

ENRICHMENT AND EARLY HANDLING PROTECT AGAINST AGE-RELATED DEFICITS IN RHA/VERH AND RLA/VERH RATS:  
II. HISTOLOGICAL OBSERVATIONS IN THE HIPPOCAMPUS.

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The purpose of the present work was to establish possible differences at the histological level between groups of aged rats from two lines (RHA/Verh and RLA/Verh) receiving different treatments (E and/or H) during the postnatal period (see part I). In addition, control groups (without any treatment) of aged (C) and young rats (Y) from both lines were included in the study. After anesthesia, rats were perfused intracardially with 4% paraformaldehyde in cacodylate buffer 0,1M (pH 7,4), the brains were removed and embedded in paraffin. Series of coronal brain sections including the hippocampus were cut and stained with hematoxylin-eosin and acid fuchsin.

Our observations revealed that RLA/C and RHA/C rats showed an important affectation of the hippocampal region, especially in the Ammon's horn, when compared with RLA/Y and RHA/Y groups. Aging in both lines produced cellular atrophy of pyramidal neurons in CA1 and CA3, hilar neurons, and inner granular neurons of fascia dentata. Thus, most cells in this location displayed dark nucleus and cytoplasm, and only few light normal neurons were observed. Disorganization of CA3 regions was more evident in the RLA/C, whereas RHA/C showed more affectation related to the hilus. Noticeably, the number of dark neurons in these areas was highly decreased in all groups receiving postnatal treatment. That was much more evident in RLA/H, RLA/E, RLA/HE, RHA/E and RHA/HE than in RHA/H. Moreover, a significant increase in the number of glial cells was observed in RHA/E and RHA/HE animals, principally in the hilus and in relation to mossy fibers in CA3.

In conclusion, our observations indicate that postnatal (H and E) treatments produce a beneficial effect in preventing neuronal affectation in the hippocampus.

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