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THE EFFECT OF PERITONEAL DIALYSIS ON CARDIAC FUNCTIONAL PARAMETERS IN PATIENTS WITH CONGESTIVE HEART FAILURE

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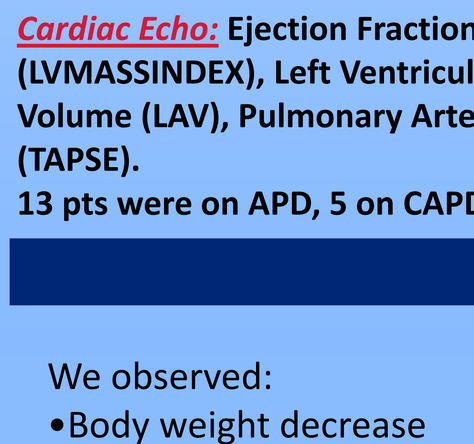
INTRODUCTION & OBJECTIVES



The term CardioRenal Syndrome (CRS) refers to the pathophysiological concomitant disorder of the heart and the kidneys.

An acute or chronic dysfunction of one organ may induce acute or chronic dysfunction of the other organ.

Limited data support that peritoneal dialysis (PD) applied in patients (pts) with congestive heart failure (CHF), resistant to diuretic therapy, results in significant improvement of their status.

The gradual and continuous removal of the dialysate, in peritoneal dialysis (PD), could be an effective ultrafiltration treatment of selected patients suffering from CHF.

We examined the long term effect of PD, as a continuous ultrafiltration treatment to pts with CHF, NYHA stage IV and renal disease stage > IIIb on cardiac functional parameters.

We have applied a detailed Cardiac Echo (CE) examination in an effort to identify markers to distinguish population that might benefit of early PD application.

METHODS

Characteristics of the treated group are shown on the table.

Inclusion criteria: **NYHA IV class symptoms, multiple hospitalizations during the past months due to fluid overload, failure to respond to increased diuretics and deterioration of the renal function.**

Evaluation: **Monthly complete biochemical workup and assessment of the cardiac function by (CE) on the initiation of PD and 6 - 12 months later were performed.**

Cardiac Echo: **Ejection Fraction (LVEF), Relative Wall Thickness (RWT), Left Ventricular Mass Index (LVMASSINDEX), Left Ventricular Mass (LVMASS), E/E', Left Atrium Volume Index (LAINDEX), Left Atrium Volume (LAV), Pulmonary Artery Systolic Pressure (PASP), Tricuspid Annular Plane Systolic Excursion (TAPSE).**

13 pts were on APD, 5 on CAPD. 10 pts were using icodextrin and their daily changes were 4 – 6.

Characteristics of the treated group (N=18)

Female to Male ratio	6 / 12
Mean Age (years)	80.3 (69 – 95)
Duration of PD (months)	10.12 (6 – 20)

RESULTS

We observed:

- Body weight decrease
- Improved eGFR
- Decrease of bilirubin levels
- Substantial decrease of diuretics
- Elimination of hospitalizations due to CHF decompensation
- Remarkable improvement of NYHA class
- Significant reductions of LA and LV

- The rest of the parameters remained unaffected.
- LVEF showed equivocal changes.
- One pt died on the 8th month of therapy due to sudden death.

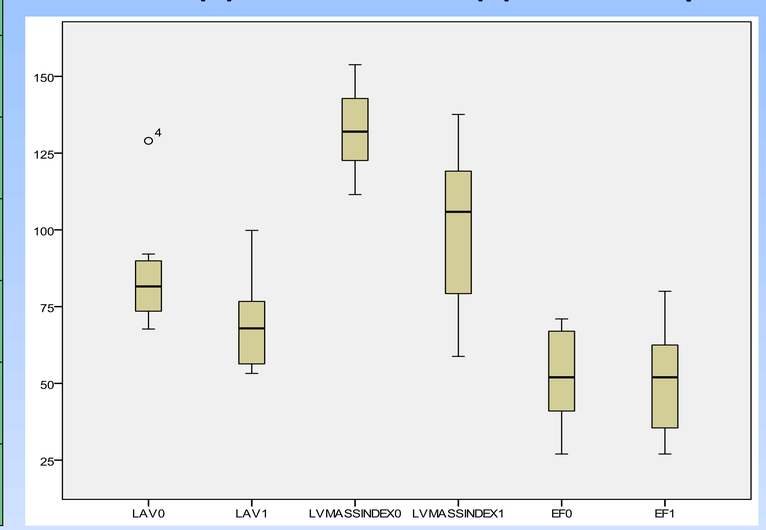
Results of the Echocardiographic Study

ECHO FUNCTIONAL PARAMETERS	START	FOLLOW UP	p
LAV (ml)	83.3 ± 28	68.7 ± 19	<0.05
LAINDEX (g/m²)	45.6 ± 16	36.5 ± 12	ns
RWT (cm)	0.47 ± 0.1	0.49 ± 0.1	ns
TAPSE (cm)	2 ± 0.8	1.8 ± 0.5	ns
LVMASS (g/m²)	212 ± 51	158 ± 48	<0.05
LVMASSINDEX (g/m²)	125.3 ± 21	98.4 ± 25	<0.05
PASP (mmHg)	40 ± 19	38.5 ± 11	ns
EF (%)	49.3 ± 17	54 ± 18	borderline
E/E'	16.5 ± 11	17.8 ± 5.9	ns

Significant Changes due to PD application

	START	FOLLOW UP	P
Body Weight (kg)	76 ± 11	71 ± 12	P < 0.05
eGFR (ml/min)	14.5 ± 9	19 ± 9	P < 0.05
Total Bilirubin Levels (mg/dl)	1.2 ± 0.9	0.5 ± 0.2	P < 0.05

Boxplot of the main Echo data at start (0) and at the end (1) of follow up



➪ 3 pts, that were not included in this study, died from sudden death before or few days after the initiation of PD.

CONCLUSIONS

➪ **As a result of the gradual & continuous removal of excess fluid all pts improved their clinical status**

➪ **There was improvement of left cardiac function, however, LVEF changes were ambiguous and cannot be used as an objective marker for this population**

➪ **Markers of right cardiac function didn't change significantly, probably due to technical or individualized causes**

The results of this prospective, but small, study encourage the application of PD in selected pts with CHF because it leads to dramatically diminished hospitalizations, due to cardiac events, and restores pts autonomy.

Presently, selection of pts should be made on clinical grounds.

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