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Surface ECG and Holter monitoring in patients with congestive heart failure with diastolic versus systolic left ventricular dysfunction

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Background: The aim of this study was to compare noninvasive ECG parameters, potentially identifying patients at increased risk, between CHF patients with diastolic versus systolic dysfunction.

Methods and Results: Among 778 consecutive ambulatory CHF patients, 156 (20%) were identified as having diastolic dysfunction (DD) based on EF \leq 50% and they were compared to remaining 642 (80%) patients defined as those with systolic dysfunction (SD; mean EF = 31%). Clinical variables and the following noninvasive ECG parameters were compared between patients with DD and SD: QRS, and QTc duration in 12-lead ECG, heart rate, frequency of VPBs, HRV parameters, heart rate turbulence, and QT/RR slope in 24-hour Holter monitoring. DD patients were older (65 vs. 63 yrs; $p = 0.03$), more often female (46 vs. 23%), had less frequent prior MI (23 vs. 45%) and more frequent hypertensive cardiomyopathy (39 vs. 6%). Table shows univariate comparisons of ECG parameters between DD and SD patients. Multivariate logistic regression model after adjustment for age, sex, prior MI, and HTA, showed that higher heart rate and more frequent VPBs are observed in SD than DD patients, however, other parameters were not significantly different between groups.

Conclusions: CHF patients with diastolic dysfunction present lower heart rate and less frequent VPBs. Nevertheless the parameters of HRV and repolarization show similar pattern. The last finding may suggest that despite substantial difference in ejection fraction, heart rate and VBPBs this group of patients may present similar risk as those with systolic CHF.

Parameter	DD	SD	p value
QRS	115	130	0.002
QTc	442	449	ns
mean HR	68	72	0.001
VPBs	53	518	< 0.001
SDNN	109	101	ns
rMSSD	34	28	0.02
LF	415	384	ns
HF	216	161	ns
HRT:T onset	-0.66	-0.80	ns
HRT:T slope	7.9	5.3	0.04
QTe/RR slope	0.17	0.18	ns

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