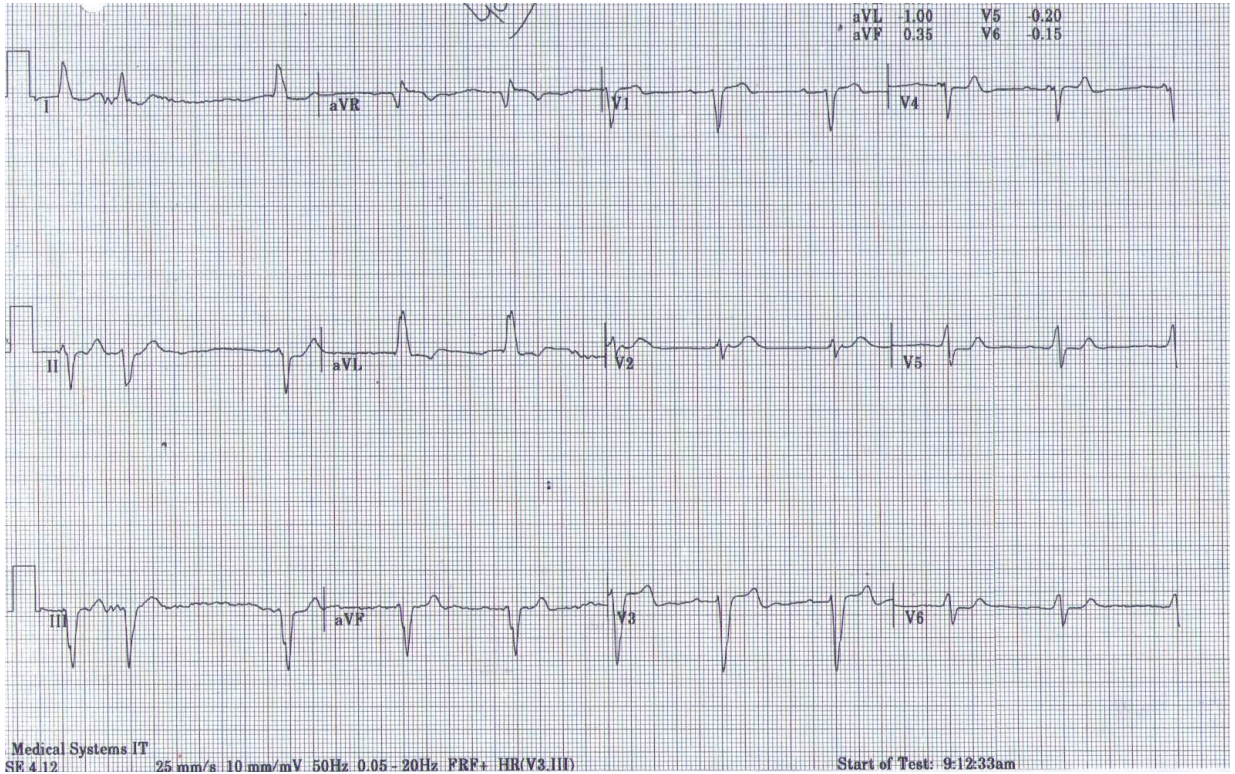

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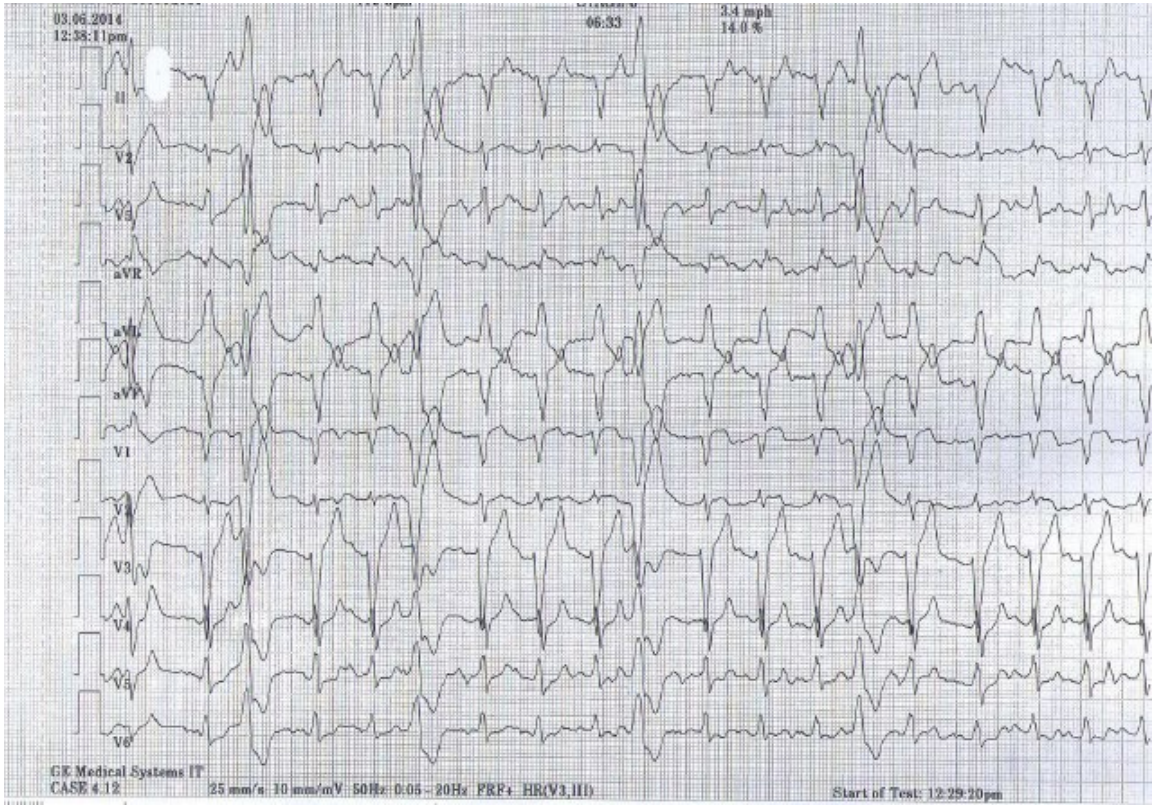

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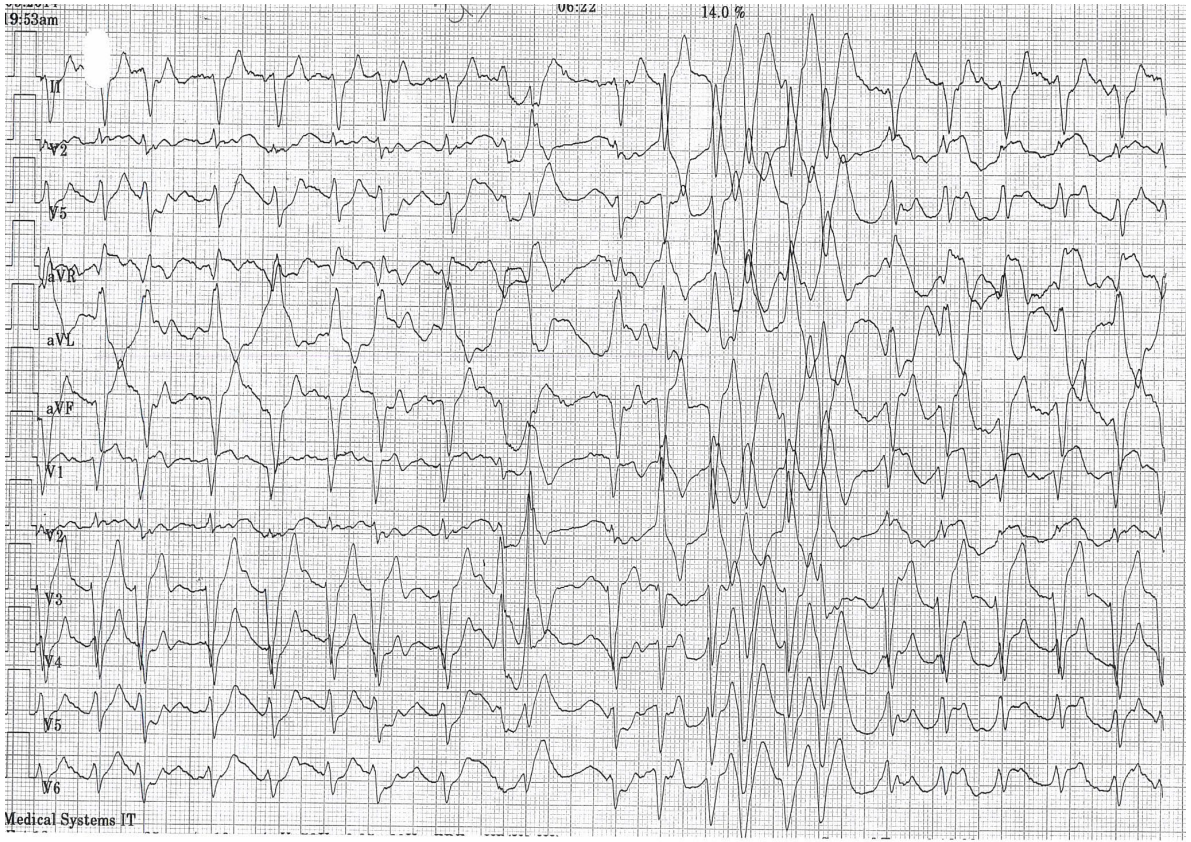
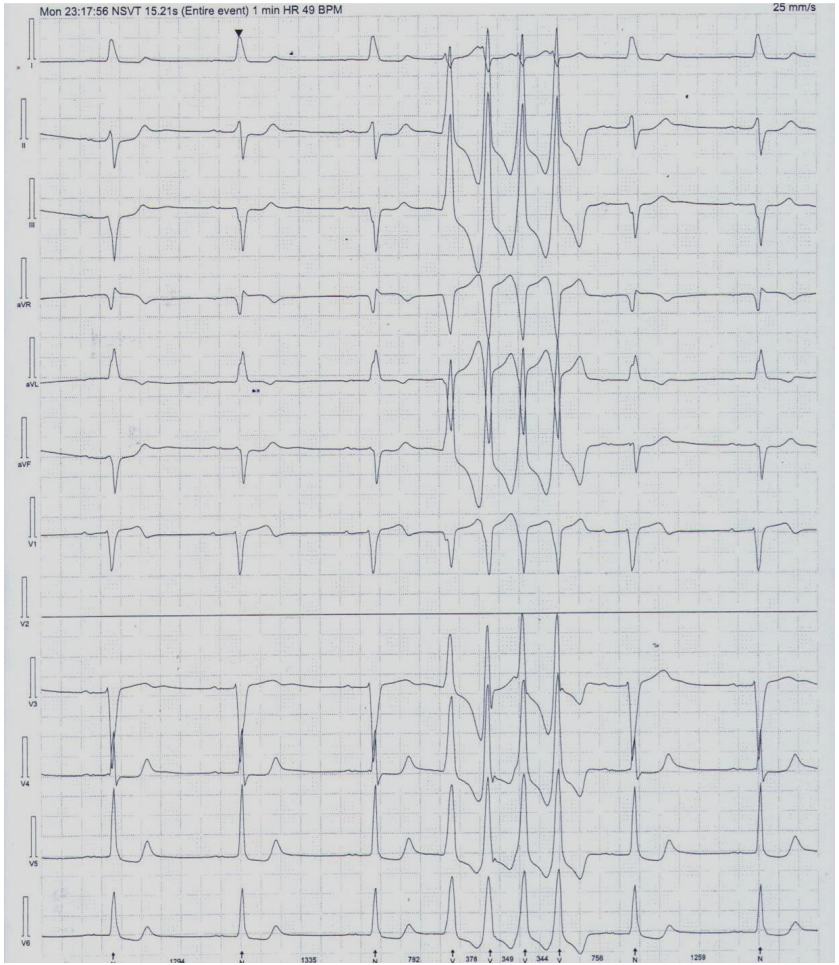
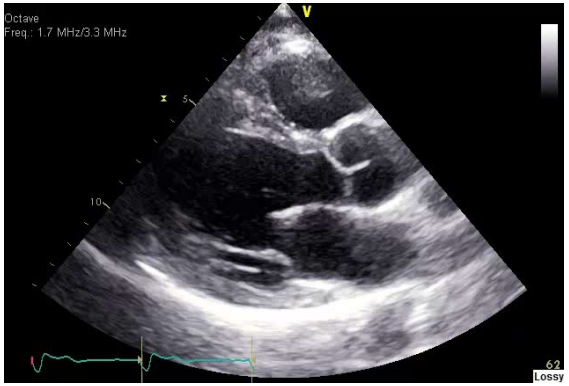
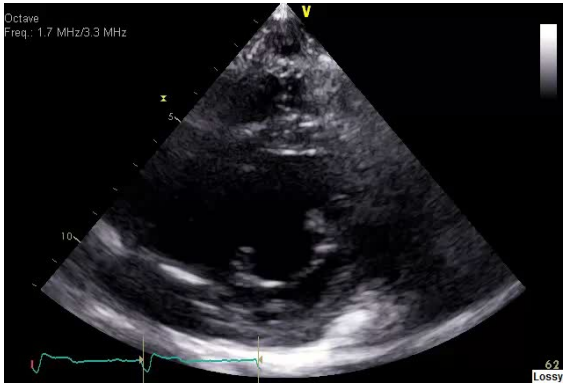


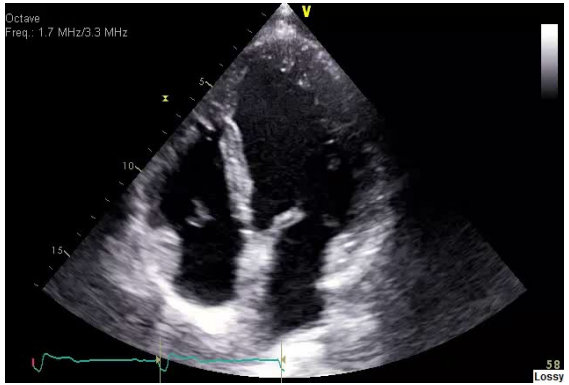


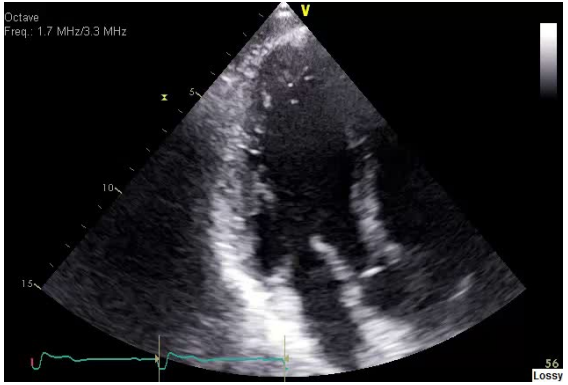
הולטר
12 חיבורים

הצגת מקרה אקו לב

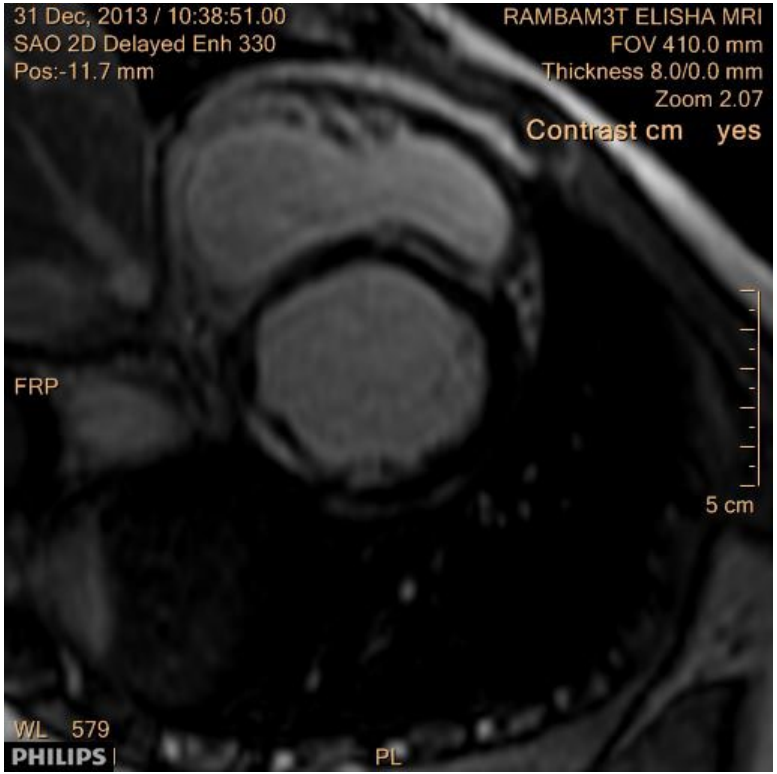






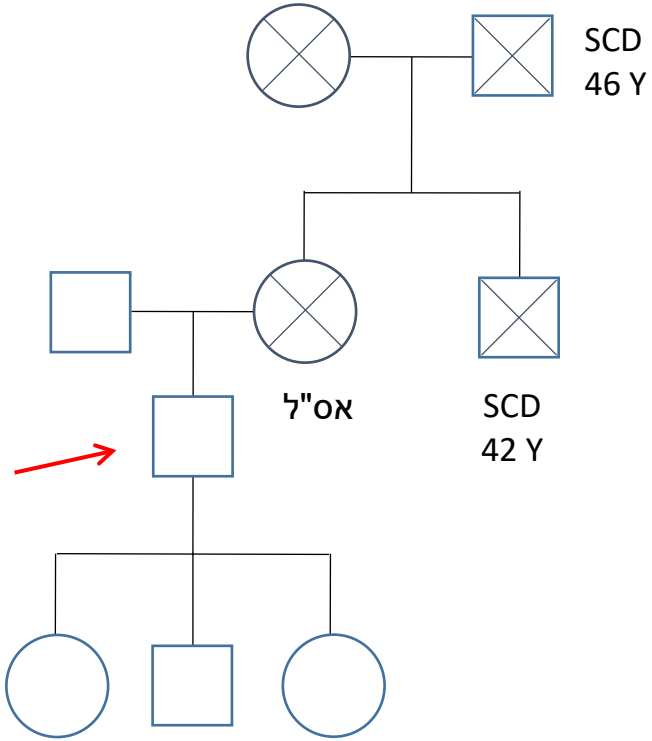


הצגת מקרה MRI לב



- Borderline LV size and systolic function
- Normal LV wall thickness
- Normal RV size and systolic function
- Mid-wall delayed enhancement in inferior wall

הצגת מקרה - עץ משפחה



אבחון גנטי בגן LMNA

רצף תקין CAAGGAGGCGAAGCTTCGAGACCT

CAAGGAGGC**GAAGCTTCG**AGACCT

C AA

del KLRDL
Ins AK

LMNA-risk VTA calculator

Risk Prediction Score for Life-Threatening Ventricular Tachyarrhythmias in Laminopathies

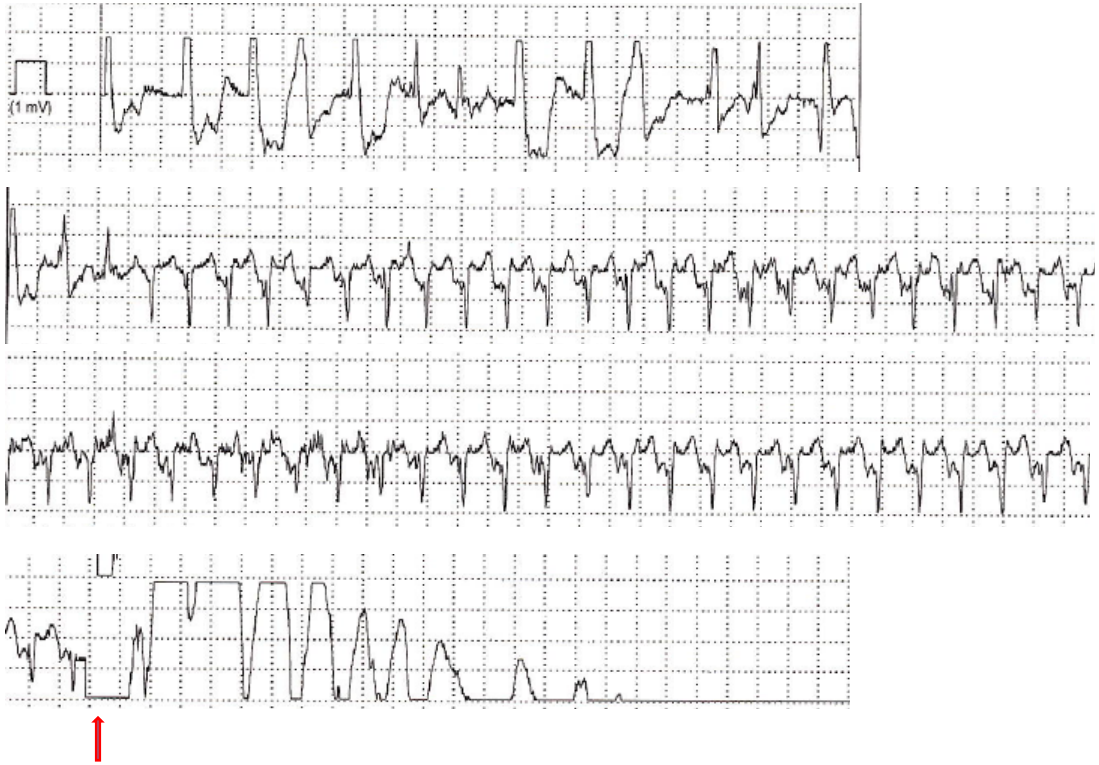
Sex	◉ Male ○ Female	
Non-missense LMNA mutation	◉ Yes ○ No	*Non-missense mutations include insertions, deletions, truncating mutations or mutations affecting splicing*
Atrio-ventricular block	○ Absent ◉ 1st degree ○ High degree	*Please select the highest degree. 1st degree AV block corresponds to ≥0.20 sec PR interval and high degree AV block to type II 2nd degree or 3rd degree (and not type I 2nd degree)*
Non-sustained ventricular tachycardia	◉ Yes ○ No	*NSVT corresponds to ≥3 consecutive ventricular complexes at a rate ≥120 bpm on 24-h ambulatory electrocardiographic monitoring*
Left ventricular ejection fraction	60 %	*Left ventricular ejection fraction measurement derived from echocardiogram*

Risk of Life-Threatening Ventricular Tachyarrhythmias at 5 years

42.1 %

Reset

Eight years later EF=50-55%



The challenge to preserve EF and to prevent CHF

Table 1

Echocardiographic results at 16 weeks of age for *Lmna*$^{H222P/H222P}$ mice treated with placebo (DMSO), benazepril or selumetinib ($n = 7$ mice per group); values are means ± standard errors of means.

Drug	HR (/min)	LVEDD (mm)	LVESD (mm)	FS (%)
DMSO	498 ± 7	4.0 ± 0.2	3.3 ± 0.4	19.0 ± 5.9
Benazepril	497 ± 9	3.9 ± 0.2	2.9 ± 0.1	25.8 ± 2.4*
Selumetinib	501 ± 9	3.7 ± 0.2	2.8 ± 0.1*	30.7 ± 5.3**

HR, heart rate; LVEDD, left ventricular end diastolic diameter; LVESD, left ventricular end systolic diameter; FS, left ventricular fractional shortening. *$P < 0.05$, **$P < 0.005$ compared to DMSO.

Muchic A et al Biochemical and Biophysical research communications 2014; 452: 958-96

Mitogen-Activated Protein Kinase Inhibitors Improve Heart Function in Cardiomyopathy Caused by Mutation in Lamin A/C Gene

Table. Echocardiographic Data at 20 Weeks of Age for *Lmna*$^{+/+}$ Mice and *Lmna*$^{H222P/H222P}$ Mice Treated With DMSO Placebo or Treated With SP600125 or PD98059

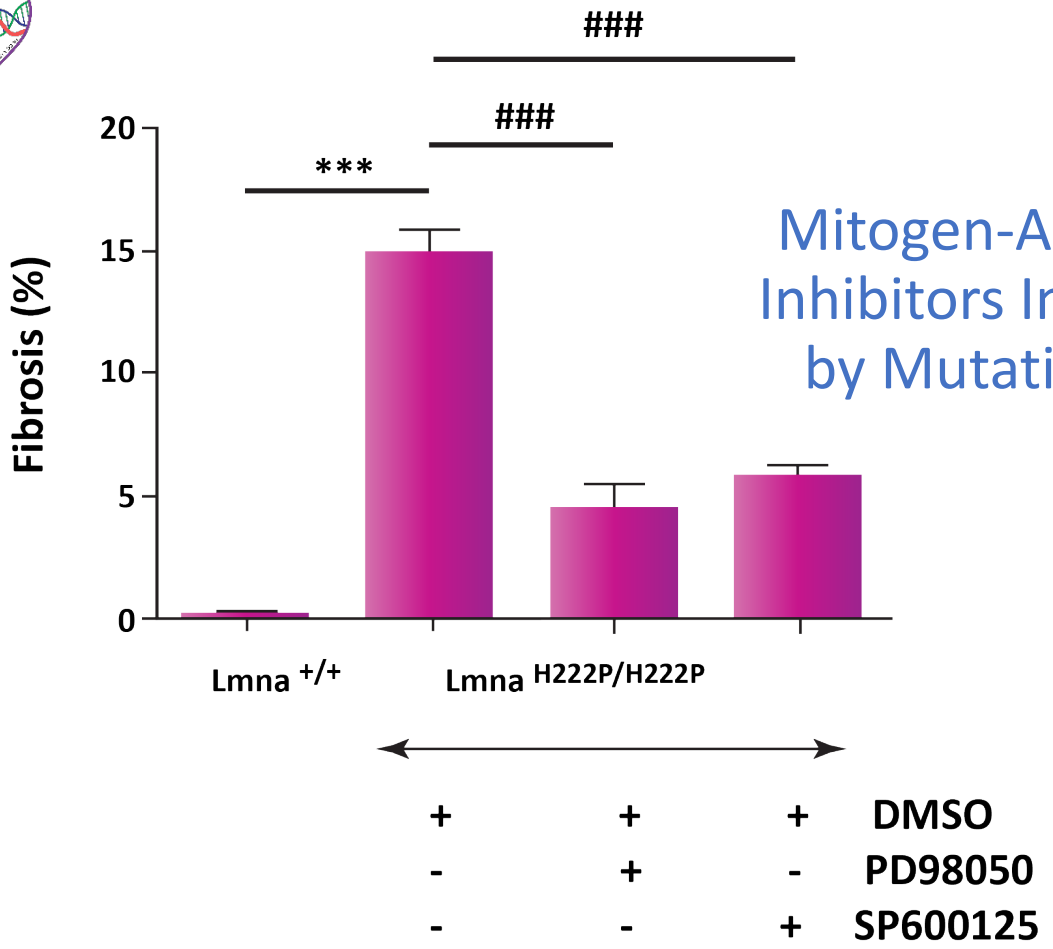
Genotype (Treatment Group)	n	HR, bpm	LVEDD, mm	LVESD, mm	EF, %	FS, %
Lmna$^{+/+}$	12	400	3.50±0.06	2.07±0.08	73.21±1.17	41.71±1.01
Lmna$^{H222P/H222P}$ (DMSO)	22	372	3.87±0.11*	3.00±0.13†	53.87±2.58†	27.86±1.54†
Lmna$^{H222P/H222P}$ (PD98059)	19	350	3.55±0.11	2.41±0.11‖	65.46±2.64§	35.91±1.88§
Lmna$^{H222P/H222P}$ (SP600125)	26	363	3.73±0.08	2.67±0.10‡	61.88±1.66§	33.11±1.16§

HR indicates heart rate; FS, fractional shortening. Values are mean±SEM.

Comparison between DMSO-treated *Lmna*$^{H222P/H222P}$ and *Lmna*$^{+/+}$ mice: *$P<0.05$, †$P<0.0005$. Comparison between SP600125-treated, PD98059-treated, and DMSO-treated *Lmna*$^{H222P/H222P}$ mice: ‡$P<0.05$, §$P<0.005$, ‖$P<0.0005$.

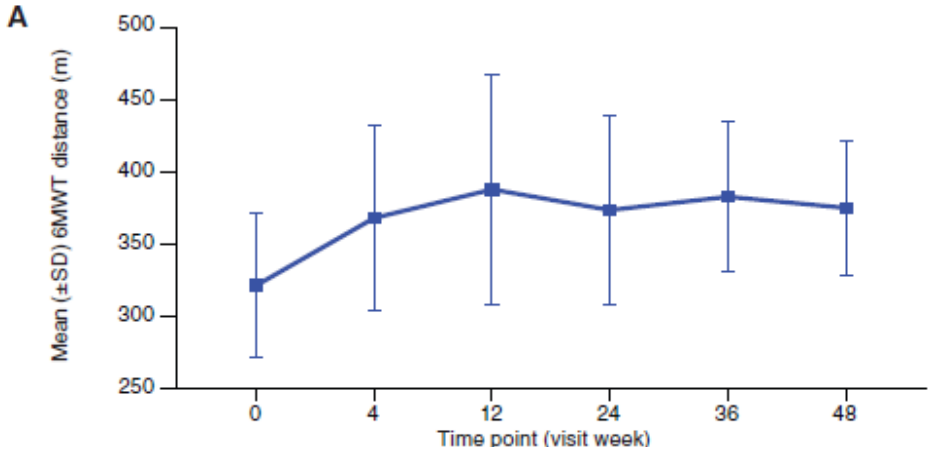
Wu W et al Circulation 2011; 123: 53-61

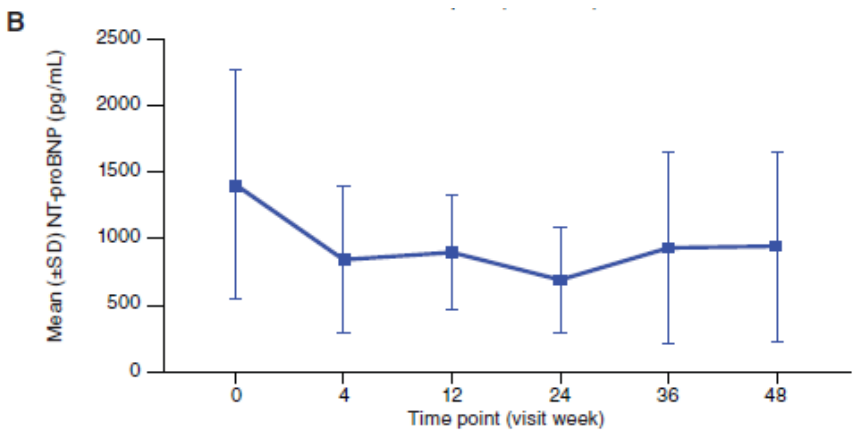
Mitogen-Activated Protein Kinase Inhibitors Improve Fibrosis Caused by Mutation in Lamin A/C Gene



Wu W et al Circulation 2011; 123: 53-61

Efficacy and Safety of ARRY-371797 in *LMNA*-Related Dilated Cardiomyopathy: A Phase 2 Study





MacRae CA et al. Circ Genom Precis Med 2023

The challenge to preserve EF

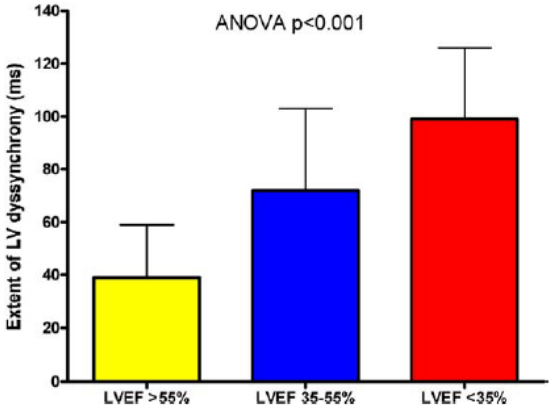


Figure 4 **LV Dyssynchrony During RV Pacing According to Baseline LVEF**

In 153 patients undergoing pacemaker implantation, LV dyssynchrony was assessed during RV apical pacing. Patients were classified according to baseline left ventricular ejection fraction (LVEF): normal (LVEF >55%), moderately depressed (LVEF 35% to 55%), or severely depressed (LVEF <35%). The extent of LV dyssynchrony was strongly related to baseline LVEF. In patients with normal LVEF, 45% of the patients developed LV dyssynchrony (40 of 89), whereas 39 of the 42 patients (93%) with moderately depressed LVEF developed LV dyssynchrony. In patients with severely depressed LVEF (n = 22), all patients exhibited LV dyssynchrony during RV apical pacing (49). ANOVA = analysis of variance; other abbreviations as in Figure 1.

Tops LF et al JACC 2009; 54: 764-766

The role of early CRT-D implantation in DCM patients with narrow QRS carrying lamin A/C

Indication for a device implantation, n=10

Pacemaker:
Bradycardia, n=4
AV block, n=2

ICD:
Sustained VT, n=3
Primary prevention for high risk, n=1

CRT-D group, n=5

Pacemaker, n=3
ICD, n=2

non CRT-D group, n=5

Pacemaker, n=4
ICD, n=1

Blich et al. Am J Cardiovasc Dis 2024; 14: 47-53

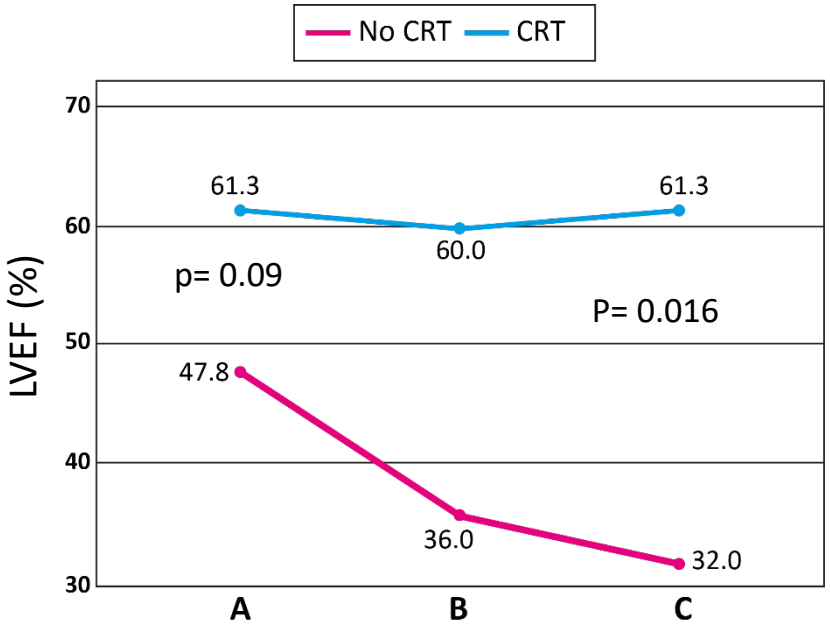
Results

Baseline characteristics of the study population n=10 , at presentation

Variable	CRT-D, n=5	Non CRT-D, n=5	p
Age (mean ± SD) ,years	53.2 ± 12	50 ± 5	N/S
Male, n (%)	4 (80%)	4 (80%)	N/S
Rate, ECG, (mean ± SD), bpm	42± 12	45 ± 15	N/S
Max PR, 12l holter, (mean ± SD) msec	268 ± 50	280± 0	N/S
QRS duration, mean± SD, ms	92 ±16	100±12	N/S
NSVT, 12l holter, n (%)	2 (40%)	2 (40%)	N/S
EF , echocardiography, (mean ± SD) %	61 ± 2	47.8 ± 12	0.09
LVEDD, echocardiography, (mean ± SD), cm	5.3 ± 0.3	5.5 ± 0.2	N/S

Blich et al. Am J Cardiovasc Dis 2024; 14: 47-53

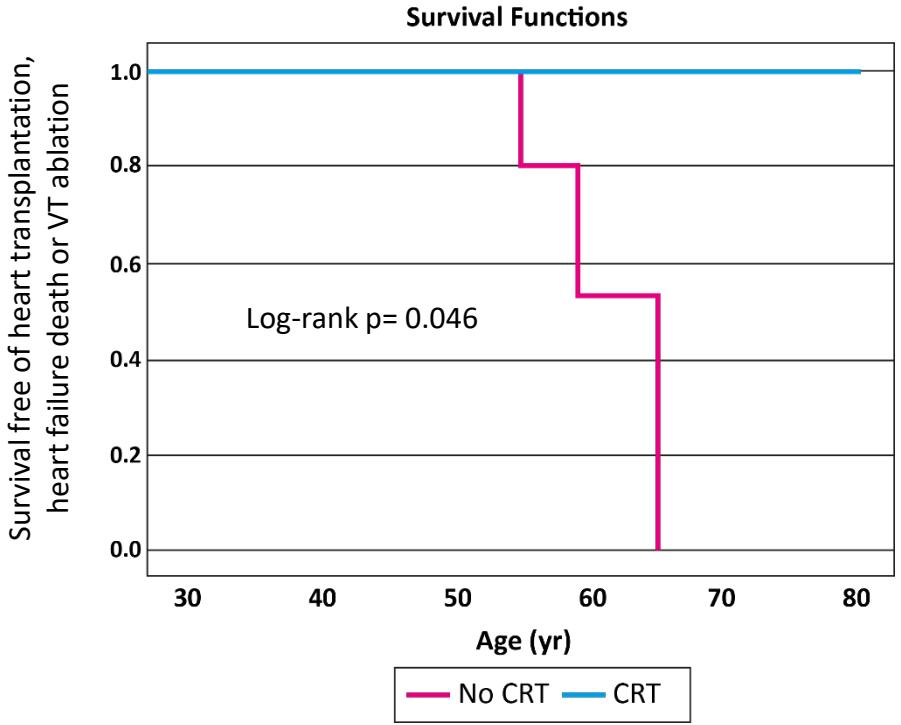
LVEF during the follow up in the CRT and no CRT group follow up 6.4± 4 years



LVEF (%), mean± SD	61±4	32±15	P=0.016

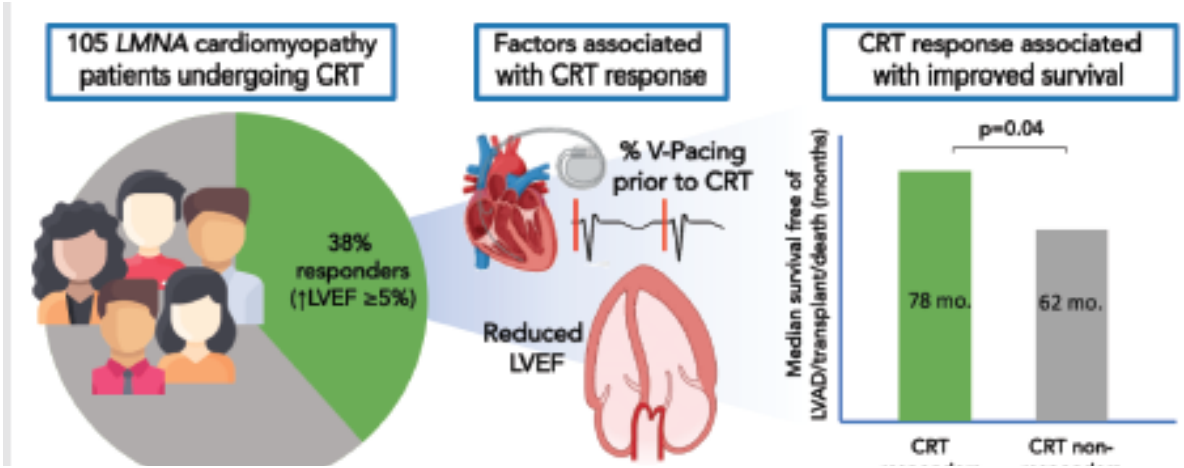
Blich et al. Am J Cardiovasc Dis 2024; 14: 47-53

Survival free of heart transplantation, heart failure death or VT ablation



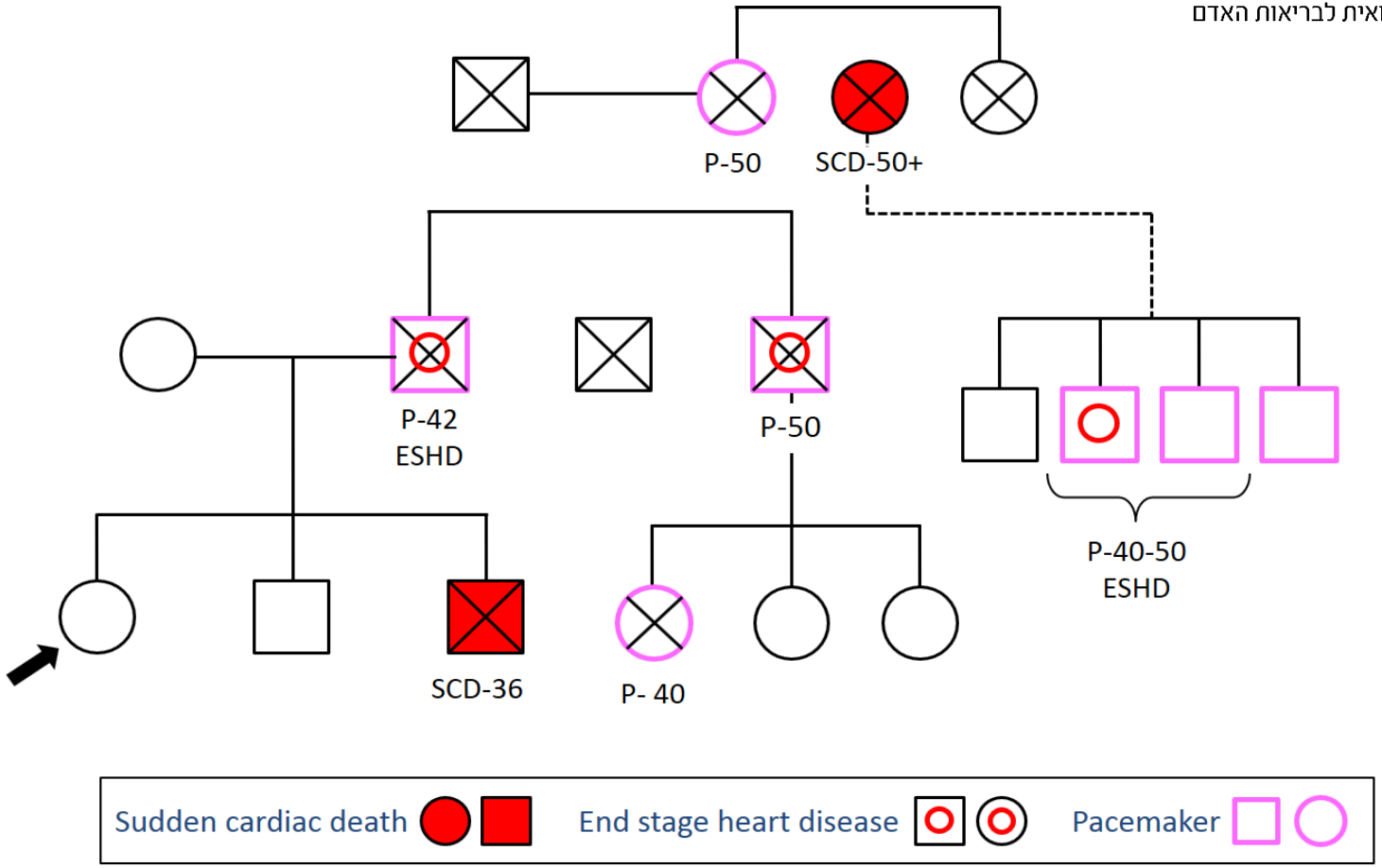
Blich et al. Am J Cardiovasc Dis 2024; 14: 47-53

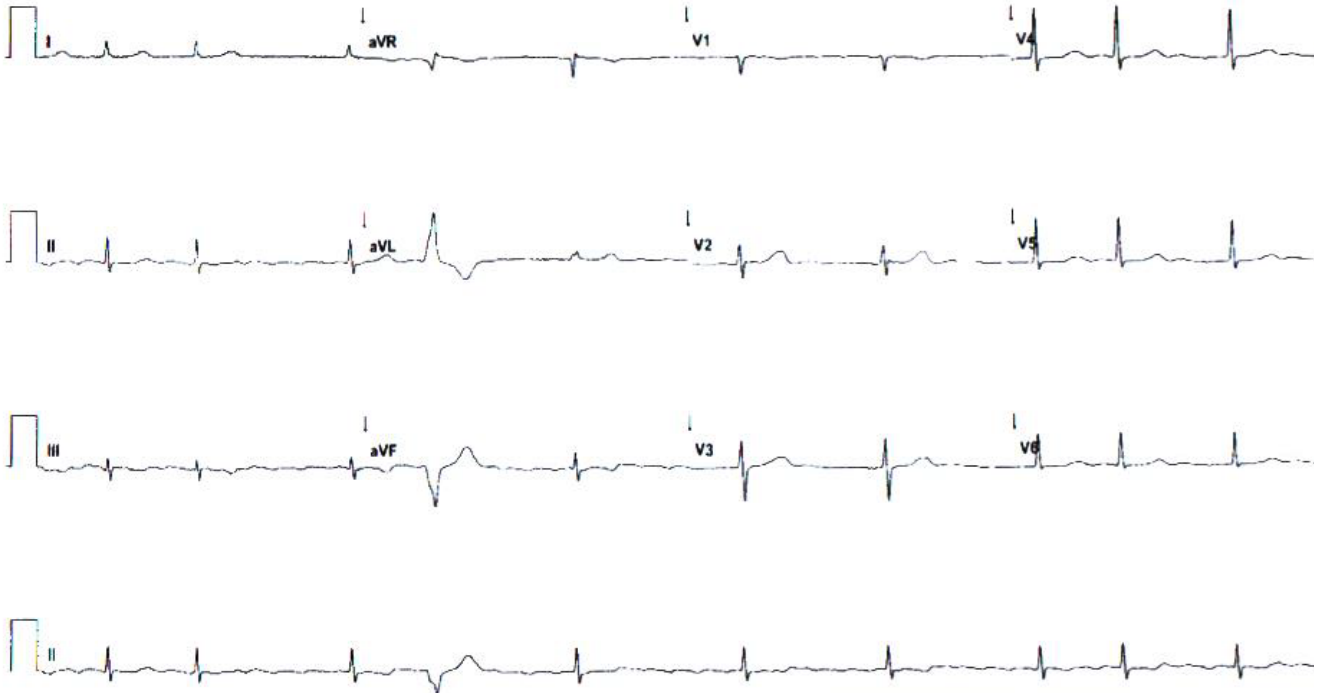
The response to CRT therapy in LMNA cardiomyopathy

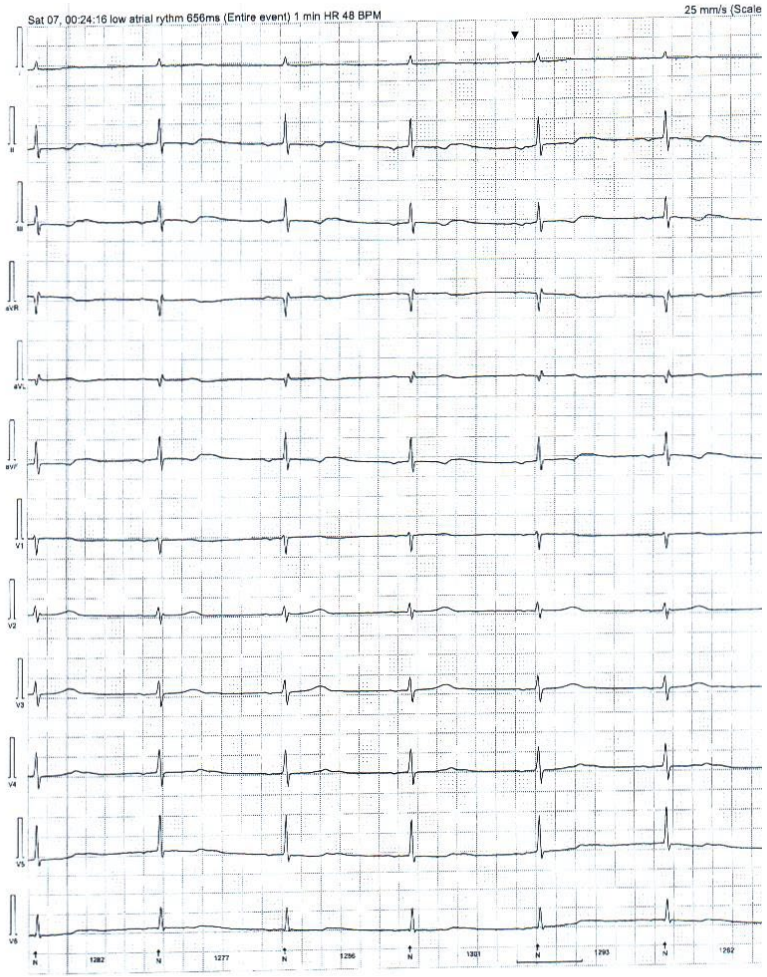


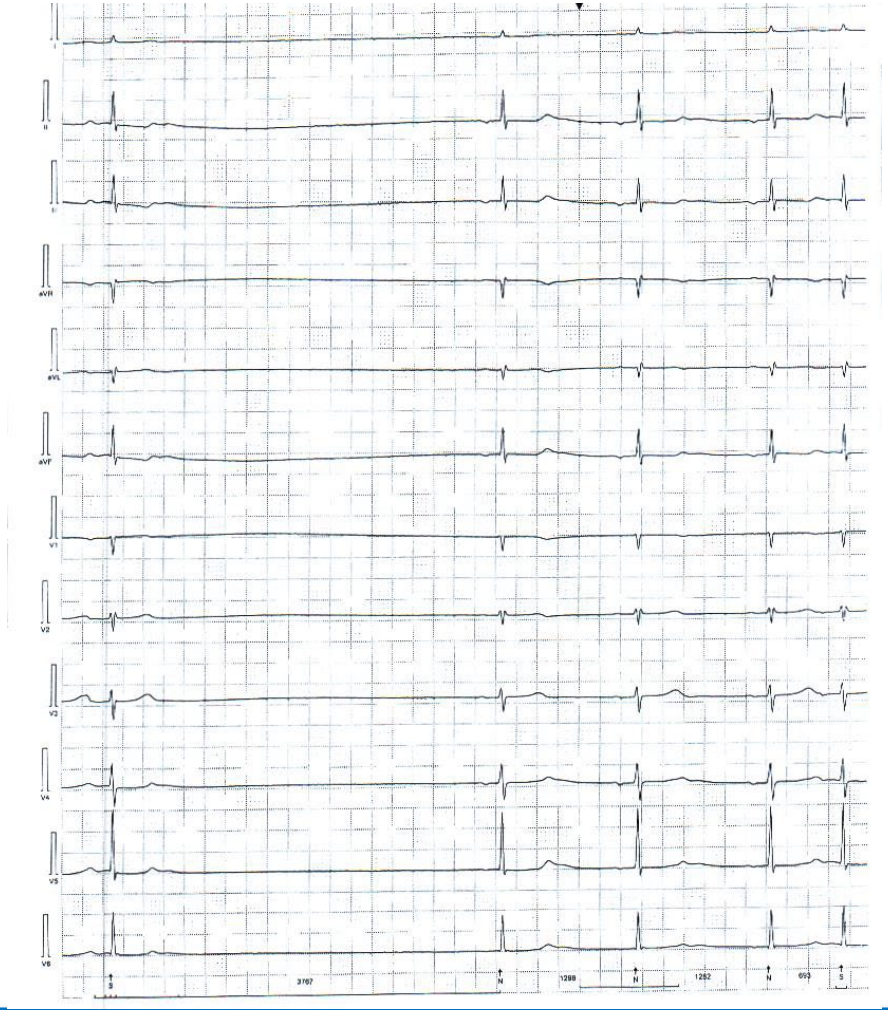
Factors associated with improved systolic function and survival amongst LMNA cardiomyopathy patients undergoing cardiac resynchronization therapy (CRT), LVAD, left ventricular assist device: LVEF, left ventricular ejection fraction.

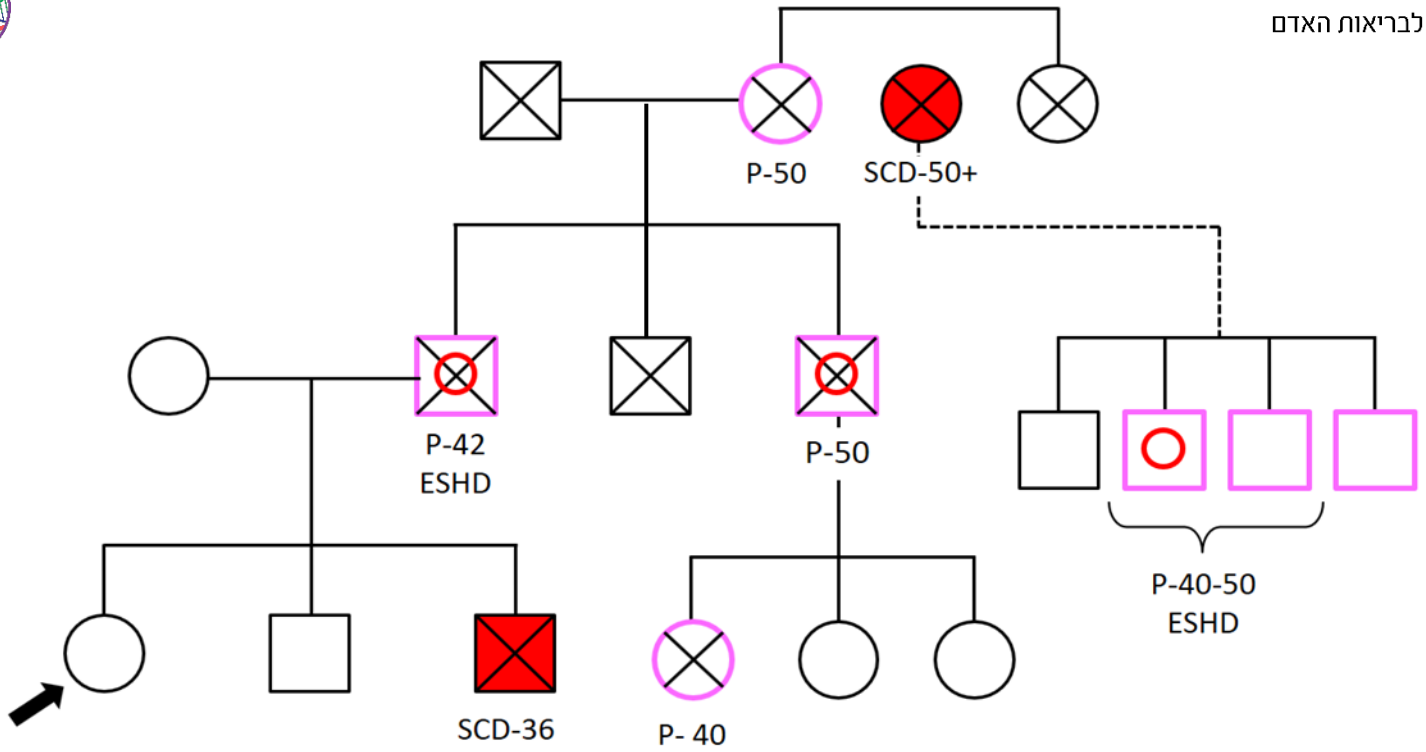
Sidhu K et al. Eur J of Heart Failure 2022; 24: 685-693


P-50
SCD-50+
P-42
ESHD
P-50
P-40-50
ESHD
SCD-36
P- 40
Sudden cardiac death
End stage heart disease
Pacemaker


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II


Sat 07, 00:24:16 low atrial rythm 656ms (Entire event) 1 min HR 48 BPM
25 mm/s (Scale
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
1282
1277
1296
1301
1293
1262


I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
3767
1299
1252


P-50
SCD-50+
P-42
ESHD
P-50
P-40-50
ESHD
SCD-36
P- 40
Sudden cardiac death
End stage heart disease
Pacemaker

רמב"ם
הקריה הרפואית לברי

LMNA-risk VTA calculator

Risk Prediction Score for Life-Threatening Ventricular Tachyarrhythmias in Laminopathies

Sex	○ Male ◉ Female	
Non-missense LMNA mutation	◉ Yes ○ No	*Non-missense mutations include insertions, deletions, truncating mutations or mutations affecting splicing*
Atrio-ventricular block	○ Absent ◉ 1st degree ○ High degree	*Please select the highest degree. 1st degree AV block corresponds to ≥0.20 sec PR interval and high degree AV block to type II 2nd degree or 3rd degree (and not type I 2nd degree)*
Non-sustained ventricular tachycardia	○ Yes ◉ No	*NSVT corresponds to ≥3 consecutive ventricular complexes at a rate ≥120 bpm on 24-h ambulatory electrocardiographic monitoring*
Left ventricular ejection fraction	60 %	*Left ventricular ejection fraction measurement derived from echocardiogram*

Risk of Life-Threatening Ventricular Tachyarrhythmias at 5 years

14.1 %

Reset

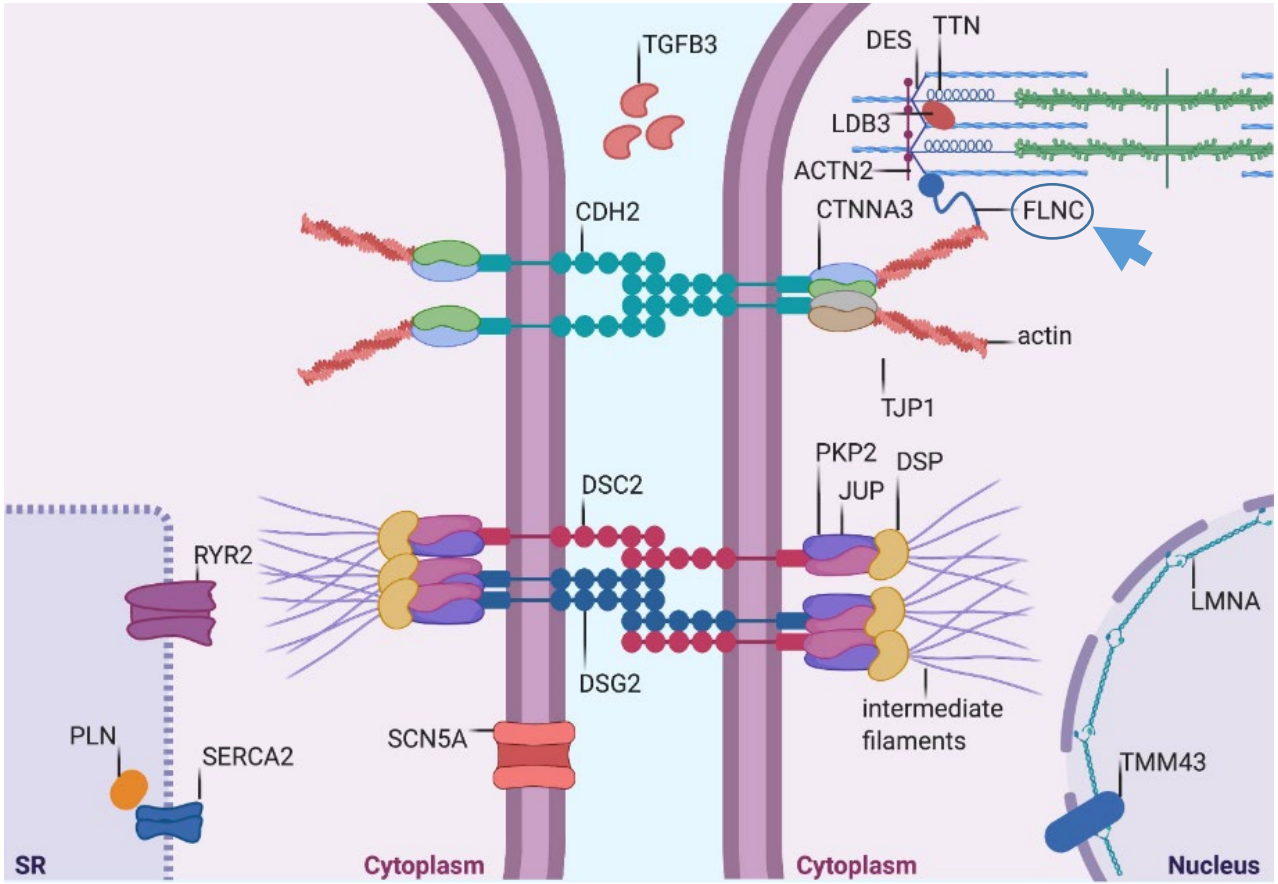
Life-Threatening Ventricular Tachyarrhythmias is defined as 1) sudden cardiac death, 2) appropriate ICD therapy, defined as a shock to terminate a VTA, or 3) other manifestations of hemodynamically unstable VTA

Wahbi et al. Development and Validation of a New Risk Prediction Score for Life-Threatening Ventricular Tachyarrhythmias in Laminopathies. Circulation. 2019 Jul 23;140(4):293-302.

Personalized Medicine in Genetic DCM (Genes related to DCM) (146)

ACTC1, BAG3, DES, DMD, DSP, FLNC, HCN4, LMNA, MYBPC3, MYH7, PKP2, PLN, RBM20, TAZ, TNNC1, TNNI3, TNNT2, TPM1, TTN, *ABCC9, ACTA1, ACTN2, ALMS1, ALPK3, ANKRD1, ANO5, ASNA1, CAV3, CHRM2, COL741, CRYAB, CSRP3, DNAJC19, DOLK, DSC2, DSG2, DYSF, EMD, EYA4, FHL2, FHOD3, FKRP, FKTN, FOXD4, GAA, GATA4, GATA6, GATAD1, GLB1, GYG1, HFE, JPH2, JUP, KLF5, LAMA2, LAMA4, LAMP2, LDB3, MURC, MYBPHL, MYH6, MYL2, MYL3, MYOT, MYPN, MYZAP, NEBL, NEXN, NKX2-5, PCCA, PCCB, PLEKHM2, PPA2, PPCS, PRDM16, PSEN1, PSEN2, QRSL1, RAF1, RPL3L, RYR2, SCN5A, SDHA, SGCD, SGCG, SLC22A5, SPEG, TAZ, TBX5, TBX20, TCAP, SYNE1, SYNE2, TBX20, TCAP, TMEM43, TMEM70, TNNI3K, TRIM63, TMPO, TOR1AIP1, TTR, TXNRD2, VCL, XK, ZBTB17,AKT1, BRAF*, CASZ1, CAVIN4, CDC25B, CTF1, DNM1L*, DTNA, FBX032, FHL1, GATA5*, GLA*, GSK3B, HAND1, HAND2, IDH2*, ILK*, ISL1, KAT2B, KLHL24, KCNJ2*, KCNJ8*, JARID2, LEMD2, LMOD2, LRRC10, MEF2C, MIB1, MYLK3, NDUFB11, NNT, NONO, NKX2-5*, NRAP, NUBPL, OBSCN*, OPA3*, PDLIM3*, PDLIM5, PKD2, PPP1R13L, PRKAG2, PTPN11*, RAF1, RBM24, SGCA*, SGCB*, SURF1, TLL2, TMOD1, TUFM.*

Yield of Genetic Test 50%


TGFB3
DES
TTN
LDB3
ACTN2
CDH2
CTNNA3
FLNC
actin
TJP1
PKP2
DSP
JUP
DSC2
RYR2
DSG2
intermediate
filaments
LMNA
PLN
SERCA2
SCN5A
TMM43
SR
Cytoplasm
Cytoplasm
Nucleus

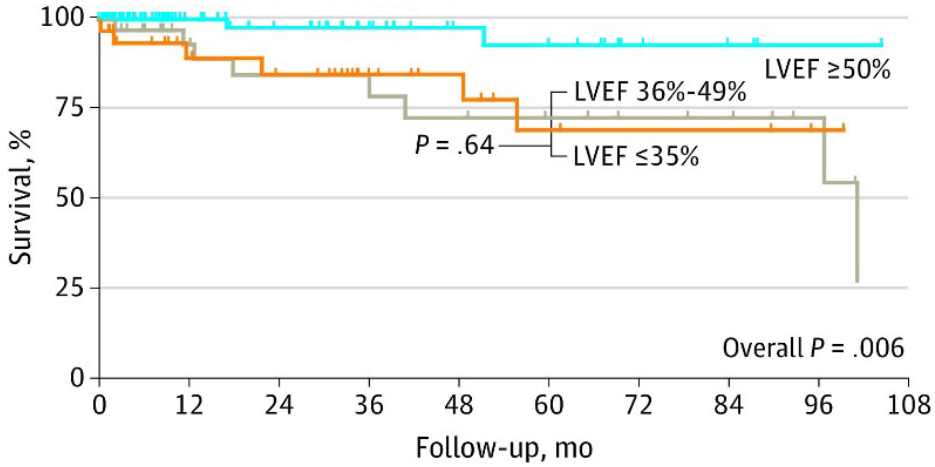
Clinical Characteristics of Carriers of Truncating Mutations in FLNC (n= 82)

		Evaluated	Positive finding	%
Arrhythmia	PVC (>500/24)	55	33	60
	NSVT	55	28	51
	SVT	55	10	18
Events	Sudden death	82	12	15
	Appropriate ICD shock	82	8	10

J Am Coll Cardiol 2016;68:2440–51

Survival free from arrhythmic end point in DCM patients carrying FLNC truncated mutation n=167

Survival free from secondary composite arrhythmic end point



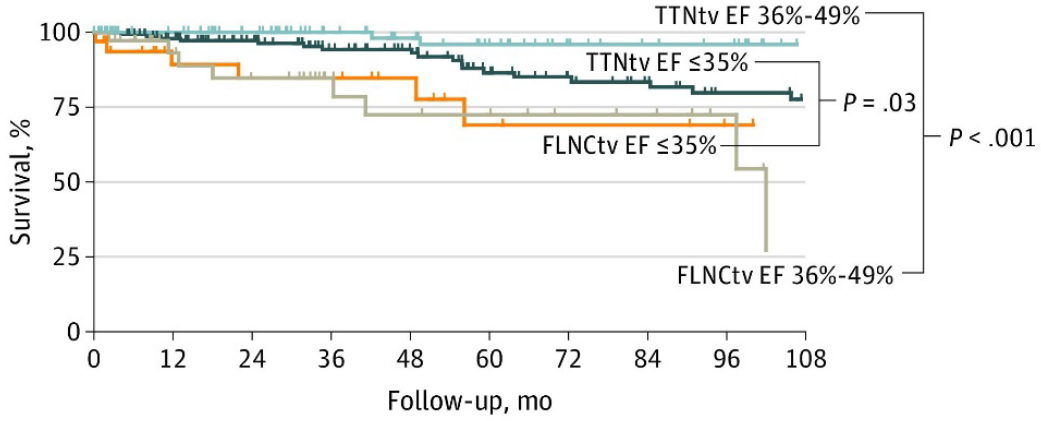
No. at risk

LVEF ≥50%	95	50	38	28	20	19	13	12	9	8
LVEF 36%-49%	36	22	19	15	12	10	8	7	4	1
LVEF ≤35%	33	21	19	15	12	7	6	6	4	3

JAMA Cardiol 2021;6: 1-11

Survival free from arrhythmic end point in DCM patients carrying FLNC truncated mutation and TTN truncated mutation

Survival free from secondary composite arrhythmic end point, by genetic variant



No. at risk

TTNtv EF 36%-49%	86	81	71	55	46	37	28	24	22	13
FLNCtv EF 36%-49%	36	22	19	15	12	10	8	7	4	1
TTNtv EF ≤35%	158	129	108	89	79	60	53	46	39	36
FLNCtv EF ≤35%	33	21	19	15	12	7	6	6	4	3

JAMA Cardiol 2021;6: 1-11

לסיכום

- חולי DCM , אתגר בטיפול
- האבחון הגנטי הינו פתח לרפואה מותאמת אישית
- מאפשר טיפול מיטבי במניעת דום לב ואי ספיקת לב
- חשיבות המחקר הקליני והבסיסי

רמב"ם
הקריה הרפואית לבריאות האדם

Rambam Health Care Campus,
Haifa, Israel

Thank you

המרפאה להפרעות קצב תורשתיות

Inherited Arrhythmia Clinic Rambam Medical Center

מרפאה קלינית
המעבדה לביצוע בדיקות גנטיות בשיתוף המכון הגנטי
מחקר בתחום

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