

COMPARISON BETWEEN RADIONUCLIDE ANGIOGRAPHY DERIVED SYNCHRONY AND ENTROPY AND TISSUE DOPPLER IMAGING IN PATIENTS UNDERGOING CARDIAC RESYNCHRONIZATION THERAPY.

D. Pontillo (1), S.Trivisonne (2), A.Anitori (2), M. Campoli (3), F.Fiore Melacrinis (4), S. Maccafeo (4), M. Sassara (3), L. Chiatti (2), R. Schiavo (4).
 (1) Cardiology, (2) Health Physics, (3) Cardiac Pacing and (4) Nuclear Medicine Units, Belcolle Hospital, Viterbo, Italy

Background

Heart failure patients (p) with QRS > 120 ms and EF < 35% are usually referred for cardiac resynchronization therapy (CRT). Unfortunately, the results of imaging techniques to improve the percentage of responders have been quite disappointing, showing a very poor inter- and intraobserver reproducibility.

Our aim was to compare two novel radionuclide angiography (RNA) derived indices, i.e. synchrony (S) and entropy (E), with tissue Doppler imaging (TDI) in patients undergoing CRT.

Patients

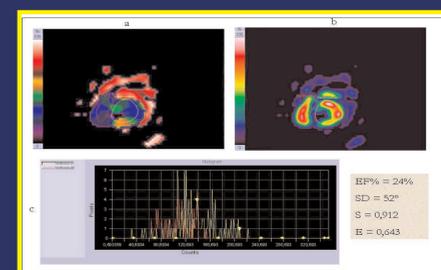
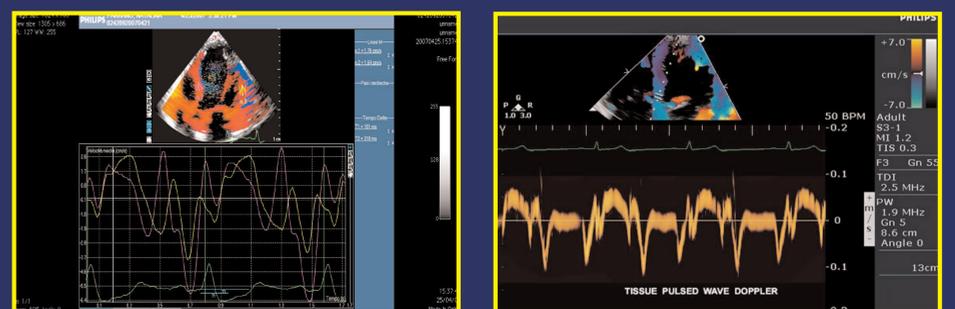
16 pts, CHF on opt therapy, undergoing CRT after TDI/Echo and RNA
 Mean age 70 y
 CAD/IDC 50/50%
 8 mo follow up

Methods

TDI evaluation was carried out on 12 basal and mid segments of the LV and the standard deviation of the ECG Q wave-peak S interval was considered as a marker of effectiveness of CRT, with a cutoff of 32 ms. RNA, phase angle (O), and amplitude derived from Fourier analysis of volume curve quantitate regional contraction timing and magnitude and are the basis for the evaluation of new synchrony (S) and entropy (E) parameters. In the presence of optimal mechanical synchrony S and E approach 1 and 0, respectively. On the contrary when dyssynchrony is present S and E approach 0 and 1, respectively.

Results

	BASELINE	FOLLOW-UP	p
LVESV (ml)	145 ± 41	115 ± 44	0.06
EF (Echo) (%)	27 ± 6	41 ± 9	< 0.0001
SD echo, (ms)	34 ± 10	29 ± 10	0.12
EF (RNA) (%)	28 ± 8	35 ± 13	0.10
S	0.921 ± 0.071	0.935 ± 0.063	0.57
E	0.571 ± 0.128	0.542 ± 0.128	0.53
SD (°)	49 ± 20	36 ± 21	0.10



No correlation was noted between any ultrasound and nuclear data, with the exception of baseline EF.



Conclusions



Our results demonstrate lack of correlation between nuclear and ultrasound data. These discrepancies, along with the low reproducibility of ultrasound data, may disclose the faceted aspects of left-intraventricular dyssynchrony. Possibly, S and E may consider different aspects of mechanical asynchrony with respect to TDI, whereas a complete description of asynchrony may be obtained by means of a multiparametric approach.