

Response of amoeboid and ramified microglial cells to lipopolysaccharide injections in postnatal rats- a lectin and ultrastructural study

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摘要

Abstract

The present study describes the response of amoeboid and ramified microglial cells in the corpus callosum to intraperitoneal lipopolysaccharide injections in postnatal rats as examined by lectin histochemical staining and electron microscopy. In 1 day old rats receiving endotoxin injections and sacrificed at various time intervals, the lectin labelling of amoeboid/ramified microglia was greatly enhanced. The increased labelling persisted in some ramified microglia in rats killed at 14 and 21 days of age; otherwise in normal or control animals of the corresponding stages, the same cells were very weakly stained. In rats killed at 2 days of age after intraperitoneal lipopolysaccharide injection, the number of microglia appeared to increase, but this was reduced at 7 days of age. The lectin-labelled amoeboid/ramified microglia were frequently seen adherent to the outer walls of the callosal blood vessels where infiltrated lymphocytes were also observed. Ultrastructurally, some lectin-labelled microglial cells underwent degeneration and were engulfed by other lectin-positive cells. After endotoxin injections, microglial cells, notably the amoeboid form, showed extensive ruffling at their cell membrane, massive accumulation of lysosomes and increased staining of lectin at their Golgi apparatus. A similar lectin labelling pattern was also observed in ramified microglia of lipopolysaccharide-injected rats. It is concluded that both amoeboid and ramified microglial cells in postnatal rats responded to endotoxin injections as reflected by their enhanced lectin labelling at the surface membrane, lysosomes and Golgi apparatus. It is suggested that such changes may be involved in synthesis and/or modification of galactosyl glycoconjugates probably for the increased production of membranous glycoproteins or lysosomal enzymes.