OP66-3  Transient Right Ventricular Pressure Overload Induced by Pneumonectomy Causes Vulnerability to Lethal Arrhythmias

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Peumonectomy causes arrhythmias in clinical settings, although the precise mechanisms are not fully understood. To investigate if pneumonectomy-induced (PI) pulmonary hypertension (PH) produces right ventricular (RV) arrhythmogenic vulnerability, we serially performed optical mapping analysis (OMP) with electrophysiological study (EPS) to the heart excised from pneumonectomy and monocrotaline-induced (MCTi) PH rats. RV pressure was measured by telemetry before excision. PI-PH transiently sustained from day 1 to 2 weeks after pneumonectomy. OMP revealed abnormal RV conduction delay and pattern (36/42 rats, 87%) accompanying ventricular fibrillation/tachycardia (VF/VT) induction by EPS while all MCTi-PH rats showed both abnormal RV conduction and VF/VT induction. Conclusions; Similar to MCTi-PH, transiently sustained PH itself can cause lethal arrhythmias possibly due to conduction disturbance in RV. These findings give us new insights in understanding the mechanisms for lethal arrhythmias in pneumonectomy and/or acute pulmonary embolism.

Keywords: pulmonary hypertension, ventricular fibrillation, optical mapping