Rapid Recovery Hyperbarics

9439 Archibald Ave. Suite 104 Rancho Cucamonga CA, 91730
909.477.4545 | www.hbot4u.com

Lung Disorders

Experimental

Hyperbaric oxygen attenuates lipopolysaccharide-induced acute lung injury M.-Y. Lu1, B.-H. Kang1, F.-J. Wan1, C.-S. Chen2 and K.-L. Huang1, 2,

- Institute of Undersea and Hyperbaric Medicine, National Defense Medical Center, 161 Ming-Chuan E. Road, Sec. 6, Taipei 114, Taiwan R.O.C.
- Division of Chest Medicine, Department of Internal Medicine, Tri-Service General Hospital, Taipei, Taiwan R.O.C.
-

Abstract

Objectives. To study the effect of hyperbaric oxygen therapy in alleviating acute lung injury induced by lipopolysaccharide (LPS) in rats.

Design and interventions. The rats received an intraperitoneal injection of LPS (15 mg/kg). Animals were either breathing air at 1 ATA or subjected to hyperbaric oxygen (HBO2) therapy. The HBO2 therapy was carried out in a hyperbaric chamber at a pressure of 3 ATA for 90 min. In another two groups, LPS-treated rats also received intraperitoneal injection of N-nitro-L-arginine (LNAME, 25 mg/kg) or L-N6-(iminoethyl)lysine (LNIL, 10 ml/kg). Another two groups of LPS-treated rats were subjected to HBO2 exposure after the injection of L-NAME or L-NIL.

Measurements and main results. The bronchoalveolar lavage (BAL) was done into the left lung at 7.5 h after intraperitoneal injection of LPS. Parts of the right lung were excised for myeloperoxidase measurement, whereas the rest was collected for wet/dry ratio determination. LPS significantly increased the nitrite/nitrate (NOx-) concentration (34.4±15.7 vs 4.5±3.1 µM), LDH activity (66±17 vs 46±15 mAbs/min), and protein concentration (373±119 vs 180±90 mg/l) in the BAL fluid. Treatment with HBO2 immediately after the injection of LPS enhanced the increase of NOx- production, but reduced the LDH and protein in BAL fluid to the control levels. Pretreatment with either L-NAME or L-NIL abolished the increase of NOx- in the BAL fluid and further elevated the LDH level and protein concentration.

Conclusion. Our results suggested that HBO2 alleviates the LPS-induced acute lung injury, which may be related to the enhancement of nitric oxide production.

Keywords. Lipopolysaccharide - Acute lung injury - Hyperbaric oxygen - Nitric oxide