

LPS inhalation challenge: a new tool to characterize the inflammatory response in humans.

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Inhaling bacterial endotoxin and its derivative LPS can induce a distinct inflammatory response, varying among hosts. Experimental LPS-inhalation is an established procedure in inflammation research. We evaluated experimental LPS-inhalation in 20 young healthy volunteers to determine the safety and the reproducibility of markers of inflammation and clinical findings (symptoms, lung function, exhalative NO, and body temperature). LPS was increased every 30 min up to cumulative 100 microg, the protocol was repeated after 2, 4, and 6 weeks. During 71 provocations, 13 episodes of clinical complaints were observed in 10 subjects. Those were a total of 11 local reactions (15.5%, e.g., cough), and six systemic reactions (8.5%, e.g., fatigue). All adverse events resolved spontaneously within 10 h. Changes of FEV(1) and eNO showed no significant differences between the four visits. In the majority of our subjects (88.2% on visit 1-3, 76.5% on visit 4), a rise in body temperature (>0.5 degrees C) was recorded and normalised latest after 24 h. On the first and the last visit, serum concentrations of CrP and LBP increased significantly and correlated well with each other ($r=0.71$; $P<0.001$). LPS-challenge is a safe and tolerable tool to investigate inflammatory response in humans and could lead to better characterization of patients with chronic inflammatory disease.

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