

Chronic Obstructive Pulmonary Disease

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Effects of hyperoxia exposure on free radicals accumulation in relation to ultra structural pathological changes of diaphragm

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COPD are associated with an increased load on the diaphragm leading to accumulation of reactive oxygen species (ROS) and the subsequent cellular damages and death. The pathological alterations induced by ROS in the diaphragm during oxygen breathing are not known. The purpose of the present study was to examine the effects of hyperoxia exposure (HP) on free radicals (FR) accumulation in relation to the ultra structural pathological alterations in the diaphragm. Twenty adult male rats were randomly assigned to two groups; control (C) and hyperoxia (HP). Animals of the HP were breathing 100% O₂ for 72 hours continuously. Both serum and diaphragm tissue supernatant analysis showed significantly higher ($p < 0.05$) FR in HP group as compared with control group. Ultra structure examinations showed that HP resulted in variety of pathological alterations in the mitochondria and endoplasmic reticulum that were associated with disarrangement of myofibrils, loss of I-banding for myosin, focal myolysis of the myofilaments, complete fragmentation of myosin, tearing of myofilaments from Z plates and tearing of the endothelial cell of the interstitial blood capillaries. Based on the results of the present study, it can be concluded that hyperoxia induced acceleration ROS formation damaged the contractile apparatuses of the diaphragm and related endomembrane proteins that could involve intracellular calcium channels proteins.

Biography

Al-Said Haffor obtained his PhD (1985) degree in Applied Physiology from the Ohio State University, Columbus, OH, USA. Began his career as an Assistant Professor of Applied physiology at Mississippi State University, USA. Three years later being Promoted to Associate Professor of clinical epidemiology at MSQA, CSU-DH, besides being a physiologist and supervisor in Internal Medicine and Critical, in the Pulmonary Physiology Department at LAC+USC Medical Center (1987 - 2000). Since 2001 he has been Professor of Physiology in King Saud University (in Riyadh, Alkharj & Wadi Aldwasir) and Dar AlUloom University, College of Medicine (2014 - present). His research had been funded by SABEC, as well as by the Deanships for Research & Graduate studies at King Saud University and Salman Bin Abdul Aziz University. He conducted more than 30 presentations in regional and international conferences, while in the USA and KSA. He published more than 40 Original Articles and Reviews in peer reviewed journals.

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