EARLY RESPONSE OF MICROGLIAL CELLS TO EXCYTOTOXIC LESIONS.

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It is well established that intracerebral injections of acidic aminoacids with potent neuroexcitatory properties cause neuronal degeneration. However, the microglial response to this kind of lesions has not been studied in detail. The aim of the present work was to study the early changes occuring in the microglial population present in the lesioned area. The TPPase histochemical technique was used as selective marker for microglial demonstration.

Adult male rats weighing 180 g were used. Animals received an ibotenic acid injection in the striatum. After different survival times, rats were perfused with 2% paraformaldehyde, 0.5% glutaraldehyde, 5% sucrose in 0.1 M caccodylate buffer pH 7.4. Vibratome slices 50 um thick were incubated in the Novikoff-Goldfisher medium for 1 hour at 37º C. Either cocarboxylase or 5'-inosine diphosphate were used as substrate.

Our results show that a remarkable glial reaction can be observed in association to the neuronal degeneration process. Both TPPase-negative hypertrophied astrocytes and TPPase-positive microglial cells were noticed in the lesioned area. The earliest microglial response consist in an enlargement of the cell body, proliferation of phagocytic vacuoles and shortenning of processes. When compared to control animals, reactive microglia displays a substantial increase in TPPase activity associated to the plasmatic membrane and phagocytic vacuoles. The relation between this increase of TPPase activity and neurotransmitters metabolism will be discussed.