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GLIAL CELLULAR SIGNALS AFTER FRONTAL SENSORIMOTOR CORTEX LESIONS IN AGING RATS. I. Dalmau, B. González* and B. Castellano. Unit of Histology, Faculty of Medicine, Autonomous University of Barcelona, Spain.

Mechanisms triggering glial activation in the aged brain are not well understood and it is still not well established if the intrinsic glial reactivity described by some authors is the result or may be the cause of a general progressive process of degeneration taking place. Anyway, in this conditions, it should be expected that intrinsic activated glial cells may be either more predisposed to react in front of a lesion as they are already prepared to act, or more permissive as consequence of its chronic exposition to a changing abnormal environment. In the present study we analyzed the glial reactivity induced by an aspiration experimental lesion in the sensorimotor cortex of aged Wistar rats (24-months-old) in order to compare it with those induced in adult rats (3-months old). After a survival time of 5 days, both aging and adult brains were histologically processed for immunodetection of different markers, including reactive astroglial and microglial stains, transcription factors activation and several cytokine and HSPs expression.

The preliminary results showed that the aged brain displays a significant constitutive expression of MHC I and ¶I, GFAP, and some HSPs (27 and 32) mainly in white matter. Activation of both STAT-3 and NFkB transcription factors was occasionally seen in some glial cells in white matter. No expression of cytokines was found in association with glial cells.

In the cortex of lesioned aged rats, GFAP reactive astrocytes surrounding the lesion showed high levels of HSP-27. In contrast, microglia/macrophages expressed HSP-32. Activation of transcription factors (NFkB and STAT-3), as well as an important upregulation of IL-1ß, IL-6 and TNFα expression was seen in relation to glial cells. When compared with adult lesioned rats, some differences were found: STAT-3 and NFkB activation was more prominent in adult lesioned rats that in aged lesioned rats, whereas IL-1ß, IL-6 and TNFα expressions were higher in aged lesioned rats than in adults.

These results indicated that the capacity of glial response in the aging brain strongly differs from that found in the adult brain.

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