i990 Abstracts

Poster Session

## P1513

## Myocardial work analysis is a potential novel tool to diagnose subclinical cardiac dysfunction in cirrhotic cardiomyopathy

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**Background.** Cirrhotic cardiomyopathy (CCM) is defined as systolic and/or diastolic cardiac dysfunction, associated with high preload and low afterload. Thus, assessment of cardiac dysfunction in these circumstances is still debatable. Left ventricular (LV) deformation is still load-dependent, and does not reflect directly myocardial energy consumption. Since myocardial work (MW)incorporates both deformation and afterload, it might be a better alternative for the assessment of LV function in CCM.

**Methods.** 80 subjects were assessed by 2D conventional and speckle tracking echocardiography (STE): 40 patients with liver cirrhosis (LC) (58 ± 8 years, 23 males), free of any cardiovascular disease or diabetes, and 40 age and gender matched normal, control subjects. Left ventricular ejection fraction (LVEF) and systolic/diastolic blood pressure (SBP/DBP) were measured. A new approach was used to evaluate myocardial work by 2DSTE: global constructive work (GCW), as the "positive" work of the heart; global wasted work (GWW), as the "negative" work of the heart; global work efficiency (GWE), as the GCW/(GCW + GWW) in %; and global work index (GWI), as the GCW added to GWW. E/E' ratio, left atrial volume index (LAVi), and systolic pulmonary arterial pressure (sPAP) were also assessed.

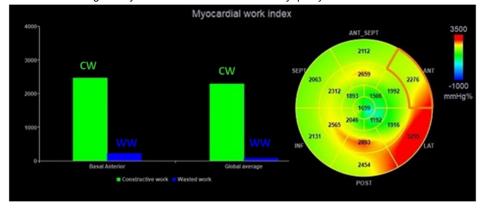
Results. Patients with LC had significantly lower SBP/DBP than controls, with similar LVEF (Table). GCW and GWI were decreased in patients with LC, probably due to decrease in afterload, which shifts LV work to a lower level of energy. GWE and GWW were similar to controls. By segmental analysis (18 segments model), apical and mid antero-lateral segments were the first affected in terms of myocardial work, with higher WW, low WE, but without a compensatory increase in CW in other segments, suggesting a regional myocardial dysfunction. All patients with LC presented significantly elevated E/E' ratio, LAVi, and sPAP, compared to controls (Table).

**Conclusion.** Myocardial global constructive work and global work index decrease in LC patients, compared to normal individuals, probably due to augmented peripheral vasodilatation. Apical and mid antero-lateral segments are the first affected. Assessment of global and regional MW might be a potential new tool to assess CCM, and to understand the relationship between LV remodeling and increased filling pressure under different loading conditions.

Comparative myocardial work indices

group	SBP (mmHg)		LVEF (%)	E/E'	LAVI	sPAP	GWI	GWE (%)	- C (	GWW (mmHg %)
LC (40)	111 ±14	$69 \pm 12$	$59 \pm 7$	$8.5 \pm 2.5$	$45.9 \pm 14.5$	$26 \pm 9$	$1927 \pm 379$	$95 \pm 2$	$2068 \pm 386$	$90.1 \pm 49$
Controls (40)	$126 \pm 14$	$76 \pm 8$	$61 \pm 7$	$7.5 \pm 2.2$	$31.8 \pm 6.8$	$21 \pm 8$	$2123 \pm 353$	95± 2	$2302 \pm 335$	$94.4 \pm 49$
P value	0.001	0.004	0.3	0.05	0.001	0.009	0.01	0.9	0.005	0.7

Abstract P1513 Figure. Myocardial Work Cirrhotic Cardiomyopathy



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