

EVALUATION OF THE LEFT AND RIGHT VENTRICULAR DYSSYNCHRONY IN PATIENTS WITH CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION TREATED WITH PULMONARY THROMBENDARTERECTOMY.

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Background: Pressure overload in patients with chronic thromboembolic pulmonary hypertension (CTEPH) influences the mechanical function of the right ventricle (RV). Also disturbances in interventricular coupling may result in clinical presentation of patient with CTEPH.

Aim: We evaluated the effect of pulmonary endarterectomy (PTE) on mechanical function of both the right and left ventricle (LV).

Methods: Eleven patients (mean age 55 ± 11 years; 4 men, 7 women) with CTEPH without intraventricular conduction disturbances entered the study. All patients underwent successful PTE (NYHA class 3.2 ± 0.7 vs 1.4 ± 0.5 $p < 0.0001$; mean pulmonary artery pressure 61.3 ± 11.7 vs 29 ± 3 mmHg $p < 0.01$; pulmonary vascular resistance 896 ± 413 vs 207 ± 64 dyn/cm/s⁻⁵ $p < 0.01$). M-mode, 2D and tissue Doppler (TDI) echocardiographic evaluation were performed to determine global and regional function of both ventricle. The following echocardiographic parameters were assessed one week before and one month after PTE: RV and LV dimension, RV fractional area change (FAC), ejection fraction (EF) of LV, pulmonary valve acceleration time (PV-AT), time to onset of systolic RV free wall velocity, time to peak of systolic RV free wall velocity, time to onset of systolic interventricular septum (IVS) velocity, time to peak of systolic IVS velocity, time to onset of systolic LV lateral wall velocity, time to peak of systolic LV lateral wall velocity. Longitudinal intraventricular dyssynchrony was assessed as tissue Doppler opposing wall velocity delay (LV_{lat} -IVS delay, RV-IVS delay), interventricular mechanical dyssynchrony was assessed as difference between right and left ejection (LV_{lat} -RV delay).

Results: The results are presented in Table 1.

Conclusions: Pulmonary endarterectomy improves global RV systolic function and reduces intraventricular dyssynchrony.

Tab.1 Echocardiographic measurements before and after pulmonary endarterectomy

	Before PTE (mean±SD)	After PTE (mean±SD)	p
RV dimension [mm]	49±8	31±7	0,01
FAC-RV [cm2]	33±5	43±4	0,01
PV-AcT [mm]	59±5	99±3	0,03
RV-time to onset [ms]	145±21	122±20	0,04
IVS-time to onset [ms]	118±28	113±11	ns
LV_{lat} -time to onset [ms]	129±30	110±10	ns
RV-time to peak [ms]	220±26	189±26	0,045
IVS-time to peak [ms]	195±29	192±15	ns
LV_{lat} -time to peak [ms]	200±53	211±18	ns
LV_{lat} -IVS onset delay [ms]	88±45	15±9	0,002
RV-IVS onset delay [ms]	11±8	6±3	0,049
LV_{lat} -RV onset delay [ms]	16±5	11±8	ns
LV_{lat} -IVS peak delay [ms]	18±4	22±17	ns
RV-IVS peak delay [ms]	21±4	7±5	0,05
LV_{lat} -RV peak delay [ms]	12±6	20±11	ns