EFFECTS OF BUDESONIDE ON LUNG FUNCTION AND INFLAMMATION MARKERS IN A MODEL OF ACUTE LUNG INJURY

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Diffuse alveolar damage, lung edema, and inflammation are fundamental signs of acute lung injury (ALI) of various etiology. This study evaluated possible benefits of intratracheally given corticosteroid budesonide on the lung function parameters, edema formation, number of cells in the bronchoalveolar lavage (BAL) fluid, and concentrations of proinflammatory markers in animals with experimentally-induced ALI. In oxygen-ventilated rabbits, ALI was induced by repetitive saline lung lavage, until PaO_2 decreased to value ˂26.7 kPa in FiO_2 1.0. When the ALI model was prepared, animals were treated with budesonide (0.25 mg/kg i.t.), or were non-treated. All animals with ALI were oxygen-ventilated for following 5 hours, one group of animals served as non-ventilated controls. After sacrificing animals, left lung was saline-lavaged and BAL cells were determined. Right lung was used for estimation of lung edema formation (wet/dry weight ratio) and for determination of markers of inflammation and lung injury (IL-1β, IL-6, IL-8, TNFa, esRAGE, caspase-3) by ELISA methods. Repetitive lung lavage significantly worsened gas exchange, triggered neutrophilic inflammation, and induced lung edema formation. Already within 5 hours of budesonide administration, number of cells, particularly of neutrophils, in the BAL fluid decreased, edema formation reduced, and concentrations of several proinflammatory cytokines and markers of injury decreased or showed a trend to decrease, respectively. This resulted into improved oxygenation and ventilation compared to non-treated animals. Concluding, intratracheal administration of budesonide alleviated inflammation and improved lung functions in a model of ALI.

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