Migration of monocytes after intracerebral injection at entorhinal cortex lesion site.

The lack of classical lymph vessels within brain tissue complicates immune surveillance of the CNS, and therefore, cellular emigration out of the CNS parenchyma requires alternate pathways. Whereas invasion of blood-derived mononuclear cells and their transformation into ramified, microglia-like cells in areas of axonal degeneration across an intact BBB have been demonstrated, it still remained unclear whether these cells reside permanently, undergo apoptosis, or leave the brain to present antigen in lymphoid organs. With the use of ECL of mice and injection of GFP-expressing monocytes, we followed the appearance of injected cells in spleen and LNs and the migratory pathways in whole-head histological sections. Monocytes migrated from the lesion site to deep CLNs, peaking in number at Day 7, but they were virtually absent in spleen and in superficial CLNs and inguinal LNs until Day 21 after lesion/injection. In whole-head sections, GFP monocytes were found attached to the olfactory nerves and located within the nasal mucosa at 48 hpi. Thus, monocytes are capable of migrating from lesioned brain areas to deep CLNs and use the cribriform plate as an exit route.