

INHALATION RISKS IN THE WAR: CHRONIC LUNG INJURY AS A RESULT OF COMBAT SERVICE

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Abstract

Chronic nonspecific lung diseases (CNSLD) in military personnel have become an increasing medical issue in the context of modern armed conflicts, especially considering prolonged exposure to particulate matter, toxic aerosols, combustion products, and barotrauma. The full-scale war in Ukraine has created unique conditions for the widespread development of respiratory injuries.

Aim: to investigate the main etiological factors, morphological and functional changes, and mechanisms of lung injury in servicemen exposed to combat-related hazards during the war.

Materials and methods. A clinical examination of 250 military personnel after deployment in combat zones was conducted, including spirometry, measurement of lung diffusing capacity for carbon monoxide (DLCO), biochemical analysis of biomarkers (KL-6, YKL-40), and high-resolution computed tomography (HRCT).

Results. It was established that 30–40 % of servicemen reported persistent respiratory symptoms following exposure to polluted air. A decrease in vital lung capacity or DLCO was detected in 12–22 % of individuals. Common complications included bronchial hypersensitivity, obstructive and restrictive ventilatory impairments, and early fibrotic changes. Blast lung injury was diagnosed in 7–16 % of those injured by explosions.

Conclusion. Exposure to particulate matter, toxic agents, and blast waves are key factors in the development of CNSLD in military personnel. Implementation of systematic lung function screening, early diagnosis, and specialized respiratory rehabilitation after combat is essential.

Key words: military personnel, respiratory risks, chronic nonpecific lung diseases, spirometry, chest CT, biomarkers, stress, hypoxia, screening algorithm.

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