

Age-related Dissociation of Oxidative Metabolisms from Phagocytosis and Up-regulation of CD11b/CD18 Expression in Human Monocytes

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Abstract : Immunosenescence is one of the crucial events in aging, resulting in a vulnerability to infection and an increased incidence of malignant tumors. In the present study, we investigated the activities of phagocytic cells, including polymorphonuclear neutrophils (PMN) and monocytes, from elderly persons, and compared these findings to those in young subjects. The production of reactive oxygen intermediates (ROI) in the peripheral whole blood by stimulation with fresh serum-opsonized zymosan was significantly augmented in elderly persons in comparison to that in young volunteers, when estimated by a luminol-dependent chemiluminescence (CL) assay. The CL response of PMN showed a similar level in both groups, but that of monocytes increased remarkably in the elderly group. On the other hand, phagocytosis of fluorescent microspheres by monocytes, observed by flow cytometry, significantly decreased in the elderly, whereas the expression of CD11b/CD18 (CR3) which is related to the phagocytic production of ROI and phagocytosis *per se* was up-regulated in monocytes from elderly persons, in comparison to the younger subjects. These results suggest that functional changes in the phagocytes due to aging occurred more deeply in monocytes than PMN, which might therefore represent one of the characteristics occurring in immunosenescence.

Key words : Monocytes, Reactive oxygen intermediates (ROI), Phagocytosis, CD11b/CD18, Aging