

Astroglial and Microglial cells in young and adult rats of the Prenatal Immune Challenge Model.

Ribo, D.1; Giralt, M.1; Romero, E.2; Hidalgo, J.1; Acarin, L.1; Borrell, J.2; Castellano, B.1; Gonzalez, B.1

1Dept. Cell Biology, Physiology and Immunology, UAB; and 2Cajal Institute (CSIC), Madrid, Spain.

In this study the putative morphological changes in glial cells were assessed in a murine model of schizophrenia, the Prenatal Immune Challenge Model (PICM), whereby endotoxic shock produces alterations in the neural mechanisms of sensorimotor information processing. Brains from 3 weeks (young) and 6 months (adult) old male Wistar rats, whose mothers were exposed to endotoxic shock by subcutaneous administration of LPS (2 mg/Kg/day) during pregnancy, were used. The prefrontal cortex, hippocampus and amygdala of PICM brains of both ages were analysed for GFAP and vimentin immunohistochemistry and tomato lectin histochemistry. Additionally, the same areas of adult PICM brains were processed for GFAP, Mac-1 and several cytokines mRNAs by using RNase Protection Assay. At both ages, PICM brains showed slight morphological alterations in astroglial cells, which were characteristic for age and area. Whereas in prefrontal cortex of young PICM brains, GFAP immunoreactivity showed a trend to decrease, in the adult animals GFAP immunoreactivity showed the opposite trend, although mRNA was significantly decreased. In the hippocampus, a significant decrease of GFAP immunoreactivity was found in the young animals, whereas in the adults although there was a significant decrease in the mRNA levels, GFAP immunoreactivity did not change significantly. In the amygdala of young animals we observed a significant increase in GFAP immunoreactivity. In adult animals however, this increase was not found and even mRNA levels trends to decrease was appreciated. No expression of vimentin was seen at any area nor age. Microglial cells did not show any relevant morphological changes, and no differences in Mac-1 mRNA expression were found. Finally, cytokines mRNAs were not detected in any area. In conclusion, in the PICM model only moderate changes in astrocytic morphology and GFAP immunoreactivity were found in both ages. A correlation between GFAP immunostaining and mRNA levels in the adult was not clearly established.