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Title: Probable lung injury by long-term exposure to oxygen close to 50 kilopascals

Authors: Suzuki, S

Keywords: saturation
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pulmonary

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Abstract: To investigate the possibility of lung injury after long-term saturation dives where oxygen partial pressure was kept between 42 and 50 kPa, we measured lung volumes, diffusing capacity (DLCO/VA), and ethane production in the alveolar expirate on six divers who participated in a 1.1-MPa saturation dive (9 days of total dive time) and on another six divers in a 4.5-MPa saturation dive (29 days of total dive time). Vital capacity after surfacing did not significantly decrease in divers after either dive profile, in comparison with pre-dive values. DLCO/VA was significantly decreased only in the 4.5-MPa saturation divers after surfacing. Ethane production, used as an index of in vivo lipid peroxidation, was significantly increased immediately after the 4.5-MPa saturation dive. The decompression procedure seemed to have little effect on the decrease in diffusing capacity and increase in ethane production. These observations indicated that the decrease of DLCO/VA was assumed to be caused by oxygen-derived free radicals.

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