Chemiluminescent data on the functional state of polymorphonuclear leukocytes (PMNs) from blood and pleural effusions, in cases of inflammation and malignancies

B. Becheva, S. Stoeff a, M. Magrisso b, V. Lazarov c, N. Trifonova c, D. Dimitrova c

Abstract

Inflammation is a localized cell and tissue response with systemic consequences, elicited by injury or tissue damage, which could destroy, reduce or sequester both the harmful agent and the wounded tissue. Polymorphonuclear leukocytes (PMNs) are one of the most important players in inflammation response.

In the last decade a new meaning to the role of PMNs in inflammation is that the tissue blood microcirculatory network area is the main field of interactions between PMNs, as well as with the other blood cells, the endothelium and thereafter the tissue.

The target activities of the PMNs as a multistep cascade (margination and adhesion to the endothelial vessel wall, transendothelial migration and migration within interstitial tissues, phagocytosis, degranulation, and generation of radical oxygen species) go along with receptor-mediated communication by other cells, cytokine synthesis and apoptosis. The “battle field” is intermingled with the injured/infected tissue effects of changed endothelial permeability, thrombosis, cellular apoptosis and organ dysfunction. We discussed processes of development of transudative or exudative effusions in the pleural cavity where PMNs are in pathological functional state and could be as heterogeneous subpopulations.

PMNs are revealed to be more than a “fighter” but also are functionally regulating factors in all processes of inflammation development and resolving.

We used the chemiluminescence method to describe different functional states of PMNs in cases of pleural infection and cancer development.

Keywords: PMNs, chemiluminescence, pleural effusion, infections, cancer.