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

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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 μ g/kg) to induce lung injury. Controls received saline. Animals were mechanically ventilated with frequency of 60/min, fraction of inspired oxygen (FiO2) 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 paO2/FiO2 <40 kPa. Increased plasma lactate and oxidative stress parameters were found in LPS rats. Inflammatory markers IL-1 β , 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-cytokinemia might suggests pleuripotency of this cytokine possessing both pro and anti-inflammatory features at the same time.

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