QRS-T angle

A Highly Significant Predictor of Outcome in Patients with Chronic Heart Failure

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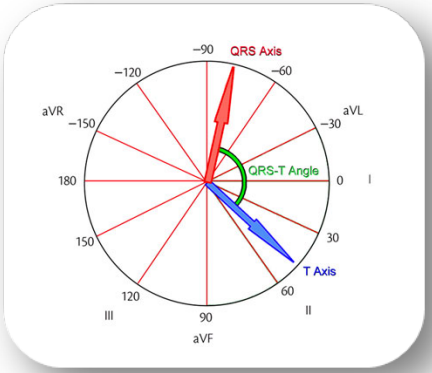
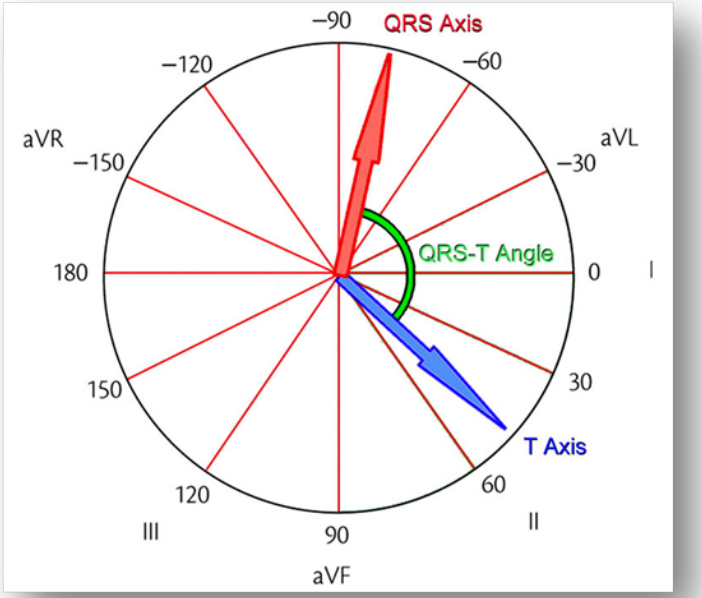


Disclosures: None to declare

Frontal QRS-T Angle

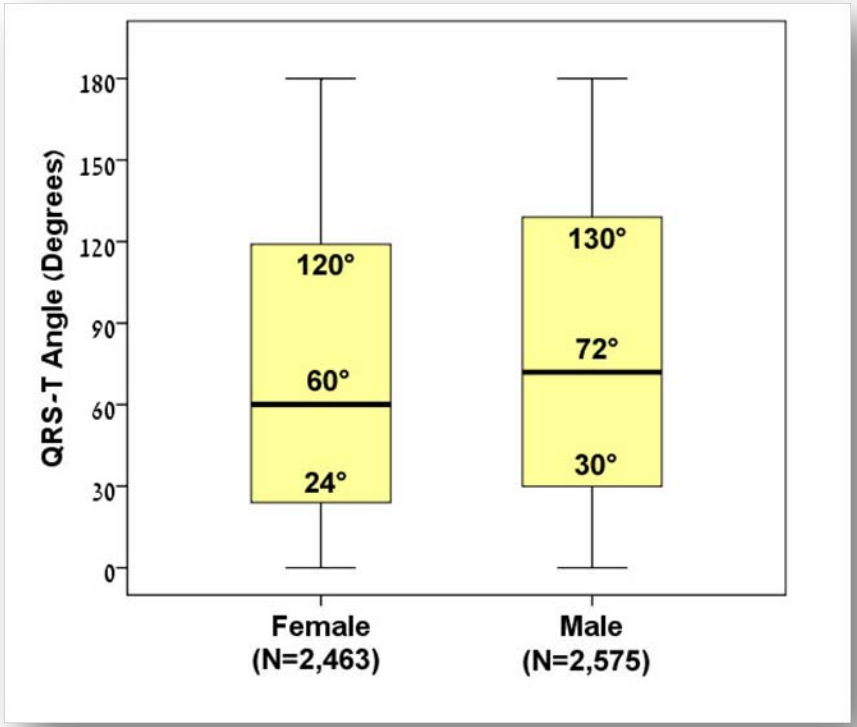
- Angle between ventricular depolarization and repolarization - calculated from standard ECG
- Reflects underlying cardiac structural abnormalities and electrical heterogeneities
- Powerful marker of electrical instability
- Predictor of sudden cardiac death, all cause mortality and cardiovascular death



Objectives and Methods

- Evaluate the QRS-T angle in heart failure patients and its effect on clinical outcome

- Heart failure patients from Clalit Health Services in Jerusalem (N=5,038)
- Median follow-up of 518 days (IQR 514-521)

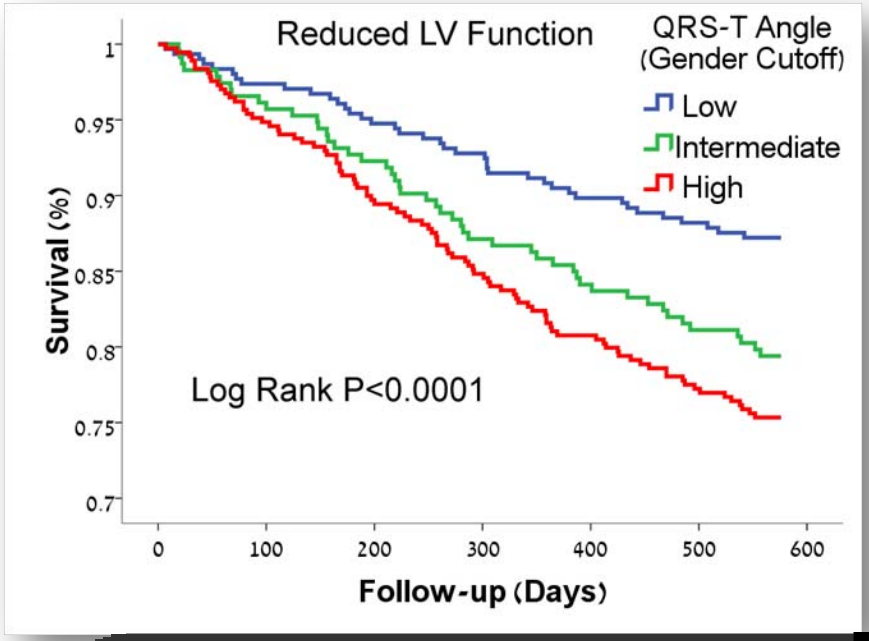


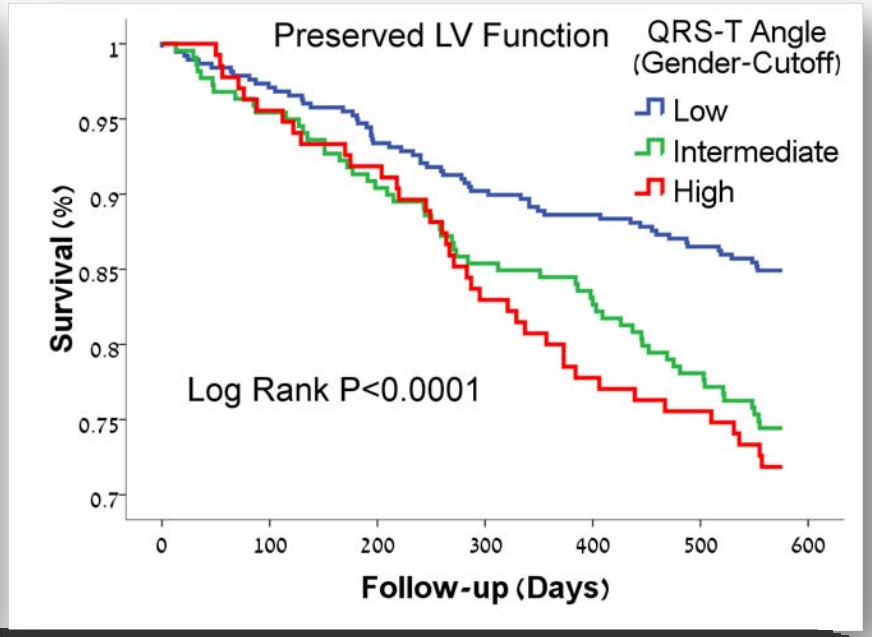
Frontal QRS-T angle Dispersion

ECG Data - Men

	QRS-T angle <72° (N=1285)	72°≤QRS-T angle<130° (N=648)	QRS-T angle ≥130° (N=642)	All Patients (N=2575)	P Value
Heart rate (beats per minute)	73±16	76±17	76±19	75±17	0.0008
PR interval (ms)	163±33	172±38	173±45	168±38	<0.0001
QRS interval (ms)	96±19	105±26	130±35	107±29	<0.0001
Corrected QT interval (ms)	438±34	450±42	472±47	449±42	<0.0001
P axis (°)	47±26	47±31	49±34	48±29	0.44
QRS axis (°)	19±41	4±62	-10±79	8±59	<0.0001
T axis (°)	36±43	79±66	118±64	67±65	<0.0001
QRS-T Angle (°)	31±20	101±17	157±15	80±56	<0.0001
Atrial fibrillation	7%	9%	12%	9%	<0.0001
Pacemaker	2%	4%	21%	7%	<0.0001
Left bundle branch block	1%	4%	17%	6%	<0.0001
Left ventricular hypertrophy	15%	16%	22%	17%	<0.0001
Ventricular ectopic complexes	10%	11%	14%	11%	<0.0001

Frontal QRS-T angle:
Independent Predictor of Outcome in Reduced and Preserved LV Function





		QRS-T angle Category			P-value
		Low	**Intermediate**	**High**	
Mortality	Women (N= 795)	1.0 (Reference)	**2.28; (1.44-3.61) 0.0005**	**2.14; (1.32-3.46) 0.002**	**0.001**
	Men (N= 857)	1.0 (Reference)	1.32; (0.82-2.12) 0.26	**2.14; (1.35-3.37) 0.001**	**0.004**
	All patients (N=1652)	1.0 (Reference)	**1.76; (1.27-2.44) 0.0007**	**2.03; (1.47-2.81) 0.00002**	**0.0001**

Conclusions

- The frontal QRS-T angle is a highly significant predictor of outcome including survival and hospitalizations in patients with HF
- QRS-T angle is applicable in both genders and provides additional clinical risk stratification
- Predictor in patients with reduced and preserved LV function
- The frontal QRS-T angle should be part of electrocardiographic evaluation of patients with HF