Response of amoeboid microglial cells to chloroquine injections in postnatal rats

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摘要

Abstract

One-day-old postnatal rats were given single daily intraperitoneal injections of chloroquine for 6 successive days and sacrificed at 7, 14 and 21 days of age. In rats killed at 7 days of age, the amoeboid microglial cells in the corpus callosum above the lateral ventricles showed a marked increase in vacuoles and lysosomes by electron microscopy. Immunohistochemical study showed that the number and OX-42 immunoreactivity of these cells were comparable to those of the control rats. At 14 days, the immunoreactive amoeboid microglia appeared hypertrophic and their immunoreactivity was noticeably enhanced when compared with the ramified cells in the controls. Ultrastructurally the amoeboid microglial cells in the chloroquine-treated cells showed massive lysosomes. At 21 days, the immunoreactivity of amoeboid microglial cells and their lysosomes were comparable to those of the controls. Results with the antibodies ED1 and OX-18 paralleled those with OX-42 in terms of the temporal change of immunoreactivity and external morphology of amoeboid microglia. OX-6 immunoreactive cells were not observed in both groups of rats. With the isolectin, Griffonia simplicifolia, the reaction product which was normally confined to the plasma membrane of amoeboid microglia was also localized in vacuoles and the massive lysosomes in the chloroquine-injected rats suggesting the internalization of plasma membrane and its sequestration in the lysosomes. It is concluded from this study that although amoeboid microglial cells responded vigorously to chloroquine, its effects are reversible since with the discontinuance of the drug and prolongation of survival interval, the cells regained their normal features.