Static inflation attenuates ischemia/ reperfusion injury in an isolated rat Lung In Situ

高尙志

Shang-Jyh kao;Wang D;Yeh DYW;Hsu K;Hsu YH;Chen HI

摘要

Abstract

STUDY OBJECTIVES: Ischemia (I)/reperfusion (R) lung injury is an important clinical issue in lung transplantation. In the present study, we observed the effects of lung static inflation, different perfusates, and ventilatory gas with nitrogen or oxygen on the I/R-induced pulmonary damage. DESIGN AND SETTING: A total of 96 male Sprague-Dawley rats were used. The lung was isolated in situ. METHODS: In an isolated lung, the capillary filtration coefficient (Kfc), lung weight gain (LWG), lung weight (LW)/body weight (BW) ratio, and protein concentration in BAL fluid (PCBAL) were measured or calculated to evaluate the degree of lung injury. Histologic examinations with hematoxylin-eosin staining were performed. RESULTS: I/R caused lung injury, as reflected by increases in Kfc, LWG, LW/BW, and PCBAL. The histopathologic picture revealed the presence of hyaline membrane formation and the infiltration of inflammatory cells. These values were significantly attenuated by static lung inflation. The I/R lung damage appeared to be less in the lung perfused with whole blood than in the lung perfused with an isotonic solution. Therapy with ventilatory air (ie, nitrogen or oxygen) did not alter the I/R lung damage. CONCLUSIONS: The data suggest that lung inflation is protective to I/R injury, irrespective of the type of ventilatory air used for treatment. The preservation of the lung for transplantation is better kept at a static inflation state and perfused with whole blood instead of an isotonic physiologic solution.