

## **HEART RATE VARIABILITY IN RATS SUBJECTED TO LPS-INDUCED LUNG INJURY**

I. Zila, M. Kolomaznik, B. Czippelova, A. Calkovska

Department of Physiology, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia

Study aimed to evaluate heart rate variability (HRV) as index of cardiac autonomic control in rats with lipopolysaccharide (LPS)-induced lung injury. Anaesthetized Wistar rats were intratracheally instilled with bacterial LPS (500 µg/kg) to induce lung injury. Controls received saline. Animals were mechanically ventilated with frequency of 60/min, fraction of inspired oxygen (FiO<sub>2</sub>) 0.4, inspiratory time 40%, tidal volume of 6ml/kg. ECG recordings were done before and 30, 60, 120, 180, 240 min after LPS/saline administration. HRV magnitude was quantified by time and frequency-domain analysis. After 4 hrs of ventilation, inflammatory markers, galectin-3 and oxidative stress in homogenized heart and lactate in plasma were evaluated. Lung injury was specified as reduction of dynamic compliance >30% or decrease of paO<sub>2</sub>/FiO<sub>2</sub> <40 kPa. Increased plasma lactate and oxidative stress parameters were found in LPS rats. Inflammatory markers IL-1β, IL-5, IL-12p70 and IL-13 were increased after 4 hrs from LPS administration. Galectin-3 concentration raised in LPS animals compared to controls. HRV analysis did not exhibit any significant change, but tendency to decrease in HRV magnitude was observed in LPS-induced lung injury rats. No correlation between HRV and hyper-cytokemia might suggests pleuripotency of this cytokine possessing both pro and anti-inflammatory features at the same time.

Grants: APVV-17-0250 and VEGA 1/0055/19.