

# Mild hypothermia attenuates lung edema and plasma interleukin-1 beta in a rat mechanical ventilation-induced lung injury model

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### Abstract

Recent data suggest that deep hypothermia has protective effects on experimental induced lung injury. It is not well known if these effects persist with mild hypothermia. The authors hypothesized that mild hypothermia may attenuate lung injury and decrease local and systemic proinflammatory cytokines in a rat model of injurious mechanical ventilation (MV). Twelve Sprague-Dawley male adult rats were anesthetized, intubated, and randomly allocated to normothermia group (37 degrees C) (NT) or mild hypothermia group (34 degrees C) (MH). After 2 hours of deleterious MV (peak inspiratory pressure [PIP] 40 cm H<sub>2</sub>O, zero end-expiratory pressure [ZEEP], and inspiratory fraction of oxygen [Fio(2)] 100%), arterial blood gases, lung gravimetry, and histological study were obtained. Protein content, interleukin (IL)-1 beta, and tumor necrosis factor (TNF)-alpha were measured in plasma and bronchoalveolar lavage (BAL) fluid. Subjects that underwent MH had a significant lower wet-to-dry lung weight ratio (8.32 +/- 0.28 vs. 10.8 +/- 0.49, P = .01), IL-1 beta plasma concentration (0.6 +/- 0.6 vs. 10.27 +/- 2.80 pg/mL, P = .0048) and Pao(2). There were no differences in terms of Pao(2), histological injury, or BAL protein content. In this model of injurious mechanical ventilation, subjects treated with mild hypothermia had less lung edema and lower plasma IL-1 beta. Some of known beneficial effects of deep hypothermia can be obtained with mild hypothermia.

### Keywords

**Author Keywords:** Therapeutic hypothermia; Ventilator-induced lung injury

**KeyWords Plus:** RESPIRATORY-DISTRESS-SYNDROME; BODY-TEMPERATURE; PULMONARY-EDEMA; CARDIAC-ARREST; PROTECTION